



# **Proceeding: NLRCS International Congress**

September 6-8, 2017

Mashhad, Iran

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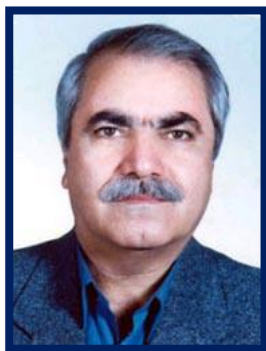
# **Welcome! To the NLRSC Congress 2017 Mashhad**

## **Dear Participants!**

We are excited to be hosting the first International Congress of " Nutrition: from Laboratory Research to Clinical Studies" (NLRCS). This international congress being held September 6-8, 2017 in Mashhad, IRAN. The purpose of the congress is to bring together cellular and molecular researchers, nutritionists, physicians, dietitian experts in food and health as well as other specialists to discuss the challenges of the interplay between nutrition sciences and medical intervention. The meeting will try to facilitate exchanging of ideas and knowledge between the different disciplines for basic research and clinical interdisciplinary collaborations focusing on nutrition and health issues.

We look forward to welcoming you to 2017 – the 1<sup>st</sup> NLRCS International Congress in our beautiful city, Mashhad.

## Organizer Committee



**Prof. Mostafa Mehrabi Bahar**  
Chancellor of Mashhad University of Medical Sciences

In the Name of God; the Merciful, the Compassionate

It is a great honor and pleasure to be your host in the first International NLRCS congress “Nutrition from Laboratory Research to Clinical Studies”.

We are excited to present to you some of the latest research and scientific findings in this congress, with the help of our respected colleagues, as we take a big leap towards the future of science. We are also keen in hosting the greatest specialists in the fields of Health and Nutrition Sciences. We strongly believe that this three-day congress would be a grand opportunity to share the latest science in order to take useful steps together towards improving public health through the understanding of; basic sciences, human nutrition as well as food and health industries.

My colleagues and I in administrative and scientific committees of the congress sincerely hope this event provides the required academic ground for increasing the knowledge of the dear attendants. We aim for this to be an effective and worthy step for seekers and innovators of science and technology.

Yours Sincerely,

**Prof. Mostafa Mehrabi Bahar**  
Chancellor of Mashhad University of Medical Sciences



**Prof. Angelo Azzi**  
Honorary president of NLRCS

**Dear Participants in the First International Congress on “Nutrition: from Laboratory Research to Clinical Studies (NLRCS)”**

I would like to welcome all of you very personally and warmly. This meeting represents a special event for several reasons. First, the topic is extremely important for Iran, the Asia-Pacific region and the entire world. Nutrition ranges from optimal nutrition to under-nutrition and obesity: all three aspects are present in different proportions in all parts of the globe. Non-optimal nutrition leads to associated severe diseases: understanding the cause of them allows prevention and therapy. Understanding disease means scientific research that must range from the most basic laboratory experiments to epidemiological and clinical intervention studies. This large array of scientific approaches requires coordination that is best obtained in a dedicated center.

In fact, this Conference represents the first step in the creation of such a center which will be under the auspices of UNESCO and WHO. The Centre aims will be to help in the improvement of human nutrition, an event which will be realized through research, innovation and education, not only on a national base but rather reaching out to other countries in Asia, the Pacific and beyond. The presence of a roster of outstanding speakers, national and international, indicates the importance that famous scientists have given, with their participation, to this event. It indicates the effort as well which has been made by local and national authorities in terms of support and organization. The sponsorship of The International Union of Biochemistry and Molecular Biology (IUBMB) and the Federation of Asian and Oceanian Biochemists and Molecular Biologists (FAOBMB) is evidence of the consideration that the scientific world is giving to Iran and this initiative.

This Conference has been possible due to the intelligent and intensive efforts of the Organizers and first, among all, of Prof. Majid Ghayour-Mobarhan and the International Advisory Committee. During this Conference scientists will not only be able to exchange research information but also to establish personal and lasting interactions: in fact, above science and beyond national borders we are all equal human beings and, in this occasion, we want to reaffirm this principle.

**Prof. Angelo Azzi**  
Honorary president of NLRCS



**Prof. Majid Ghayour-Mobarhan**  
President of NLRCS

## **Message of president**

### **Dear Friends and Colleagues**

I feel honored and privileged to chair the first International Congress of NLRCS, “Nutrition, from the Laboratory Researches to Clinical Studies” hosted by Mashhad University of Medical Sciences, September 6-8th, 2017, IRAN.

Nutritional events and conferences are designed to learn about and share the latest progressions in the food sciences and nutrition and its link to health-related quality of life (HRQOL). The 2015 Incheon declaration confirmed that "education is a catalyst for developing the skills, values, and behaviors that leading to healthy lives and well-being". Regarding UNESCO's slogan, "Education for Health and well-being", International Center for science, high Technology and Environmental Sciences in Mashhad University of Medical Sciences aims to develop the scientific approaches. The objective is to encourage knowledge exchange to achieve high quality education in health and nutrition in society. We are also committed to enhance our relationships with international organizations such as WHO and UNESCO to share our valuable experiences with other nations. Holding this international conference is in this regard. We intend to focus on all aspects of nutrition issues going through a wide variety of nutritional topics which will be a bridge from cellular and molecular studies in modern laboratories to medical practice to enrich our attendees' points of view.

We are pleased to invite scientists, researchers, professionals, practitioners, nutritionists, dieticians, public health experts, and sports nutritionists, food industry researchers to exchange ideas and be informed about the latest research developments in these fields. It is my pleasure to invite you to experience the beautiful metropolitan city that was officially named the capital of the Islamic culture in 2017 for the Asia region by the Islamic Educational, Scientific and Cultural Organization (ISESCO). We are looking forward to giving you the warmest welcome.

**Prof. Majid Ghayour-Mobarhan**  
President of NLRCS



**Dr. Mohammad Safarian**  
Executive committee chair



**Prof. Seyed Mohammad Reza Parizadeh**  
Scientific committee chair

We welcome you and appreciate your participation in the congress. The congress, which is held on September 6-8, 2017 in Mashhad, Iran, is organized mainly by Mashhad University of Medical Sciences, and the Iranian Society of Nutrition. Mashhad University of Medical Sciences is pleased to be the host of this event.

NLRCS congress is a showcase of the advances in the nutrition sciences. We will arrange for an attractive and exciting scientific program that will reflect the most recent advances in nutrition sciences. At the same time, NLRCS congress serves important roles in networking between scientists globally. Importantly, NLRCS congress also has provided the opportunity for training young scientists and integrating them into the large scientific community. We are dedicated to make NLRCS congress 2017 a forum for all researchers to interact with peers in the field.

Mashhad is also a lively, friendly and open city with many attractions. These attractions along with the friendly atmosphere will make sure that scientific interactions and communications will thrive at NLRCS congress 2017. We are looking forward to hosting you and to making NLRCS congress 2017 a memorable Persian experience.

**With best regards**

**Prof. Seyed Mohammad Reza Parizadeh and Dr. Mohammad Safarian**



**Dr. Mohammad Hashemi**  
Executive committee co-chair



**Dr. Amir Avan**  
Scientific committee co-chair

On behalf of the organizing committee for international congress entitled “Nutrition: from Laboratory research to clinical studies”, we cordially welcome you to Mashhad. The purpose of the congress is to bring together cellular and molecular researchers, nutritionists, physicians, experts in food and health and other specialists to discuss the challenges of the interplay between nutrition sciences and medical intervention in all age group. The meeting is trying the exchange of ideas and knowledge between the different disciplines for basic research and clinical interdisciplinary collaborations focusing on nutrition and health issues.

The congress comprises different parallel panels including basic science research to patient bedside: human nutrition and health, cancer and nutrition, fasting and human health, obesity, diabetes , metabolic syndrome, fatty liver and related disorders, malnutrition in ICU and preoperative, nutrition and cardiovascular diseases, nutrition and proteomics & nutrigenomics, NCDs unhealthy diet risk factors, reduction of salt, sugar and TFA, micronutrient deficiency and food fortification strategy, healthy food supply regarding to food safety chain, functional foods, food contaminants and additives, new aspects and challenges in food science and food safety, analysis of health and nutrition data, immunity and nutrition, and nano-foods.

Furthermore the 1<sup>st</sup> International Symposium of Nutritional Implications for Public Health 7-8 Sep. 2017 is an important side event of the NLRCS congress. The symposium will be conducted with technical support of WHO and in collaboration with UNESCO. The objectives of the symposium are: 1) Overview of Global, EMRO and Iran national programs/ priorities/ progress / challenges on nutrition with focus on UN Decade of Action on Nutrition and SDGs, 2) Review/ discuss current nutritional policy and at national level, 3) Provides recommendations for way forward on national nutritional programs and seeking political commitment towards reducing nutritional challenges as well as strengthening national efforts for prevention of NCDs, 4) Establishment of an institutional network on nutrition in Iran.

We do hope that you will be able to join the congress and symposium and hoping very much to enjoy your time in beautiful city of Mashhad.

Sincerely yours,  
**Dr. Amir Avan and Dr. Mohammad Hashemi**

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Farzin Naseri  
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Zahra Zeinalipour

Dr. Ahmadreza Zarifian  
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Hossein Esfahani



### The Link between N-Acetyltransferase Gene Polymorphisms and Red Meat Consumption in Squamous Cell Carcinoma of the Oesophagus

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1. Division of Medical Biochemistry, Department of Integrative Biomedical Sciences, Faculty of Health Sciences, University of Cape Town, Anzio Road, Observatory 7925, Cape Town, South Africa.

**Objectives:** Tobacco smoking, alcohol and red meat consumption are some of the major known risk factors associated with the development of squamous cell carcinoma of the oesophagus (OSCC). Enzymes such as N-Acetyltransferase 1 and 2 (NAT 1 and NAT2) are crucial in the metabolism of carcinogenic arylamines present in tobacco smoke and overcooked red meat and aldehydes produced in the metabolism of alcohol. We hypothesize that certain genetic polymorphisms in the NAT 1 and NAT2 genes influence the risk of OSCC upon exposure to environmental and/or dietary stimuli.

**Materials and Methods:** Single nucleotide polymorphisms (SNPs) in the NAT 1 and NAT2 genes were investigated by genotyping 732 OSCC cases and 768 healthy control individuals in the Black and Mixed Ancestry populations groups in South Africa to deduce the acetylator phenotype (slow, intermediate or rapid) from the combination of the genotyped SNPs.

**Results:** The NAT34 1CC genotype (rs 180 1280) was significantly associated with a reduced risk for OSCC in the Mixed Ancestry population (OR = 0.3 1; 95% CI 0. 1 1-0.87). The NAT2 slow/intermediate acetylator status significantly increased the risk among cigarette smokers in the Black population (OR = 2.76; 95% CI 1.69-4.52), and among alcohol consumers in the Mixed Ancestry population (OR = 2.77; 95% CI 1.38-5.58). Similarly, the NAT 1 slow/intermediate acetylator status was a risk factor for tobacco smokers in the Black population (OR = 3.4 1; 95% CI 1.95-5.96) and for alcohol consumers in the Mixed Ancestry population (OR = 3.4 1; 95% CI 1.70-6.8 1). In a case-only analysis, frequent red meat consumption was associated with a significantly increased risk for developing OSCC in individuals with the NAT2 slow/intermediate acetylators in the Mixed Ancestry population (OR = 3.55; 95% CI 1.29-9.82; P = 0.0 19).

**Conclusion:** Our findings indicate that N-Acetyltransferase gene polymorphisms may modify the association between environmental risk factors and oesophageal cancer and that N-acetyltransferases play a key role in the detoxification of dietary associated carcinogens. Prevention strategies in lifestyle and dietary

habits may have to be taken into account in assessing the susceptibility to oesophageal cancer in high-risk populations.

**Keywords:** N-Acetyltransferase Gene Polymorphisms, Red Meat Consumption, Oesophagus Carcinoma.

### The effects of DASH diet on weight loss and metabolic status in adults with non-alcoholic fatty liver disease: a randomized clinical trial

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2. Research Center for Biochemistry and Nutrition in Metabolic Diseases, Kashan University of Medical Sciences, Kashan, I.R. Iran

**Objectives:** We are aware of no study evaluating the effects of Dietary Approaches to Stop Hypertension (DASH) diet on weight loss, metabolic profiles, biomarkers of inflammation and oxidative stress in adult patients with non-alcoholic fatty liver disease (NAFLD). This study was designed to determine the effects of the DASH diet on weight loss, metabolic profiles, biomarkers of inflammation and oxidative stress in overweight and obese patients with NAFLD.

**Materials and Methods:** This randomized controlled clinical trial was done among 60 overweight and obese patients with NAFLD. Patients were randomly allocated to consume either the control (n=30) or the DASH eating pattern (n=30) for 8 weeks. Both diets were designed to be calorie-restricted. Both diets were consisted of 52-55% carbohydrates, 16- 18% proteins and 30% total fats; however, the DASH diet was designed to be rich in fruits, vegetables, whole grains, and low-fat dairy products and low in saturated fats, cholesterol, refined grains, and sweets. Prescribed sodium in the DASH diet was less than 2400 mg/day. Fasting blood samples were taken at before and after 8-week intervention to quantify metabolic profiles, biomarkers of inflammation and oxidative stress.

**Results:** After following the DASH eating pattern, compared to the control diet, serum alanine aminotransferase (ALT) (-8.4± 16.5 vs. +3.8±23.8 IU/L, P=0.02), alkaline phosphatase (ALP) (-26.3±36. 1 vs. +4.3±34. 1 U/L, P=0.00 1), insulin levels (-3.3±3.4 vs. - 1. 1±3.8 μIU/mL, P=0.0 1), homeostasis model of assessment-estimated insulin resistance (HOMA-IR) (-0.8±0.8 vs. - 0.2±0.9, P=0.0 1), homeostasis model of assessment-estimated b cell function (HOMA-B) (- 12.5± 14.6 vs. -3.3± 16.6, P=0.02) significantly decreased and quantitative insulin sensitivity

check index (QUICKI) ( $+0.02 \pm 0.02$  vs.  $+0.01 \pm 0.01$ ,  $P=0.004$ ) significantly increased. Additionally, compared with the control diet, the DASH diet has resulted in significant reductions in serum triglycerides ( $-31.3 \pm 58.3$  vs.  $+0.3 \pm 63.8$  mg/dL,  $P=0.04$ ), VLDL-cholesterol concentrations ( $-6.3 \pm 11.7$  vs.  $+0.1 \pm 11.8$  mg/dL,  $P=0.04$ ) and total-/HDL-cholesterol ratio ( $-0.6 \pm 0.9$  vs.  $-0.07 \pm 0.7$ ,  $P=0.01$ ). Finally, decreased concentrations of serum high-sensitivity C-reactive protein (hs-CRP) ( $-1224.7 \pm 124.8$  vs.  $-319.5 \pm 977.5$  ng/mL;  $P=0.03$ ), plasma malondialdehyde (MDA) ( $-0.3 \pm 0.6$  vs.  $-0.1 \pm 0.4$   $\mu\text{mol/L}$ ,  $P=0.04$ ), increased levels of nitric oxide (NO) ( $+8.5 \pm 15.4$  vs.  $+1.0 \pm 6.2$   $\mu\text{mol/L}$ ;  $P=0.01$ ) and glutathione (GSH) ( $+67.8 \pm 110.8$  vs.  $+4.5 \pm 64.8$   $\mu\text{mol/L}$ ;  $P=0.009$ ) were also found in the DASH group compared with the control group.

**Conclusion:** Overall, consumption of DASH eating pattern for 8 weeks among patients with NAFLD had beneficial effects on weight loss, metabolic profiles, biomarkers of inflammation and oxidative stress.

**Keywords:** DASH, non-alcoholic fatty liver disease, metabolic profiles, inflammation, oxidative stress.

#### Clinical and metabolic response to probiotic supplementation in patients with multiple sclerosis: a randomized, double-blind, placebo-controlled trial

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**Objectives:** The current study was performed to evaluate the effects of probiotic supplementation on disability, mental health and metabolic status in patients with multiple sclerosis (MS).

**Materials and Methods:** This randomized double-blind placebo-controlled clinical trial was conducted among 60 patients with MS.

Participants were randomly assigned into two groups to receive either a probiotic capsule containing Lactobacillus acidophilus, Lactobacillus casei, Bifidobacterium bifidum and Lactobacillus fermentum ( $2 \times 10^9$  CFU/g each) ( $n=30$ ) or placebo ( $n=30$ ) for 12 weeks. Expanded disability status scale (EDSS) scoring and parameters of mental health were recorded at baseline and 3 months after intervention.

**Results:** After 12 weeks' intervention, compared with the placebo, probiotic supplementation resulted in a significant improve in EDSS score ( $-0.3 \pm 0.6$  vs.  $+0.1 \pm 0.3$ ,  $P=0.001$ ), beck depression inventory total score ( $-5.6 \pm 4.9$  vs.  $-1.1 \pm 3.4$ ,  $P<0.001$ ), general health questionnaire scores ( $-9.1 \pm 6.2$  vs.  $-2.6 \pm 6.4$ ,  $P<0.001$ ) and depression anxiety and stress scale scores ( $-16.5 \pm 12.9$  vs.  $-6.2 \pm 11.0$ ,  $P=0.001$ ). In addition, changes in serum high-sensitivity C-reactive protein ( $-1.3 \pm 3.5$  vs.  $+0.4 \pm 1.4$   $\mu\text{g/mL}$ ,  $P=0.01$ ), plasma nitric oxide ( $+1.0 \pm 7.9$  vs.  $-6.0 \pm 8.3$   $\mu\text{mol/L}$ ,  $P=0.002$ ) and malondialdehyde (MDA) ( $+0.009 \pm 0.4$  vs.  $+0.3 \pm 0.5$   $\mu\text{mol/L}$ ,  $P=0.04$ ) in the supplemented group were significantly different from the changes in these indicators in the placebo group. Additionally, probiotic supplementation resulted in significant decreases in serum insulin ( $-2.9 \pm 3.7$  vs.  $+1.1 \pm 4.8$   $\mu\text{IU/mL}$ ,  $P<0.001$ ), homeostasis model of assessment-estimated insulin resistance ( $-0.6 \pm 0.8$  vs.  $+0.2 \pm 1.0$ ,  $P=0.001$ ), Beta cell function ( $-12.1 \pm 15.5$  vs.  $+4.4 \pm 17.5$ ,  $P<0.001$ ) and total-/HDL-cholesterol ( $-0.1 \pm 0.3$  vs.  $0.1 \pm 0.3$ ,  $P=0.02$ ), and significant increases in quantitative insulin sensitivity check index ( $+0.01 \pm 0.02$  vs.  $-0.005 \pm 0.01$ ,  $P<0.001$ ) and HDL-cholesterol levels ( $2.7 \pm 3.4$  vs.  $0.9 \pm 2.9$  mg/dL,  $P=0.02$ ) compared with the placebo.

**Conclusion:** Overall, the current study demonstrated that taking probiotic capsule for 12 weeks among patients with MS had favorable effects on EDSS, parameters of mental health, inflammatory factors, markers of insulin resistance, HDL-cholesterol, total-/HDL-cholesterol and MDA levels.

The research was registered in the Iranian website for registration of clinical trials (<http://www.irct.ir>: IRCT201511015623N59).

**Keywords:** Probiotic, multiple sclerosis, disability, inflammation, oxidative stress

#### High dose vitamin D supplementation is associated with an improvement in several cardiometabolic risk factors in adolescent girls: a nine-week follow up study

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**Objectives:** Vitamin D deficiency is a prevalent and important global health problem. Because of its role in growth and development, vitamin D status is likely to be particularly important in adolescent girls. Here we explored the effects of high-dose vitamin D supplementation on cardiometabolic risk factors.

**Materials and Methods:** We have examined the effects of vitamin D supplementation on cardiometabolic risk factors in 988 healthy adolescent girls in Iran. Fasting blood samples and anthropometric measurements were obtained at baseline and after supplementation with high dose vitamin D. All individuals took a capsule of 50000 IU vitamin D/ week for nine weeks. The study was completed by 940 participants.

**Results:** The prevalence of vitamin D deficiency was 90% at baseline, reducing to 16.3% after vitamin D supplementation. Vitamin supplementation was associated with a significant increase in serum levels of 25 (OH) vitamin D and calcium. There were significant reductions in diastolic blood pressure, heart rate, waist circumference, and serum fasting blood glucose, total- and low density lipoprotein-cholesterol after the nine-week period on vitamin D treatment, but no significant effects were observed on body mass index, systolic blood pressure, or serum high density lipoprotein-cholesterol and triglyceride.

**Conclusion:** Vitamin D supplementation had beneficial effects on cardio-metabolic profile in adolescent girls.

**Keywords:** vitamin D, cardiometabolic, supplementation, adolescent

### **Beneficial effects of vitamin D supplementation in adolescent girls: a nine week follow up study**

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**Objectives:** Vitamin D deficiency increased from 20% to 80% in Mashhad population since 1996 to 2011. Although several studies suggested vitamin D status can affect on various aspect of population health in adults, but there are limited data in relation to adolescents. Therefore, the purpose of current study is to explore the effect of mega-dose vitamin D on various aspects of physical and mental health in adolescent girls.

**Materials and Methods:** The current study is an interventional study that included 988 adolescent girls from Mashhad and Sabzevar cities. Each person took 9 tablets (50000IU) in during nine weeks. Fasting blood samples were taken early in the morning at baseline and after supplementation. IBS status, demographic characteristic, dietary intakes and dietary habits were assessed at baseline. The study was completed by 940 participants.

**Results:** The prevalence of vitamin D deficiency was 90% at baseline, reducing to 16.3% after vitamin D supplementation. Vitamin supplementation was associated with significant increments in serum levels of 25 (OH) vitamin D and calcium. There were significant reductions in diastolic blood pressure, heart rate, waist circumference, and serum fasting blood glucose, total- and low density lipoprotein-cholesterol after the nine-week period on vitamin D treatment, but no significant effects were observed on body mass index, systolic blood pressure, or serum high density lipoprotein-cholesterol and triglyceride. After supplementation, depression and aggression scores were decreased. In addition, we found that diet-related practices were associated with the prevalence of IBS.





**Conclusion:** Mega-dose of vitamin D supplementation can improve various aspect of heath. However, further RCTs are required to examine the effect of mega-dose vitamin D.

**Keywords:** Vitamin D, adolescent, supplementation, irritable bowel syndrome

**Metabolic response to omega-3 fatty acid supplementation in patients with diabetic nephropathy: a randomized, double-blind, placebo-controlled trial**

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**Objectives:** To the best of our knowledge, this study is the first evaluating the effects of omega-3 fatty acid administration on glycemic status, lipid concentrations, biomarkers of inflammation and oxidative stress in patients with diabetic nephropathy (DN).

**Objective:** This study was carried out to evaluate the effects of omega-3 fatty acid administration on glycemic status, lipid concentrations, biomarkers of inflammation and oxidative stress in patients with DN.

**Materials and Methods:** This parallel randomized double-blind placebo-controlled clinical trial was performed among 60 patients with DN. Patients were randomly allocated into two groups to receive either 1000 mg/day omega-3 fatty acid from flaxseed oil (n=30) or placebo (n=30) for 12 weeks. Fasting blood samples were taken at baseline and 12 weeks after supplementation to quantify glycemic status, lipid concentrations, biomarkers of inflammation and oxidative stress.

**Results:** After 12 weeks of intervention, patients who received omega-3 fatty acid supplements compared with the placebo had significantly decreased serum insulin levels (-6.6±9.9 vs. -1.2±7.4 µU/mL, P=0.001), homeostasis model of assessment-estimated b cell function (HOMA-B) (-30.2±6.13 vs. -1.5±37.5, P=0.03) and improved quantitative insulin sensitivity check index (QUICKI) (+0.01±0.02 vs. +0.002±0.02, P=0.03). Additionally, compared with the placebo, omega-3 fatty acid administration has resulted in significant reductions in serum triglycerides (-

19.8±48.2 vs. +12.6±56.1 mg/dL, P=0.01) and VLDL-cholesterol concentrations (-4.0±9.6 vs. +2.5±11.2 mg/dL, P=0.01). Supplementation with omega-3 fatty acid had no significant effects on other lipid profiles, biomarkers of inflammation and oxidative stress compared with the placebo.

**Conclusion:** Overall, findings from the current study indicated that omega-3 fatty acid supplementation for 12 weeks among DN patients had beneficial effects on serum insulin levels, HOMA-B, QUICKI, serum triglycerides and VLDL-cholesterol; however, it did not influence other metabolic profiles, biomarkers of inflammation and oxidative stress.

**Keywords:** Omega-3 fatty acid, supplementation, diabetic nephropathy, metabolic status

**School-based approaches to child obesity prevention: an update on global experiences**

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**Objectives:** There is a growing trend of childhood overweight and obesity worldwide. So far many interventions have been implemented to prevent or treat this public health problem. This paper is an update of a systematic review of scientific evidence to determine the effectiveness of school-based interventions for the management of overweight and obesity in children and adolescents (6 to 18 years) over a 17-year period (January 2001 to August, 2017).

**Materials and Methods:** All English stematic reviews and meta-analyses targeting children and adolescents aiming at preventing or controlling obesity in school settings were included in the review.

**Results:** The review showed that in designing child/adolescent overweight and obesity

interventions considering various dimensions would increase the probability of their success. Components and duration of the interventions, characteristics and gender of the participants, and the potential physical and mental adverse effects of the interventions were among the main dimensions to be considered. The sustainability of the interventions was also found to be of great importance.

**Conclusion:** In designing child/adolescent overweight and obesity interventions it is of utmost importance to pay special attention to different dimensions such as characteristics of the subjects, potential adverse effects of the intervention, etc., to increase chances of success.

**Keywords:** children, obesity, overweight, intervention, weight management, school

#### **A randomized controlled clinical trial investigating the effect of omega-3 fatty acids and vitamin E co-supplementation on markers of insulin metabolism and lipid profiles in gestational diabetes**

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**Objectives:** Limited data are available that evaluated the effects of combined omega-3 fatty acids and vitamin E supplementation on glucose homeostasis parameters and lipid concentrations in gestational diabetes (GDM).

**Objective:** The current study was designed to determine the effects of omega-3 fatty acids and vitamin E co-supplementation on glucose homeostasis parameters and lipid concentrations among women with GDM.

**Materials and Methods:** This prospective randomized, double-blind, placebo-controlled clinical trial was carried out among 60 patients with GDM. Patients were randomly allocated to take either 1000 mg omega-3 fatty acids from flaxseed oil plus 400 IU vitamin E supplements (n=30) or placebo (n=30) for 6 weeks. Fasting blood samples were obtained from at the beginning of the study and after 6-week intervention to quantify related variables.

**Results:** After 6 weeks of intervention, omega-3 fatty acids and vitamin E co-supplementation, compared with the placebo, resulted in a

significant reduction in fasting plasma glucose (FPG) ( $-1.8 \pm 1.0$  vs.  $+1.5 \pm 1.9$  mg/dL,  $P < 0.001$ ), serum insulin concentrations ( $-1.8 \pm 6.9$  vs.  $+5.8 \pm 12.1$   $\mu$ U/mL,  $P = 0.004$ ), homeostasis model of assessment-estimated insulin resistance (HOMA-IR) ( $-0.8 \pm 1.6$  vs.  $+1.4 \pm 2.8$ ,  $P = 0.001$ ), homeostasis model of assessment-estimated beta cell function (HOMA-B) ( $-0.2 \pm 27.7$  vs.  $+22.8 \pm 48.2$ ,  $P = 0.02$ ) and a significant elevation in the quantitative insulin sensitivity check index (QUICKI) ( $+0.01 \pm 0.02$  vs.  $-0.01 \pm 0.02$ ,  $P = 0.01$ ). Changes in serum triglycerides ( $+10.8 \pm 4.5$  vs.  $+34.2 \pm 35.5$  mg/dL,  $P = 0.02$ ), VLDL- ( $+2.1 \pm 8.3$  vs.  $+6.8 \pm 7.1$  mg/dL,  $P = 0.02$ ), LDL- ( $+1.6 \pm 18.8$  vs.  $+1.7 \pm 15.9$  mg/dL,  $P = 0.03$ ) and HDL-cholesterol concentrations ( $+1.9 \pm 8.7$  vs.  $-2.4 \pm 7.7$  mg/dL,  $P = 0.04$ ) were significantly different between the supplemented women and placebo group. However, after controlling for baseline total cholesterol levels, maternal age and BMI at baseline, the changes in serum LDL-cholesterol concentrations were not significantly different between the two groups. We did not find any significant effect of joint omega-3 fatty acids and vitamin E supplementation on total cholesterol concentrations.

**Conclusion:** Overall, we demonstrated that omega-3 fatty acids and vitamin E co-supplementation in GDM women had beneficial effects on glucose homeostasis parameters, serum triglycerides, VLDL- and HDL-cholesterol concentrations, but it did not influence total- and LDL-cholesterol levels.

**Keywords:** Omega-3 fatty acids, vitamin E, supplementation, gestational diabetes, pregnant women

#### **Salt and obesity: a systematic review and meta-analysis of observational studies**

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**Objectives:** Overweight and obesity is a worldwide health concern. Several evidence

reported sodium intake may be associated with obesity. Therefore, the aim of the present study was to run a meta-analysis and systematic review on reported evidence regarding association between sodium intake and obesity.

**Materials and Methods:** We searched multiple electronic databases (PubMed, Scopus, and Google Scholar) for observational studies on the relationship between sodium/salt intake and obesity published until February 20 16. A systematic literature search identified 10 cohort and 22 cross-sectional studies.

**Results:** Of 32 studies included in this systematic review, most articles reported that there is a direct association between salt/sodium intake and obesity. The meta-analysis was performed on 18 cross-sectional report. Higher sodium consumption was associated with greater BMI (1.24, 95% CI: 0.80, 1.67; I<sup>2</sup>:98.4% (P<0.000 1)) and individuals who had more sodium intake in comparison with those who consumed lower amount of sodium had 4.75 cm (95%CI, 3.25, 6.25) greater waist circumference; however, there was a significant heterogeneity (I<sup>2</sup>:90.8% (P<0.000 1). Publication bias was not detected.

**Conclusion:** The present review showed that sodium consumption is directly associated with higher risk of obesity and overweight.

**Keywords:** Salt, Obesity, Systematic review.

#### **The effect of a weight reducing diet containing fish or walnut or fish-walnut on cardiovascular risk factors in overweight and obese women: A randomized clinical trial**

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**Objectives:** There are several reports regarding the beneficial effects of omega-3 fatty acids on decreasing the incidence of cardiovascular disease (CVD). However, the different sources of these kinds of fat are not studied. There are we are going to compare the effects of walnut (plant omega-3 fatty acid) and fatty fish (marine omega-

3fatty acid) and their combination on cardiovascular risk factors among overweight or obese subjects.

**Materials and Methods:** In this clinical trial 99 overweight and obese women were on three weight reducing diets with fish (300 gr /week), walnut (6 walnuts per week) or fish-walnut (150g fish and 3 walnuts per week) for 12 weeks. Fasting blood sugar, inflammatory markers, serum lipids, coagulating factors, oxidative markers and leptin were measured at baseline and the end of the study. Anthropometric indices, blood pressure levels and food records were assessed at the beginning of the study and by 3-wk intervals until the end of trial.

**Results:** The reduction in SBP(P=0.0 1), DBP(P=0.03), FBS(P=0.00 1), TG(P=0.0 1), LDL(P=0.03), hs-CRP(P=0.00 1), D-Dimer(p=0.00 1), Fibrinogen(P=0.00 1), ALT(P=0.00 1), AST(P=0.0 1), TNF- $\alpha$ (P=0.0 1), IL-6(P=0.00 1) and increase in HDL(P=0.00 1) was statistically different among three diets. No significant changes were appeared for MDA and leptin. A marginally significant difference was seen regarding weight and waist.

**Conclusion:** The present study showed that combination of marine and plant omega3 together is more effective on cardiovascular risk factors than the isolated fish or walnut.

**Keywords:** Weight loss diet, walnut, fish, cardiovascular risk factors.

#### **Comparative study of solid lipid nanoparticle and nanostructure lipid carrier of Curcumin**

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**Objectives:** Nanostructured lipid carrier (NLC) and solid lipid nanoparticles (SLN) have been studied as a drug-delivery system for the controlling of drug release. These colloidal systems have many important advantages, such as biocompatibility, good tolerability and ease of scale-up. Curcumin (diferuloylmethane), a polyphenol extracted from *Curcuma longa*, has been well known for its functional properties. In this study, were used to encapsulated curcumin and overcome its limitations in food application

such as instability, poor bioavailability and poor solubility in aqueous solutions.

**Materials and Methods:** The objective of this study was to investigate the production of nanocarriers were produced by a combination of high shear homogenization and ultrasonication methods. In order to produce curcumin-loaded SLN and NLC, aqueous and lipid phases were separately prepared. The total amount of lipid phase was kept constant (5 %) in all lipid nanocarriers. SLN contained solid lipid, while in NLC formulations, 15 % of the solid lipid was replaced by oil. Effect of applied solid lipids (Glycerol monostearate and Glycerol distearate), type of liquid oil (combination of caprylic/capric triglycerides and oleic acid), type of nanocarriers and curcumin loading (0, 0.25, 0.5% of emulsion) on some physicochemical properties of produced nanocarriers were studied.

**Results:** With increasing concentration of curcumin from 0 to 0.5%, the particle size increased from 74.68 to 182.06 nm, respectively. The results showed that all produced nanocarriers had the PDI value lower than 0.5 indicating their narrow size distribution.

**Conclusion:** According to the result, NLC formulations showed smaller size in comparison to SLN formulations. It could be due to the less crystalline structure of NLC and therefore provide more space for curcumin. Incorporating higher amount of curcumin led to significant increase in nanoparticles size. Having the smaller size leads to higher stability against gravity due to the brownian motion of nanocarriers. The mean particle size and the particle size distribution (usually as polydispersity index) are the most important characteristics for nanodispersions which govern the physical stability, solubility, biological performance, release rate, turbidity and chemical stability

**Keywords:** Nanoencapsulation, Nanostructured lipid carrier, Solid lipid nanoparticles, Curcumin

### **A randomized controlled clinical trial investigating the effect of omega-3 fatty acids and vitamin E co-supplementation on markers of insulin metabolism and lipid profiles in gestational diabetes**

Mohsen Taghizadeh<sup>1</sup>, Mehri Jamilian<sup>2</sup>, Maryam Karamali<sup>3</sup>, Zatollah Asemi<sup>1</sup>

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**Objectives:** Limited data are available that evaluated the effects of combined omega-3 fatty acids and vitamin E supplementation on glucose homeostasis parameters and lipid concentrations in gestational diabetes (GDM).

**Objective:** The current study was designed to determine the effects of omega-3 fatty acids and vitamin E co-supplementation on glucose homeostasis parameters and lipid concentrations among women with GDM.

**Materials and Methods:** This prospective randomized, double-blind, placebo-controlled clinical trial was carried out among 60 patients with GDM. Patients were randomly allocated to take either 1000 mg omega-3 fatty acids from flaxseed oil plus 400 IU vitamin E supplements (n=30) or placebo (n=30) for 6 weeks. Fasting blood samples were obtained from at the beginning of the study and after 6-week intervention to quantify related variables.

**Results:** After 6 weeks of intervention, omega-3 fatty acids and vitamin E co-supplementation, compared with the placebo, resulted in a significant reduction in fasting plasma glucose (FPG) (-1.8±1.0 vs. +1.5±1.9 mg/dL, P<0.001), serum insulin concentrations (-1.8±6.9 vs. +5.8±12.1 µIU/mL, P=0.004), homeostasis model of assessment-estimated insulin resistance (HOMA-IR) (-0.8±1.6 vs. +1.4±2.8, P=0.001), homeostasis model of assessment-estimated beta cell function (HOMA-B) (-0.2±27.7 vs. +22.8±48.2, P=0.02) and a significant elevation in the quantitative insulin sensitivity check index (QUICKI) (+0.01±0.02 vs. -0.01±0.02, P=0.01). Changes in serum triglycerides (+10.8±4.5 vs. +34.2±35.5 mg/dL, P=0.02), VLDL- (+2.1±8.3 vs. +6.8±7.1 mg/dL, P=0.02), LDL- (+1.6±18.8 vs. +1.7±15.9 mg/dL, P=0.03) and HDL-cholesterol concentrations (+1.9±8.7 vs. -2.4±7.7 mg/dL, P=0.04) were significantly different between the supplemented women and placebo group. However, after controlling for baseline total cholesterol levels, maternal age and BMI at baseline, the changes in serum LDL-cholesterol concentrations were not significantly different between the two groups. We did not find any significant effect of joint omega-3 fatty acids and vitamin E supplementation on total cholesterol concentrations.

**Conclusion:** Overall, we demonstrated that omega-3 fatty acids and vitamin E co-supplementation in GDM women had beneficial effects on glucose homeostasis parameters,





serum triglycerides, VLDL- and HDL-cholesterol concentrations, but it did not influence total- and LDL-cholesterol levels.

**Keywords:** Omega-3 fatty acids, vitamin E, supplementation, gestational diabetes, pregnant women

#### **Determination of benzoic acid and sorbic acid produced by starter culture during ripening and storage of Feta and cream cheese**

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**Objectives:** Benzoic acid and sorbic acid are widely used as preservatives in the food industry, but their addition into cheese and other dairy products has been forbidden. However, it was assumed that benzoic acid was also naturally produced in fermented dairy products and could mistakenly be considered to be adulteration; therefore, it was difficult to interpret the obtained levels during the examination of suspicious samples. The goal of current study is to determine occurred benzoic acid and sorbic acid concentration in cheese during production, fermentation and storage.

**Materials and Methods:** In this study, benzoic acid and sorbic acid levels naturally occurring in Feta and cream cheese after fermentation, production and storage in refrigerator (60 days) were assessed by HPLC and Spectrophotometry methods.

**Results:** Any benzoic acid and sorbic acid during production and storage stages, weren't detected by Spectrophotometry method. Although, HPLC method revealed that benzoic acid was created in Feta cheese and its content on samples assessed on various days was significantly different ( $P < 0.05$ ) and showed a positive correlation with lactic acid bacteria (LAB) count ( $r = 0.827$ ). By increasing the storage time from 1 to 30 days, the amount of benzoic acid was significantly increased from 24.45 to 41.10  $\mu\text{g}/\text{kg}$ , although its levels in other days did not significantly change. After production, the benzoic acid level of the samples of cream cheese was 8.52  $\mu\text{g}/\text{kg}$ , and its concentration did not significantly change during storage. In no sample, sorbic acid was detected by both spectrophotometry and HPLC methods.

**Conclusion:** Sorbic acid was not naturally produced in cheese. By considering the measurement of analysis method uncertainty, concentrations of naturally occurring benzoic acid was lower than 46.50  $\text{mg}/\text{kg}$  in Feta cheese

and 9.23  $\mu\text{g}/\text{kg}$  in cream cheese. These amounts and less was due to lactic acid bacteria growth.

**Keywords:** Benzoic acid, Sorbic acid, HPLC, Cheese

#### **Food safety analysis by molecular imprinting technique: a novel technology in detection and separation of hazardous compounds**

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**Objectives:** Food safety is one of the critical objects in consumers health policy and has led to a growing concern around the world. Maintaining a high level of control in this area is important, not only for public health, but also for the obtaining consumer confidence in food safety. So, development of rapid selective, specific and high accurate monitoring method is necessary. To date, many analytical methods are based on GC, LC, sensors and immunoassay methods. Synthetic molecularly imprinted polymers (MIPs), with specific molecular recognition ability, have over the past few years developed to become a capable alternative to common analytical methods. MIPs are stable in mechanical stress and resistant against harsh physical and chemical treatments.

**Materials and Methods:** MIPs can be prepared in two basic reversible covalent and non-covalent methods, depending on the interaction between the monomer and target analyte. MIPs are prepared from cross-linked polymers containing cavities specific to target analytes. These cavities are created by the copolymerization of cross-linking monomers and functional monomers, along with a target analyte (template), in a progenic solvent. Following polymerization, the template is washed, creating a porous cavity in polymer which is complementary to the template in size, shape and position of the functional groups. Coupling common methods of MIPs with nanoparticle such as magnetite could improve their performance and selectivity.

**Results:** A number of applications of MIPs have been developed. Most of these applications are based on the use of the imprinted polymers as recognition elements for a certain analyte or group of analytes. Molecular imprinting technology is an emerging separation and quantification tool in food analysis. The extraordinary binding properties of molecularly



imprinted materials is best shown in binding assays, using compounds that can be detected in very low concentrations. MIPs have been nearly developed for different adulterants and pollutants including pesticides, veterinary drugs, mycotoxins, illegal drugs and so on.

**Conclusion:** Intense ongoing research in agricultural and food technology has proven that MIPs can be efficiently used in this area. Given the advantages of synthetic imprinted polymers such as high stability, endurance, and low cost of production, it is believable that products based on molecularly imprinted technology will reach the market soon and detection of food frauds is one of the interesting areas of molecular imprinting technology application in food analysis.

**Keywords:** molecular imprinted polymers, food safety, analytical techniques

#### **Related Risk Factors of Metabolic Syndrome by Using a Decision Tree Algorithm**

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**Objectives:** Metabolic syndrome (MetS) is a clustering of metabolic abnormalities including central obesity, hyperlipidemia, insulin resistance and hypertension. The aim of this study was to assess and identify the risk factors associated with MetS by using a decision tree algorithm as a data mining tool.

**Materials and Methods:** A total of 6578 individuals were included in the analysis using a BMI cut off  $\geq 25$  kg/m<sup>2</sup> as a definition of overweight, in accordance with International Diabetic Federation (IDF) criteria. Subjects with obesity plus two or more of the criteria for defining MetS, were included in the MetS group. Of the 6578 subjects, 70% (4539 subjects), were

selected as a "training" dataset and 30% (2039 cases), and were used as the testing dataset to evaluate the performance of decision-tree. Two models were evaluated. In model I, age, sex, educational level, marriage and job status, TG, HDL-C, cholesterol, uric acid, FBG, Hs-CRP, SBP and DBP, physical activity level, were considered as input variables and in model II, age, gender, Hs-CRP, WBC, RBC, HGB, HCT, MCV, MCH, PLT, RDW and PDW were used as input variables. The validation of the model was assessed by constructing a receiver operating characteristic (ROC) curve.

**Results:** The sensitivity, specificity, accuracy and the area under the Roc curve (AUC) values for model I were 99%, 94%, 97% and 0.972 and for model II were 74%, 77%, 76% and 0.812, respectively.

**Conclusion:** In model I, serum triglyceride levels, sex and systolic blood pressure were the most important associated risk factors of MetS according to decision tree model. In model II, age, Hs-CRP and sex, RDW, WBC, MCV and HGB were the associated risk factors of MetS.

**Keywords:** Data mining; Decision tree; Metabolic syndrome

#### **Bionanofabrication of DNA Nanomaterials as Novel Nanonutrients using an Isothermal Amplification Technology**

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**Objectives:** Caloric requirements are one of the most important needs for older individuals. Nanonutrients are the nanoscaled foods with higher energy in comparison to those foods in micro- or macro scales. Cauliflower-like DNA nanostructures are one of the novel DNA nanonutrients that those could be produced in bottom-up approach via a bionanofabrication technology, so called, Isothermal amplification of DNA.

**Materials and Methods:** Lambda DNA were selected as the template for fabrication of cauliflower-like DNAs. Bst DNA polymerase were used for polymerization of Cauliflower-like DNAs in an enzymatic reaction with an isothermal incubation at 60 °C. Then cauliflower-like DNAs were purified using gel-extraction method after gel electrophoresis and characterized using nanoscopy (by STM) and nanocalorimetry (by NanoDSC).

**Results:** STM nanographs confirmed fabrications of cauliflower-like nanostructures of DNA. Also, NanoDSC measurements showed lower melting point ( $T_m$ ), higher  $C_p$ , and  $\Delta H_{cal}$  ( $\sim 0.5 \times 10^6$  Cal mol<sup>-1</sup>) for the cauliflower-like DNAs in comparison to those from natural forms of DNAs.

**Conclusion:** Cauliflower-like DNAs demonstrated a higher energy yield during a calorimetric experiment. This fact indicated greatly increasing of total surface area by reducing the size of these nanostructures at 1-100 nm. The greater the surface area, lower will be its melting point, and increase Enthalpy differences. This means that these nanomaterials could become more available nanonutrients for releasing energy from their hydrogen bonds. Hence, the increased energy along with reduced size, this will also improve the food deficiency by the elderly individuals and thus in-turn improve their life style.

**Keywords:** DNA Nanonutrients; DNA Nanomaterials; Isothermal Amplification; Nanoscopy; Nanocalorimetry

#### **Association between Food and Nutrition Literacy (FNLIT), dietary intakes and weight status in 10- 12 year-old students in Tehran, Iran**

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**Objectives:** Overweight and obesity in school-age children has become a major public health concern. Most programs targeting obesity have had limited success because they fail to connect food and nutrition knowledge, skills, and critical decision making. Food and nutrition literacy has been considered as an important issue, due to its critical role in shaping dietary pattern and consequently weight status. This study evaluates the association Food and Nutrition Literacy (FNLIT) with dietary intakes and weight status in 10- 12 year-old students in Tehran, Iran.

**Materials and Methods:** This cross-sectional study was undertaken on 803 students (419 boys and 384 girls) aged 10- 12 years from 44 elementary schools in Tehran city, Iran. Demographic and socio-economic characteristics, as well as three 24-hour dietary recalls (two week-days and one weekend) were collected through interviewing the students and their mothers and/or other caregivers. Weight and height were measured and BMI-Z-score for age and sex were calculated based on WHO Child Growth Standards. Food and nutrition literacy (FNLIT) was measured in cognitive and skill domains by a locally designed and validated questionnaire. Cognitive domain included understanding food and nutrition information and nutritional health knowledge sub-scales. Skill domain was consisted of functional, interactive, and critical as well as food choice literacy sub-scales. The adjusted odds ratios of food and nutrition literacy for dietary intakes and weight status were analysed.

**Results:** Based on BMI z-scores of the children, 1.9 % was thin, 47.9 % normal, 27.2 % overweight and 22.8 % obese. The results of the study showed that the most students (69%) had high level of food and nutrition literacy in the cognitive domain, but also highlighted practical challenges in the skills domain where very few (2.6%) scored highly. Adjusted binary logistic regression showed that students with low level in understanding food and nutrition information subscale were less likely to meet recommended portion of vegetable (OR=2.83, 95% CI= 1.12-7.17) and meat (OR=2.37, 95% CI= 1.01-5.55) groups. Those with low functional food and nutrition literacy were less likely to meet recommended daily intake of fruits (OR=2.42, 95% CI= 1.38-4.25). After controlling for confounding factors of the first model (demographic and socio-economic factors), the probability of obesity in students with low level of food label literacy was 1.9 times more compared with desirable literacy students (OR=1.78, CI= 1.03-3.07). However, after further control for weight status (energy intake in addition to confounding factors of the first model), the association disappeared.

**Conclusion:** These results have public health implications on an important global problem of childhood and adolescence body weight. Results suggested that, food and nutrition literacy may play a main role in shaping children's dietary intake and obesity prevention. Enhancing the food and nutrition literacy should be considered as part of the strategies in combating children and adolescence weight problem. The results



also suggest that schools need to give greater attention to the development of practical food and nutrition skills alongside existing education focused on the transfer of food and nutrition information. More rigorous research methods are required to effectively assess the causality between food and nutrition literacy and children's weight status in order to confirm the extent of the relationship.

**Keywords:** Food and Nutrition Literacy, dietary intakes, weight status.

### **Serum Vitamin D level among medical students in Birjand city, Iran**

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**Objectives:** Vitamin D is a fat- solvent vitamin that helps regulation of body calcium, phosphate levels, and bone mineralization. Besides its nutritional value, a huge body of evidences revealed different roles in a range of disorders such as cell growth, cancer prevention hypertension, cardiovascular disease, type 2 diabetes. In spite of its importance in health and diseases, vitamin D deficiency is common around the world and it is realized that around 1 billion individuals on the planet have vitamin D deficiency or inadequacy most of them in Middle East and South Asia. Iran is a fairly sunny country but some studies have shown that the rate of vitamin D deficiency is high in different parts of Iran and also in different age groups even in children and teenagers. Birjand is located in East of Iran and has enough sun in most of the year and the aim of this study was to evaluate the prevalence of vitamin D deficiency among a group of healthy young medical students at Birjand University of Medical Sciences.

**Materials and Methods:** 160 healthy medical students randomly selected for this study. All participants provided written consent form and demographic data and health related issues were evaluated by mean of a questionnaire. 5 ml of venous blood was taken and after serum separation the level of vitamin D measured by a commercial ELISA kit. According to the kit's manual, vitamin D level divided into four categories as the following: Deficiency (< 10 ng/ml), Insufficiency (10-30 ng/ml), normal (30-100 ng/ml) and toxicity (> 100 ng/ml).

**Results:** The mean age of students was 20.7 years and the M/F ratio was 0.92. The mean level of vitamin D was 13.99 ng/ml and the level was significantly higher in boys than girls (16.54 ng/ml vs 11.59 ng/ml,  $P < 0.05$ ) respectively. 53.5% of students had vitamin D deficiency and the prevalence of the deficiency was significantly higher among girls than boys (62.2% vs 44.2%,  $P < 0.05$ ).

**Conclusion:** The results of current study confirmed high rate of vitamin D deficiency among students especially girls. Further studies for finding the best strategy for correcting this problem is an urgent need.

**Keywords:** vitamin D, Deficiency, Birjand, Student

### **Develop an applicable questionnaire for obesity registry in nutritional clinics**

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**Objectives:** Nutrition and diet therapy clinics are treatment centers that can be useful in providing valuable scientific and research information, including anthropometric assessment, food pattern measurements and biochemical parameters assessment. The existing data in nutrition clinics could be applied for research purposes, so employing a registry system is considered as a contributory factor to the effective record of patients' nutritional information. Because of the importance of documenting data from nutritional clinics, this study aimed to develop an applicable questionnaire and database for registry in nutritional clinics.

**Materials and Methods:** Patients diagnosed with overweight and obesity were subjected to this registry. An expert dietitian recorded all of the patients' nutritional data on the nutritional registry form, which was placed at the first visit. In the first phase of this study, the primary questionnaire was proposed based on nutritional literature review and comparative studies. In the second phase, this dataset was evaluated by an expert panel discussion including 21 members from all over the country and their comments were taken by Delphi technique.



**Results:** A total of 400 patients were registered during the initial four months. A modified questionnaire, web based nutritional software and data dictionary was used to record patient information in a nutritional clinic. The questionnaire consisted of 102 items, including: patient's personal information, family medical history, medication history, history of smoking, nutritional information, anthropometric measurement, diagnostic item, and a 24-hour recall. These items were also included in the software; the matching has been done in all the nutritional clinics all over the country, by using the data dictionary.

**Conclusion:** Many studies have been done on patients referred to medical centers. Using mentioned data from patients in clinics, including nutritional clinics, can be useful for scientific researches and advancement of knowledge. It is noteworthy that this obesity registry system follows international standards and this database could be linkable to any national database. We are supposed to offer the provided database as a rich repository of data to researchers aiming to facilitate data collection process and improve future studies.

**Keywords:** Registry, Obesity, Nutrition, Delphi, Questionnaire, Database

#### **Nigella sativa Extract Ameliorates Kidney Function via Renin-Angiotensin System Blockade in a Rat Model of Unilateral Ureteral Obstruction**

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**Objectives:** Obstructive nephropathy is one of the important renal diseases caused by obstruction in urinary tract and if untreated, can lead to chronic kidney disease (CKD). Unilateral ureteral obstruction (UUO) is one of the most important and common laboratory models for

pathophysiologic evaluation of renal fibrosis. Renin-angiotensin system plays an important role in the pathophysiology of kidney injury following UUO. Nigella sativa (NS) is a plant with many pharmacological effects. In the present study, the effect of captopril and NS extract against kidney damage following UUO was evaluated.

**Materials and Methods:** 32 male albino Wistar rats were randomly divided into 3 groups: 1- sham-operated, 2- UUO, 3- captopril (30 mg/kg)+UUO, 4- NS (400 mg/kg)+UUO. 3 days after the administration of captopril and NS extract, the animals were anaesthetized. Then, the abdomen was opened with a midline abdominal incision and the left ureter was ligated with 4-0 silk at two points and was cut between the ligatures to prevent urinary tract infection. The administration of captopril and NS extract was continued two weeks after UUO. Blood sample was collected on day 1 and 48 h, 5 days, one and two weeks after UUO. Serum osmolarity and urea and creatinine concentrations were determined.

**Results:** Compared with day 1 in the UUO group, there was a significant increase in serum osmolarity and urea and creatinine concentration 48h, 5 days, one and two weeks after UUO. Serum osmolarity and urea concentration in captopril+UUO and NS (400)+UUO groups showed no significant change compared with day 1. Serum creatinine concentration in captopril treated rats significantly increased 48h and 5 days after UUO compared with day 1. However, two weeks after UUO, serum level of creatinine significantly decreased compared with 48h following UUO. In NS (400)+UUO group serum creatinine concentration significantly increased compared with day 1. However, serum level of creatinine significantly decreased one and two weeks following UUO, compared with 48h after UUO.

**Conclusion:** The current study suggests that NS extract are able to improve the UUO-induced renal dysfunction. These favorable actions of NS extract on UUO model in rat are comparable with the well-known RAS inhibitor captopril.

**Keywords:** Nigella sativa Extract, Kidney Function, Renin-Angiotensin System.

#### **Evaluation of some heavy metals contamination in meat and edible offal of sheep**

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**Objectives:** Heavy metals contamination of food has been rising in recent years due to the industrial development of countries. The objective of this study was to investigate the contamination of sheep meat and edible offal in Kerman province with the heavy metals arsenic, cadmium, lead, mercury, nickel and copper.

**Materials and Methods:** In this study, 90 samples of meat, liver and kidney were collected from slaughtered sheep. The samples were sent to Toxicology Research Center of Tehran University under standard conditions. Samples were analyzed by Inductively Coupled Plasma Atomic Emission Spectroscopy (ICP-AES).

**Results:** In this study, 3.33% of meat samples had unpermitted level of lead contamination. Kidney samples were observed arsenic, copper, mercury and nickel contamination at the permitted level, but 53.33% and 56.66% of samples were found to be unauthorized in lead and cadmium contamination respectively. In 46.6%, 16.66% and 3.3% of liver specimens lead, copper and cadmium were detected respectively.

**Conclusion:** The results of this study demonstrated that 3.33% of slaughter sheep meat contaminated with lead, but 66.66% of liver and 80% of kidney showed at least a heavy metal unpermitted level. These edible organs are not safe and it is recommended to avoid using these offals.

**Keywords:** Sheep, Heavy metals, Meat, Liver, Kidney

#### Clinical and metabolic response to probiotic supplementation in patients with multiple sclerosis: a randomized, double-blind, placebo-controlled trial

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**Objectives:** The current study was performed to evaluate the effects of probiotic supplementation

on disability, mental health and metabolic status in patients with multiple sclerosis (MS).

**Materials and Methods:** This randomized double-blind placebo-controlled clinical trial was conducted among 60 patients with MS. Participants were randomly assigned into two groups to receive either a probiotic capsule containing Lactobacillus acidophilus, Lactobacillus casei, Bifidobacterium bifidum and Lactobacillus fermentum ( $2 \times 10^9$  CFU/g each) ( $n=30$ ) or placebo ( $n=30$ ) for 12 weeks. Expanded disability status scale (EDSS) scoring and parameters of mental health were recorded at baseline and 3 months after intervention.

**Results:** After 12 weeks' intervention, compared with the placebo, probiotic supplementation resulted in a significant improve in EDSS score ( $-0.3 \pm 0.6$  vs.  $+0.1 \pm 0.3$ ,  $P=0.001$ ), beck depression inventory total score ( $-5.6 \pm 4.9$  vs.  $-1.1 \pm 3.4$ ,  $P<0.001$ ), general health questionnaire scores ( $-9.1 \pm 6.2$  vs.  $-2.6 \pm 6.4$ ,  $P<0.001$ ) and depression anxiety and stress scale scores ( $-16.5 \pm 12.9$  vs.  $-6.2 \pm 11.0$ ,  $P=0.001$ ). In addition, changes in serum high-sensitivity C-reactive protein ( $-1.3 \pm 3.5$  vs.  $+0.4 \pm 1.4$   $\mu\text{g/mL}$ ,  $P=0.01$ ), plasma nitric oxide ( $+1.0 \pm 7.9$  vs.  $-6.0 \pm 8.3$   $\mu\text{mol/L}$ ,  $P=0.002$ ) and malondialdehyde (MDA) ( $+0.009 \pm 0.4$  vs.  $+0.3 \pm 0.5$   $\mu\text{mol/L}$ ,  $P=0.04$ ) in the supplemented group were significantly different from the changes in these indicators in the placebo group. Additionally, probiotic supplementation resulted in significant decreases in serum insulin ( $-2.9 \pm 3.7$  vs.  $+1.1 \pm 4.8$   $\mu\text{IU/mL}$ ,  $P<0.001$ ), homeostasis model of assessment-estimated insulin resistance ( $-0.6 \pm 0.8$  vs.  $+0.2 \pm 1.0$ ,  $P=0.001$ ), Beta cell function ( $-12.1 \pm 15.5$  vs.  $+4.4 \pm 17.5$ ,  $P<0.001$ ) and total-/HDL-cholesterol ( $-0.1 \pm 0.3$  vs.  $0.1 \pm 0.3$ ,  $P=0.02$ ), and significant increases in quantitative insulin sensitivity check index ( $+0.01 \pm 0.02$  vs.  $-0.005 \pm 0.01$ ,  $P<0.001$ ) and HDL-cholesterol levels ( $2.7 \pm 3.4$  vs.  $0.9 \pm 2.9$   $\text{mg/dL}$ ,  $P=0.02$ ) compared with the placebo.

**Conclusion:** Overall, the current study demonstrated that taking probiotic capsule for 12 weeks among patients with MS had favorable effects on EDSS, parameters of mental health, inflammatory factors, markers of insulin resistance, HDL-cholesterol, total-/HDL-cholesterol and MDA levels. The research was registered in the Iranian website for registration of clinical trials (<http://www.irct.ir: IRCT2015111015623N59>).

**Keywords:** Probiotic, multiple sclerosis, disability, inflammation, oxidative stress

#### Comparative study of solid lipid nanoparticle and nanostructure lipid carrier of Curcumin

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**Objectives:** Nanostructured lipid carrier (NLC) and solid lipid nanoparticles (SLN) have been studied as a drug-delivery system for the controlling of drug release. These colloidal systems have many important advantages, such as biocompatibility, good tolerability and ease of scale-up. Curcumin (diferuloylmethane), a polyphenol extracted from *Curcuma longa*, has been well known for its functional properties. In this study, were used to encapsulated curcumin and overcome its limitations in food application such as instability, poor bioavailability and poor solubility in aqueous solutions.

**Materials and Methods:** The objective of this study was to investigate the production of nanocarriers were produced by a combination of high shear homogenization and ultrasonication methods. In order to produce curcumin-loaded SLN and NLC, aqueous and lipid phases were separately prepared. The total amount of lipid phase was kept constant (5 %) in all lipid nanocarriers. SLN contained solid lipid, while in NLC formulations, 15 % of the solid lipid was replaced by oil. Effect of applied solid lipids (Glycerol monostearate and Glycerol distearate), type of liquid oil (combination of caprylic/capric triglycerides and oleic acid), type of nanocarriers and curcumin loading (0, 0.25, 0.5% of emulsion) on some physicochemical properties of produced nanocarriers were studied.

**Results:** With increasing concentration of curcumin from 0 to 0.5%, the particle size increased from 74.68 to 182.06 nm, respectively. The results showed that all produced nanocarriers had the PDI value lower than 0.5 indicating their narrow size distribution.

**Conclusion:** According to the result, NLC formulations showed smaller size in comparison to SLN formulations. It could be due to the less crystalline structure of NLC and therefore provide more space for curcumin. Incorporating higher amount of curcumin led to significant increase in nanoparticles size. Having the smaller size leads to higher stability against gravity due to the brownian motion of nanocarriers. The

mean particle size and the particle size distribution (usually as polydispersity index) are the most important characteristics for nanodispersions which govern the physical stability, solubility, biological performance, release rate, turbidity and chemical stability

**Keywords:** Nanoencapsulation, Nanostructured lipid carrier, Solid lipid nanoparticles, Curcumin

### Clinical effects of *Nigella Sativa* on respiratory diseases

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**Objectives:** *Nigella sativa* (*N. sativa*) is one of the most widely used medicinal plants. It has been used as food additive, preservative and herbal remedies for different diseases from ancient time. In traditional and modern medicine many astonishing effects like treatment and prevention of many diseases related to the respiratory, gastrointestinal, immune and nervous system had been mentioned for *N. sativa*.

**Materials and Methods:** Studies on the clinical effects of *N. sativa* on obstructive respiratory diseases which were published between 2000 and 2017 were searched using various databases.

**Results:** The preventive or prophylactic effect of *N. sativa* was studied in asthmatic patients and chemical war victims. In asthmatic patients, after treatment with *N. sativa* boiled extract all asthmatic symptoms, asthma symptom/week, chest wheeze and pulmonary function test (PFT) values in a three months treatment period were improved. In addition, the usage of inhaler and oral  $\beta$ -agonists, oral corticosteroid, oral theophylline and even inhaler corticosteroid decreased in *N. sativa* treated patients. In addition, *N. sativa* boiled aqueous extract treatment in chemical war victims decreased the use of inhaler and oral  $\beta$ -agonists and oral corticosteroid. While there were no obvious changes in the use of drugs in control non treated patients. The bronchodilatory effect of the boiled extract of *N. sativa* in comparison to theophylline were also studied. The results of this study showed that *N. sativa* had a bronchodilatory effect, but this effect on most measured pulmonary function tests was less than those of theophylline at concentrations used.

**Conclusion:** Clinical studies indicated preventive effect as well as relieving effect of the plant and its constituents on various respiratory diseases. Therefore *N. sativa* could be of therapeutic values as both preventive and relieving therapy in respiratory diseases.

**Keywords:** *Nigella sativa*, respiratory diseases, bronchodilator

#### **Effect of *Nigella sativa* supplementation on splenocyte response of treadmill exercised rat**

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**Objectives:** *Nigella sativa* (*N. sativa*) had been known as an immunomodulator as well as a tonic agent. Therefore, in this study the effect of *N. sativa* supplementation on the splenocyte immune response of sedentary and exercise animal had been evaluated.

**Materials and Methods:** Male Wistar rats were randomly divided into control sedentary (C), moderate trained (MT), (V=20m/min, 30min/day, 6 days a week, for 8 weeks), overtrained (OT) (V=25m/min, 60min/day, 6 days a week, for 11 weeks), control sedentary + *N. sativa* (NC), moderate trained + *N. sativa* (NM) and overtrained + *N. sativa* (NO). At the end of study; cell viability, proliferation, interleukin 4 (IL-4) and interferon- $\gamma$  (IFN- $\gamma$ ) secretion in non-stimulated, and concavaline A (Con A)-stimulated splenocytes were evaluated.

**Results:** In the absence of mitogen, cell viability of NC and NO groups, cell proliferation of NC and NM groups, IFN $\gamma$  concentration of NM and NO groups and IL-4/IFN $\gamma$  ratio of NC, NM and NO groups was increased compared to non-treated groups ( $p < 0.05$ - $p < 0.001$ ); while, IL-4 supernatant content of NM group was lower than non-treated groups. In the presence of mitogen, cell viability of NC and NO groups, the IL-4 concentration of NC ( $p < 0.001$ ) and NO ( $p < 0.05$ ) groups, IFN $\gamma$  concentration and IL-4/IFN $\gamma$  ratio of NM group was increased compared to non-treated animals; while IL-4/IFN $\gamma$  ratio was decreased in NC group compared to non-treated groups. In addition, the IL-4/IFN $\gamma$  ratio of stimulated and non-stimulated splenocyte supernatant was increased in NM group compared to NC and NO groups ( $p < 0.05$ - $p < 0.001$ ).

**Conclusion:** Chronic administration of *N. sativa* may balance Th 1/Th2 cytokine profile of splenocyte in favour of Th 1, especially in overtraining and non-stimulated situation. Moderate exercise and *N. sativa* supplementation could improve disorders with Th2 elevation such as overtraining syndrome and cancer.

**Keywords:** *Nigella sativa*, Moderate exercise, Overtrained exercise, Splenocyte, Rat

#### **A survey on the consumption of healthy foods in the Parsian region in 1995**

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**Objectives:** The health of people depends on several factors, one of the most important of which is healthy eating. In discussing healthy eating, taking foods that have a positive impact on health indicators is of paramount importance.

**Materials and Methods:** In this descriptive cross-sectional study carried out in 1995, the food menu of restaurants in the Parsian operational area in the first half of 1995 was analyzed and analyzed.

**Results:** Of the 186 meals served on lunch, 8.44 percent of foods contain red meat, 8.58 percent of foods contain white meat, 19.3 percent of seafood, and 0 percent of foods were herbal. Also, in the evening meal, 43 percent of the foods contain Meat, 32.8% of foods contain white meat, 19.9% marine foods and 3.4% of foods, and herbs. Also, at the lunch time, the most cooked foods are chloe, cheese, potatoes and chives. Fish have been. At dinner, the most eaten dishes were grilled chicken feeds, shrimp feeds and fish feeds, respectively.

**Conclusion:** The results of this study showed that eating meat containing red meat is high on lunch and dinner, which requires red meat and vegetarian foods to be taken into consideration, given the red meat problems.

**Keywords:** Healthy Nutrition. Health. Food Menu

#### **Reviewing the menu of Persian Food in the month of Ramadan, 96**

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**Objectives:** Proper nutrition during Ramadan is one of the important things that need to be considered in order to keep people healthy. During the fasting of Ramadan, four principles of eating, eating, eating and choosing the type of food should be taken into account. This article describes the type of dishes served during



Ramadan in the restaurants of the Parsian operational area in the year 96.

**Materials and Methods:** In this cross-sectional descriptive study carried out in 1996, the food menu of Parsian operational area was reviewed and analyzed in Ramadan in 1996.

**Results:** Sahara promises 10 percent of seafood, 69 percent of foods contain red meat and 21 percent of foods containing white meat. It also has 27 percent of seafood, 30 percent of foods containing white meat and 43 percent of foods containing red meat.

**Conclusion:** According to the results of this study, the number of seafood in the promise of iftar and dawn should be increased. It is also suggested to include these foods in Ramadan meal during the Ramadan crop during the month of Ramadan. Also, it is necessary to pay more attention Give three other principles of Ramadan nutrition (eating, eating, eating, and eating).

**Keywords:** Nutrition. Ramadan month. Food Meal

#### **Oxytocin-induced cardioprotection via the activation of the RISK pathway**

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**Objectives:** The reperfusion injury salvage kinase (RISK) pathway is an essential signal transduction cascade in the cardioprotective mechanism of ischemic postconditioning (Ipost). Previous studies have demonstrated the cardioprotective role of oxytocin (OT) as postconditioning agent. We evaluated the role of the RISK pathway (PI3K/Akt and ERK 1/2) in the OT cardioprotective mechanisms in the early reperfusion phase.

**Materials and Methods:** Animals were randomly divided into 6 groups. The hearts were perfused for an initial 30 minutes (min) as a stabilization period followed by 30 min of ischemia and 100 min of reperfusion. OT, Wortmanin (an Akt inhibitor), PD98059 (an ERK 1/2 inhibitor) and Atosiban (an OT receptor antagonist) were perfused in concomitant with OT in the onset of reperfusion. The myocardial infarct size was determined by triphenyltetrazolium chloride (TTC) staining. The hemodynamic factors, ventricular arrhythmia scoring, coronary flow (CF) and lactate dehydrogenase (LDH) were also recorded.

**Results:** OT postconditioning (OTpost) significantly decreased the infarct size, arrhythmia scores, incidence of ventricular fibrillation (VF) and LDH. Also, OTpost significantly increased CF and slightly but not significant recovered the hemodynamic parameters versus the IR group. The cardioprotective effect of OTpost was attenuated by PI3K/Akt, ERK 1/2 inhibitors and Atosiban.

**Conclusion:** Our data have shown that OT cardioprotective effect triggers via OT receptor and mediated through RISK pathway kinases activation mostly via Akt and ERK 1/2 signaling cascades during the early phase of reperfusion.

**Keywords:** Cardioprotection, RISK pathway

#### **Serum Vitamin D level among medical students in Birjand city, Iran**

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**Objectives:** Vitamin D is a fat-soluble vitamin that helps regulation of body calcium, phosphate levels, and bone mineralization. Besides its nutritional value, a huge body of evidences revealed different roles in a range of disorders such as cell growth, cancer prevention hypertension, cardiovascular disease, type 2 diabetes. In spite of its importance in health and diseases, vitamin D deficiency is common around the world and it is realized that around 1 billion individuals on the planet have vitamin D deficiency or inadequacy most of them in Middle East and South Asia. Iran is a fairly sunny country but some studies have shown that the rate of vitamin D deficiency is high in different parts of Iran and also in different age groups even in

children and teenagers. Birjand is located in East of Iran and has enough sun in most of the year and the aim of this study was to evaluate the prevalence of vitamin D deficiency among a group of healthy young medical students at Birjand University of Medical Sciences.

**Materials and Methods:** 160 healthy medical students randomly selected for this study. All participants provided written consent form and demographic data and health related issues were evaluated by mean of a questionnaire. 5 ml of venous blood was taken and after serum separation the level of vitamin D measured by a commercial ELISA kit. According to the kit's manual, vitamin D level divided into four categories as the following: Deficiency (< 10 ng/ml), Insufficiency (10-30 ng/ml), normal (30-100 ng/ml) and toxicity (> 100 ng/ml).

**Results:** The mean age of students was 20.7 years and the M/F ratio was 0.92. The mean level of vitamin D was 13.99 ng/ml and the level was significantly higher in boys than girls (16.54 ng/ml vs 11.59 ng/ml,  $P < 0.05$ ) respectively. 53.5% of students had vitamin D deficiency and the prevalence of the deficiency was significantly higher among girls than boys (62.2% vs 44.2%,  $P < 0.05$ ).

**Conclusion:** The results of current study confirmed high rate of vitamin D deficiency among students especially girls. Further studies for finding the best strategy for correcting this problem is an urgent need.

**Keywords:** vitamin D, Deficiency, Birjand, Student

### **Teucrium polium L. improved the heart function and inhibited myocardial apoptosis in isolated rat heart**

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**Objectives:** Myocardial Reperfusion is the only logical treatment for ischemic heart disease. However, ischemic-reperfusion (I/R) injury is one of the underlying factors facilitating and accelerating the apoptosis in the myocardium. The aim of this study was to investigate the effects of Teucrium polium (TP) hydro-alcoholic extract on I/R induced apoptosis in the isolated rat heart.

**Materials and Methods:** Isolated Rat hearts were divided into six groups. The control group

was subjected to 80 min of perfusion with Krebs-Henseleit bicarbonate (KHB) buffer, the control-ischemia group subjected to 20 min of global ischemia followed by 40 min of reperfusion. Pretreated groups were perfused with 500  $\mu$ M of vitamin C and different concentrations of TP (0.5, 1, 2 mg/ml) for 20 min and then hearts were subjected to 20 min of ischemia and 40 min of reperfusion. Cardiodynamic parameters; heart rate (HR), left ventricular developed pressure (LVDP), the maximum up/down rate of left ventricular pressure ( $\pm dp/dt$  max), rate pressure product (RPP) and coronary artery flow (CF) were achieved from Lab Chart software data and the gene expression of Bax and Bcl-2 were measured in heart samples.

**Results:** Hearts treated with TP extract and vit C showed a significant recovery in cardiac contractile function and CF. The overexpression of Bcl-2, downregulation of Bax and improvement of apoptotic index (Bcl-2/Bax) were observed in pretreated TP extract and vit C hearts.

**Conclusion:** The results suggested that the TP extract ameliorate cardiac function in the reperfused myocardium, and may play a significant role in the inhibition of apoptotic pathways leading to cardioprotection.

**Keywords:** Ischemia-reperfusion injury, apoptosis, Teucrium, heart

### **Immunomodulatory effect of Zataria multiflora extract on Th2 and Th 17 in normal and Th2 polarization state**

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**Objectives:** Asthma is a chronic inflammatory disease which there is no definite treatment for this disease and more researches are needed for this purpose. The aim of this study was to investigate the effect of Z. multiflora extract on

IL-4 and IL-17 gene expression in splenocytes obtained from sensitized mice was examined in the present study.

**Materials and Methods:** Adult mice were randomly divided to: control (C), untreated asthma (A), A treated with dexamethasone and *Z. multiflora* extract (200, 400 and 800 µg/mL) groups (D, Z1, Z2, and Z3, respectively) (for groups C, A and D n=5 and for groups Z1, Z2 and Z3, n=6). Mouse model of asthma was induced by their sensitization to i.p. injection and inhalation of ovalbumin (OVA). The numbers of Th sub type cells of spleen were assessed by flow cytometry and IL-4 and IL-17 gene expression using real time PCR in mice splenocytes.

**Results:** IL-4 and IL-17 gene expressions were increased in group S compared to control group ( $P < 0.001$  and  $P < 0.05$ , respectively). *Z. Multiflora* extract 200 mg/ml, significantly reduced IL-17 gene expression compared to group S ( $P < 0.001$  for all cases). IL-4 gene expression was significantly decreased following treatment with dexamethasone ( $P < 0.001$ ).

**Conclusion:** The results indicated decrease in IL-17 gene expression profile in sensitized splenocytes treated with the extract, which might be partially due to the presence of one of its constituent, carvacrol.

**Keywords:** *Zataria multiflora*, Gene expression, Cytokines, Real time PCR, Splenocyte, Immune system

#### **Therapeutic effect of *Zataria multiflora* in chemical war victims exposed to sulfur mustard, a randomized double-blind clinical trial**

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**Objectives:** Sulfur mustard is an alkylating agent capable of causing short and long term incapacitations on various organs including lung. There is no definite treatment for lung disorders induced by SM exposure. In the present study, the preventive effect of *Zataria multiflora* (*Z.*

*multiflora*) on hematological parameters, oxidant/antioxidant markers and pulmonary function tests (PFT) in chemical war victims (CWV) exposed to SM 27-30 years ago were studied.

**Materials and Methods:** Forty seven of veterans were randomly allocated to three groups included: placebo group (P), two groups treated with 5 and 10 mg/kg/day of *Z. multiflora* (Zat 5 and Zat 10). Drugs were prescribed in a double-blind manner for two months. Total and different WBC, hematological indices, oxidant/antioxidant markers and PFT included; force vital capacity (FVC) and peak expiratory flow (PEF) were assessed at the beginning (step 0), one and two month (step I and II, respectively) after starting treatment.

**Results:** Total and different white blood cell in Zat 5 and 10 mg/kg treatment groups in Step I and II were significantly decreased compared to Step 0 ( $p < 0.05$  to  $p < 0.001$ ). The levels of thiol superoxide dismutase (SOD) and catalase (CAT) in Zat 5 and 10 mg/kg treatment groups in step I and II were significantly increased ( $p < 0.05$  to  $p < 0.001$ ) but the level of malondialdehyde (MDA) significantly decreased in two treatment groups compared to Step 0 ( $p < 0.05$  and  $p < 0.001$ ). FVC and PEF values were significant increase in Zat 5 and 10 mg/kg treatment groups in step I and II compared to step 0 ( $p < 0.05$  to  $p < 0.001$ ). In addition, FVC and PEF values in Zat 5 and 10 mg/kg were also increased in step II compared to step I ( $p < 0.05$  to  $p < 0.001$ ). The percentage of different WBC, oxidant/antioxidant markers, FVC and PEF values were significant improved in the treatment groups compared to the placebo group.

**Conclusion:** *Z. multiflora* reduces inflammatory cells and oxidant biomarkers, while increase antioxidant biomarkers and improved PFT tests in CWV exposed to SM.

**Keywords:** *Zataria multiflora*, Sulfur mustard, Hematological indices, oxidant/antioxidant markers, pulmonary function test

#### **Poor diet quality is associated with more severe depression symptoms**

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**Objectives:** Depression is a common mental disorder, which has a high burden of disease as well as a high economic burden. Diet and nutrition modulate biological processes underpinning depressive illnesses such as oxidative stress and inflammation. This study examined the extent to which depression symptoms are related to diet quality in 6,757 participants (40% males and 60% females) aged 35-65 years, enrolled in a population-based cohort (MASHAD) study.

**Materials and Methods:** A healthy eating index (HEI-20 10) was calculated from answers to a food frequency questionnaire. Symptoms of depression were evaluated using the 21-item Beck Depression Inventory.

**Results:** The mean diet quality decreased by increasing severity of depressive symptoms. Subjects with severe depression symptoms had significantly lower diet quality ( $p < 0.001$ ). Moreover, the odds ratio of diet quality for individuals having severe depression symptoms compared with subjects with no or minimal depression symptoms was 0.97 (0.96-0.98). The odds ratio remained unchanged after adjustment for age, sex, education level, current smoking habit, body mass index, and hs-CRP.

**Conclusion:** We have reported associations between diet quality and depression cross-sectionally; however, this relationship requires further examination in prospective studies in order to determine the direction of the relationship.

**Keywords:** Healthy eating index, diet quality, depression symptoms

#### **“Food addiction” in children: prevalence and associations with demographic indices**

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**Objectives:** “Food addiction” (FA) is defined as a recurrent course resulting from hedonic factors that prompt the desire for food. There are limited literature on addictive-like eating in children and no study on addictive-like eating in Iranian children and adolescents. The present study was

designed to detect the frequency of FA evaluating the relationship between FA criteria and demographic indices among children and adolescents in Ahvaz, Iran.

**Materials and Methods:** We conducted a cross-sectional survey on 3908 elementary school students (1868 males and 2040 females) aged 7-13 years in Ahvaz, Iran. A two-stage random sampling method was conducted. Finally, 222 elementary school children were recruited to the study. Demographic indices were obtained. The 27-item Yale FA Scale (YFAS) was used to measure dependence on high-fat and high-sugar foods. Items are grouped under criteria that resemble the symptoms for substance dependence. Independent sample t-test,  $\chi^2$  test, and logistic regression were undertaken using SPSS version 21.

**Results:** Thirty-seven students (17.8%; 25 males, 12 female) met the FA diagnostic threshold. The mean of FA symptom score (Mean  $\pm$  SD) was  $4.6 \pm 1.2$  for diagnosed and  $2.3 \pm 1.2$  for undiagnosed students, respectively ( $P < 0.001$ ). Students with FA diagnosis had symptoms associated with FA including “loss of control”, “withdrawal”, “tolerance”, “clinical impairment”, “give up activities”, and “much time to obtain” were reported with 38.9%, 80.6%, 72.2%, 100%, and 69.4% of children identifying FA a contributor to their eating problems. Logistic regression was applied to evaluate the relationship between FA degree classified as “mild”, “moderate” or “severe” and demographic variables. The results of “goodness of fit” test showed that the model was well-fitted ( $\chi^2 = 260.506$ ,  $P = 0.975$ ). The model showed that male students have significantly a higher FA degree than female one (Wald=4.39,  $P = 0.036$ ). Also, FA degree increased significantly with an increased paternal educational levels (Wald= 4.03,  $P = 0.045$ ).

**Conclusion:** The current study adds to the limited literature on addictive-like eating in children. Greater FA were more likely to occur for male elementary school students with higher paternal education level.

**Keywords:** Children, FA, Demographics, Yale FA Scale

#### **The scored Patient-generated Subjective Global Assessment (PG-SGA) and its association with Dysphagia, Anthropometric indices, and Biochemical parameters in Stroke Patients**

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**Objectives:** Malnutrition, dysphagia and low levels of albumin are frequent in stroke patients and have been associated with poor outcomes in stroke. The present study evaluated the nutritional status of stroke patients using the scored PG-SGA and to explore if there is an association between the PG-SGA and the objective assessment including anthropometric, hematological, and biochemical measurements.

**Materials and Methods:** This cross-sectional study involved 224 ischemic stroke patients. Nutritional status and swallowing were measured using the PG-SGA and the NDPCS, respectively. Crude and adjusted regression coefficient of PG-SGA scores with clinical and anthropometric variables were obtained by linear regression methods.

**Results:** Overall, our patients displayed relatively low albumin levels  $3.6(\pm 2.3)$  and  $3.7(\pm 0.6)$  in severe and moderate malnourished patients; respectively. A significant negative correlation was found between the PG-SGA score and albumin values ( $p=0.01$ ). The malnourished patients had significantly higher PG-SGA scores ( $13.9\pm 4.4$ ) compared with the well-nourished participant ( $1.4\pm 0.6$ ). Additionally calf circumference correlated strongly with the scores of PG-SGA ( $p=0.004$ ). A higher frequency of comorbidity was observed in malnourished patients compared to well nourished ( $p=0.001$ ).

**Conclusion:** Identification of malnutrition according to PG-SGA components and appropriate nutritional intervention which might affect stroke outcomes is important issue.

**Keywords:** Stroke; Scored Patient-generated Subjective Global Assessment; Nutrition; Dysphagia

#### Association between ABO Blood Groups and Metabolic Syndrome and its Features

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**Objectives:** Metabolic syndrome is a constellation of several metabolic disorders: central obesity, diabetes and hyperglycemia, dyslipidemia, and hypertension. This syndrome increases the risk of premature death and cardiovascular disease, and puts patients to an increased risk for developing several other diseases. Many studies have examined the relations between the ABO blood groups and several diseases such as cancers. The aim of this study is to investigate the association between ABO blood groups and metabolic syndrome and its components in a large population of Iranian healthy population in Mashhad, Northeast of Iran.

**Materials and Methods:** In this cross-sectional study, 7275 healthy people were recruited using a stratified cluster random sampling technique. All patients were screened for determinants of metabolic syndrome. Blood samples were collected from participants. Fasting plasma glucose, lipid profile, Rh and ABO blood groups were determined. Data analysis was carried out using SPSS version 16. Categorical measurements were reported as number and percentage. Quantitative measurements, Pearson and Spearman correlation, Chi square test, Kruskal-Wallis, and ANOVA tests were used. Statistical significance was assessed at a level of 0.05 (two-tailed) for all analyses.

**Results:** Among all subjects, the most frequent group was O in our study population ( $n=2485$ , 33.7%). In addition, the frequency of Rh-positive antigen was 88.2% ( $n=6418$ ). Demispan was significantly different between blood groups ( $P=0.033$ ). Group O was positively associated with cardiovascular disease ( $P=0.007$ ;  $r=0.787$ ; 95%CI=0.662-0.936) and hyperglycemia ( $P=0.007$ ;  $r=0.837$ ; 95%CI=0.735-0.952). Group A was associated with waist circumference ( $P=0.044$ ;  $r=0.902$ ; 95%CI=0.815-0.997) and cholesterol ( $P=0.008$ ;  $r=1.15$ ; 95%CI=1.038-1.274).

**Conclusion:** The results of present study showed association of blood groups with risk factors and components of metabolic syndrome. Determining ABO blood group, as a potential hereditary risk factor, may be applied to screen and manage patients with metabolic syndrome



and cardiovascular diseases such as coronary disease. Therefore, it can be added in the evaluation of cardiac risk assessment systems in clinics and research as implication of primary prevention. Further research is needed to understand the underlying biological process and the association of different blood group systems with other CVD such as heart failure and arrhythmias.

**Keywords:** blood groups; Metabolic syndrome.

#### **Growth suppression of breast cancer and oxidant anti-oxidant balance by Curcumin**

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**Objectives:** Curcumin is a renowned natural compound. It has gained notable interest as a potential anti-oxidant and anti-cancer agent, as well as antitumorigenic activities towards some aggressive and recurrent cancers. Accordingly, the present investigation was carried out to obtain an insight into the antitumor activity of liposome encapsulated curcumin.

**Materials and Methods:** We first develop breast cancer models by injection of Tobo cells in flank of animal. When the breast tumor reached a volume of 100mm<sup>3</sup> mice were divided into 4 groups of 5 as follow: control, treated with 5-FU, treated with curcumin and treated with 5-FU/curcumin combination. After 32 days the mice were sacrificed and breast tumors were collected for hematoxylin and eosin staining and tissue homogenate for oxidant/antioxidant measurements.

**Results:** The tumor size was significantly reduced in curcumin group. Interestingly this reduction was much higher in combination group. Moreover, histological staining of tumor tissues showed vascular disruption and RBC extravasation, necrosis, tumor stroma and inflammation. Results shown that co-treatment of curcumin and 5-FU synergistically decreased the lipid peroxidation as compared with 5-FU treatment. The data obtained from SOD activity

demonstrated a considerable increase in curcumin treated group as compared to that of 5-FU and co-treated groups which confirms its antioxidant property. Also, it has been observed that co-treatment leads to a significant increase in CAT activity. Nevertheless, curcumin and 5-FU treatment alone, elevated the thiol levels.

**Conclusion:** liposome encapsulated curcumin antagonizes growth, vascular disruption and RBC extravasation, necrosis, tumor stroma and inflammation in breast cancer, supporting further investigations on the therapeutic potential of this novel anticancer agent in treatment of breast cancer.

**Keywords:** Curcumin, breast cancer, oxidant/antioxidant measurements

#### **A study on adulteration of raw milk from animal husbandry in Semnan city**

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**Objectives:** Milk in its natural form has high food value. It can supply nutrients for the human body. According to the standard number 1756, milk is the natural secretion produced by the mammary glands of mammals and it comes from one or more continuous milking, without adding or dropping it. Since some dishonest people resolve hygiene problems by using a variety of methods, they endanger the health of consumers. Therefore, the purpose of this study was to investigate the presence or absence of adulteration in raw milk.

**Materials and Methods:** In this study, 30 samples of raw milk were randomly collected from animal husbandry in Semnan city and transferred to the food hygiene laboratory alongside the ice and in the sterile containers. Fraud status including microbial growth inhibitor (Hypochlorite, Formaldehyde, Hydrogen peroxide) and milk neutralizing agents (Carbonate and Bicarbonate, Salicylic acid, Benzoic acid), urea test were evaluated in these samples.

**Results:** According to the results of the experiments, the whole samples were safe and no adulteration had been made.

**Conclusion:** Despite the lack of cheating in this study, due to the importance of consumer health, it is recommended that these tests be performed annually on the lids of different regions.

**Keywords:** raw milk; adulteration; Semnan.

### **Adherence to Dietary Approach to Stop Hypertension (DASH) type diet is related to sleep quality in adolescent girls**

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**Objectives:** The beneficial impact of adherence to a DASH diet on several metabolic conditions and psychological wellbeing has been shown previously. Dietary modification can affect sleep quality. Thus, the aim of this present study was to investigate the association between adherence to the DASH diet and the prevalence of sleep disorders in adolescent girls.

**Materials and Methods:** A total of 535 adolescent girls aged between 12- 18 years old were recruited from different regions of Khorasan Razavi in northeastern of Iran, using a random cluster sampling method. A Persian translation of the Epworth Sleepiness Scale and a 168-item validated Food Frequency Questionnaire (FFQ) were used to assess daytime sleepiness and dietary intake, respectively. Socio-demographic data and anthropometric variables were also collected from all participants.

**Results:** As may be expected, participants with the greatest adherence to the DASH diet had significantly higher intakes of fruits, vegetables, low fat dairy products, fish and nuts and lower consumption of refined grains, red and processed meat, sugar-sweetened beverages and sweets. There was an inverse association between adherence to the DASH-style diet and scores for sleep insomnia ( $\beta = -0.17$ ;  $P$ -value=0.007), daytime sleepiness ( $\beta = -0.12$ ;  $P$ -value=0.005), and obstructive sleep apnea ( $\beta = -0.13$ ;  $P$ -value=0.001) in an unadjusted, crude model and after adjustment for the potential confounding factors.

**Conclusion:** There is an inverse association between adherence to DASH diet and sleep disorders in adolescent girls. Further studies, particularly longitudinal studies are required to determine whether dietary intervention may improve sleep quality.

**Keywords:** DASH diet; Sleep Disorders; Adolescents.

### **Association between the concentration of serum cytokines and growth factors and metabolic syndrome in patients with documented angiography**

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**Objectives:** Metabolic syndrome, defined as a combination of metabolic and cardiovascular risk factors, has been reported to be associated with manifold complications. It especially increases the risk of coronary artery disease (CAD) and mortality from cardiovascular diseases. Specific cytokines and biomarkers have been reportedly linked to the pathogenesis and progression of this syndrome. However, there are still insufficient data regarding the definite role of biomarkers in this regard. In this study, we have investigated the serum levels of 12 markers in patients with documented angiography and compared the concentrations and possible associations in patients diagnosed with metabolic syndrome and those not.

**Materials and Methods:** In this analytical cross-sectional study, 360 participants were divided into two groups based on their angiography results. Having >50% obstruction in at least one of the coronary arteries with an evidence of CAD was defined as positive angiography, while having <50% occlusion in coronary arteries was defined as negative angiography. They were then divided into two groups based on being

diagnosed with metabolic syndrome. Twelve cytokines (IL-1 $\alpha$ , IL-1 $\beta$ , IL-2, IL-4, IL-6, IL-8, IL-10, TNF- $\alpha$ , MCP-1, IFN- $\gamma$ , EGF, and VEGF) were measured by sandwich chemi-luminescence assays, on the Evidence Investigator® system. The data were analyzed by SPSS v.20 using descriptive statistics, one-way ANOVA, t-test, Chi-square test, and regression modeling.

**Results:** Of the 360 participants, 202 (56.1%) were males, 215 (59.7%) patients had positive angiography for CAD and 145 (40.3%) had negative angiography. 155 (43%) patients had metabolic syndrome. There were significant differences regarding sex, height, weight, BMI, waist circumference, hip circumference, serum glucose, triglyceride and HDL-cholesterol between those with and without metabolic syndrome ( $P < 0.05$ ). Serum concentration of IL-6 and IFN- $\gamma$  were significantly increased in patients with metabolic syndrome, compared with those without it ( $P = 0.031$  and  $P = 0.035$ , respectively).

**Conclusion:** Our results showed that biomarkers like IL-6 and IFN- $\gamma$  are associated with the presence of metabolic syndrome in patients undergoing angiography. These cytokines might play important roles in pathogenesis and progression of metabolic syndrome, which in turn increases the risk of cardiovascular disorders, especially CAD. Therefore, further studies with prospective designs might be of cardinal importance in this regard.

**Keywords:** Cytokines, Growth Factors, Metabolic Syndrome, Coronary Artery Disease.

#### **Soluble fiber intake is inversely associated to irritable bowel syndrome in adolescent girls**

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**Objectives:** Irritable bowel syndrome (IBS) is a common gastrointestinal function disorder that affects quality of life by its symptoms and comorbidities. Although many studies have focused on examining the role of dietary

patterns, besides specific foods on IBS risk and symptoms, there are only a few studies that were performed in dietary aspects of IBS in adolescent population. This study was undertaken to assess the role of dietary intakes in risk of having IBS in female adolescents.

**Materials and Methods:** In this cross-sectional study, data were examined on 988 adolescent from different areas of Mashhad and Sabzevar cities. By using a 168-item valid and reliable frequency questionnaire (FFQ) dietary intakes of the study participants was assessed. To calculate daily nutrient intakes for each participant, we used US Department of Agriculture's (USDA) national nutrient databank.

**Results:** Dietary intakes of macronutrients, energy and selected micronutrients for IBS positive and negative subjects were similar. Comparing caffeine intake between two groups shows a higher level of consumption in IBS patients ( $p$  value = 0.02) ( $p$  trend = 0.03). Therefore a significant converse association was seen between caffeine intake and risk of IBS. Despite no significant difference between intakes of total dietary fiber ( $p$  value = 0.23) and insoluble dietary fiber ( $p$  value = 0.09) in subjects with and without IBS, their soluble dietary fiber intake was significantly different ( $p$  value = 0.02) with a higher amount of consumption in healthy cases. After adjustment for potential confounding variables, a significant inverse association was seen between soluble dietary fiber intake and risk of IBS ( $p$  trend = 0.02, 0.03).

**Conclusion:** We found two differences in them: a significant converse association between caffeine intake and risk of having IBS and a significant inverse association between soluble dietary fiber intake and risk of having IBS.

**Keywords:** Dietary intakes, irritable bowel syndrome, gastrointestinal function disorder.

#### **Effect of Arginine on outcome of Traumatic Brain Injury patients**

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**Objectives:** Traumatic brain injury (TBI) is a major cause of death and disability worldwide. Certain patients appear to benefit when they receive immune enhancing additives, such as glutamine, arginine, and omega-3 fatty acids. We hypothesized that the TBI patients given enteral



feedings with supplementation of Arginine may have better outcome.

**Materials and Methods:** This was a randomized clinical trial, and total of 70 TBI patients in ICU (on the basis of inclusion criteria) were divided in two groups: Arginine and Control. Patients received 10 g/d Arginine powder (Arginine Group) for 10 days. Patients in Control Group received no supplement. All patients received standard hospital prepared formula. Data collected included demographic information, outcome measures such as severity of illness, GI complications, use of ventilator, and length of hospital stay and mortality rate.

**Results:** Patients were similar in terms of demographic and anthropometric measurements and there was no difference in different diagnosis of TBI in two groups. APACHE II score were decreased (arginine  $P=0.02$ , control  $P=0.0$ ) but there were no significant differences between groups after 10 days intervention. Occurrence of GI complications (diarrhea and residue) in arginine group were less than control (34.3 % in arginine group and 40% in control) although it was not significant ( $P=0.4$ ). Our data represented that there was no significant difference between two groups in total days of ventilator need and hospital stay ( $P=0.42$ ,  $P=0.21$  respectively). Mortality rate during intervention was 8.6% and 14.3% respectively in arginine and control group, in addition 28 days mortality rate were 9.1% in arginine group and 20% in control.

**Conclusion:** This study suggests that patients with traumatic brain injury who receive arginine are more likely to have less complications and better outcome. Arginine may have effect in decreasing mortality rate. More investigation in needed to confirm our data.

**Keywords:** Arginine, TBI, Complications, Mortality rate.

#### Study of antibacterial effects of Kohgiluyeh and Boyer-Ahmad province's honey samples on staphylococcus aureus

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**Objectives:** Staphylococcus aureus is one of the important factors in the development of hospital and community infections. Today, antibiotic susceptibility in bacterial isolates has decreased. Antimicrobial properties of honey, made us to investigate of antimicrobial activity of honey on

Staphylococcus aureus in order to compare the antimicrobial properties of honey in different environmental conditions.

**Materials and Methods:** In this study, honey samples collected from 4 different regions of Kohgiluyeh and Boyer-Ahmad Province. In order to investigate the antimicrobial effects of the prepared honey, concentrations of 10, 30, 50 and 70 were prepared and tested on standard strains (ATCC 25923) and clinical isolates of Staphylococcus aureus.

**Results:** None of the concentrations of honey No. 1 had effect on the growth of the bacteria studied. However, in relation to other honey samples, Antibacterial activity was observed at concentrations of 30, 50 and 70. MIC was different in different regions; Also, MICs at concentrations of 50 and 70 showed a significant difference with other concentrations.

**Conclusion:** Due to bacterial resistance to a wide range of antibiotics, honey can be considered an appropriate alternative, but this antimicrobial activity is affected by environment.

**Keywords:** honey samples, S. aureus, antimicrobial activity

#### Association between dietary intake and ABO blood group: Is there any linkage?

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**Objectives:** There are series of diets based on this recognized relation between blood types and certain diseases. It is suggested that the dietary customs of humans are linked to their ABO blood group state and based on their evolutionary rout, people with different blood types have different nutritional needs. Based on the 'Blood-Type' diet theory it is believed that an agglutination can be caused due to the incompatibility of the one's ABO blood group and a type of sugar-binding proteins called lectins found in foods. This study is aimed at answering the question that the

individuals with specific blood group have particular dietary pattern.

**Materials and Methods:** 7 172 subjects aged 35 to 65 years [2725 (40%) males and 4447 (60%) females] were recruited using a stratified-cluster method. None of the subjects had a history of a cardiovascular event (unstable angina, MI and stroke), heart failure, peripheral vascular disease including transient ischemic attack, or a history of any previous cardiovascular interventions or surgery. Dietary intake was assessed by means of a 24-h dietary recall and dietary analysis was performed using Diet Plan 6 software. A trained interviewer performed face-to-face interviews and individuals were asked about all foods and beverages that were consumed.

**Results:** The most frequent ABO group was O (n=2485, 33.7%). 88.2% were Rh positive. Dietary intakes of total N2, proteins, selenium and zinc were significantly higher in A blood group individuals. After adjustment for energy intake, total N2, selenium and zinc intake were significantly different between the four groups. Dietary intakes of lactose, mono- and poly-unsaturated fatty acid were significantly different between Rh-positive and Rh-negative subjects (p=0.012). Moreover, after adjusting energy intake, there was a significant difference in total intake of fat, mono- and poly-unsaturated fatty acids between different ABO groups (p<0.05).

**Conclusion:** The ABO-Rh blood groups were associated with different dietary patterns and nutrient intakes. Therefore, considering blood types may be helpful to identify, predict, and prevent adverse immune responses to foods and reduce food allergy.

**Keywords:** Blood groups, Diet, Dietary Intake, Micronutrients

#### **Association of dietary pattern and body size with early menarche among elementary school girls in west of Iran**

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**Objectives:** The average age at menarche (AAM) has declined around the world, which is widely attributed to improvements in nutrition. This study was carried out to investigate the association between dietary pattern and early menarche (< 12 years) among elementary school girls.

**Materials and Methods:** This case-control study was carried out on 400 elementary school girls (200 early menarche and 200 premenarche) who were aged 12 years old and over, in Kermanshah, Iran, 2015. The participants were selected by cluster sampling from three areas of Kermanshah city. Body mass index (BMI) was calculated, and information on dietary intake was investigated by using a semi-quantitative food frequency questionnaire, which consists of 160 items. Logistic regression was performed to find a relationship between dietary pattern and risk of early menarche.

**Results:** Four major dietary patterns of meat, Western, high-fiber and low-fat, and traditional were identified. After adjusting for the confounding factors, the highest tertile of meat dietary pattern (OR: 1.21; 95% CI: 0.64-2.29; P<0.009) increased the risk of early menarche, whereas the high-fiber and low-fat (OR: 0.01; 95% CI: 0.003-0.02; P<0.001) and traditional (OR: 0.13; 95% CI: 0.06-0.26; P<0.001) dietary patterns were linked with reduced risk of early menarche. BMI was significantly different between the two groups.

**Conclusion:** The high-fiber and low-fat and traditional dietary patterns were associated with low risk of early menarche, while meat diet pattern was related to enhanced risk of early menarche.

**Keywords:** Early menarche, Dietary patterns, Food frequency questionnaire, Factor analysis

#### **Body mass index, waist circumference and waist-to-hip ratio as predictors of hypertension in Ravansar Non-Communicable Disease cohort**

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**Objectives:** This study aims to evaluate the association between three obesity indices to predict hypertension (HTN).

**Materials and Methods:** Cross-sectional population study conducted in the Ravansar Non-Communicable Disease cohort (RaNCD) study, a total of 10086 subjects, aged between 35 and 65, and were studied. HTN is detected according to blood pressure base on the Joint National Committee 7 (JNC 7) and history of medical record. Multiple logistic regression analysis was used to evaluate the associations between three obesity indices and hypertension. The Receiver Operating Characteristic (ROC) curve analysis was used to evaluate sensitivity and specificity of three obesity indices as predictive factors of HTN, and to determine the best predictive cut-off points for HTN.

**Results:** Prevalence of HTN 16.43% (men 10.12%; women 21.24%), Based on HTN, BMI cut-points were 25.5 kg/m<sup>2</sup> (95% Confidence Interval: 24.6, 26.7). For men, The ROC analysis revealed that BMI is a predictor of HTN for both men 0.71 and women 0.68. WC cut-points were 90 cm (85, 95) for women, WC cut-points were 78 cm (73, 82) for men. ROC analysis for WC showed that it is a good predictor of hypertension both for men 0.68 and women 0.65

**Conclusion:** However the BMI, WC and WHtR values can similarly predict the presence of HTN. But three obesity indices can be used for screening people at increased risk of HTN in order to refer them for more careful and early diagnostic evaluation.

**Keywords:** Body mass index, Waist circumference, Obesity, Hypertension

### **Hyperlipidemias and Risk of Cardiovascular Disease: Ravansar Non-Communicable Disease cohort**

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**Objectives:** Hyperlipidemias is a major cardiovascular Disease (CVD), Hyperlipidemia can broadly be classified as isolated elevation of cholesterol, isolated elevated TG and elevations of both. The cause may be genetic, environmental or both. The aim if this study is evaluate the association of Hyperlipidemias with risk for CVD.

**Materials and Methods:** Cross-sectional population study conducted in the Ravansar Non-Communicable Disease cohort (RaNCD) study, a total of 10086 subjects, aged between 35 and 65 were studied. CVD is detected base on history of medical record. Classification of hyperlipidemias as defined by the NCEP ATP 3 guidelines expected to be released in the autumn of 2012. Multivariate logistic regression analysis was used to evaluate the detection of risk factor of CVD.

**Results:** Prevalence of CVD 5.4% (men 4.7%; women 5.8%). 1064 (20.3%) women and 2080 (43.7%) men had HDL less than 40 mg/dL, 133 (2.5%) women and 73 (1.6%) men had LDL cholesterol higher than 160 mg/dL respectively. For each unit LDL cholesterol more than 130 mg/dL increases the odds of CVD (0.04). There was a significant relationship between triglyceride (TG) and CVD in the univariate model, this not significant in the multivariate model. After adjustment for standard CVD risk factors, adults with the LDL cholesterol  $\geq$  190 mg/dL had a 2.45 (95% CI, 1.88 to 3.16) time more than LDL cholesterol < 100 mg/dL. Odds ratio for CVD in adults with HDL Cholesterol  $\geq$  60 mg/dL was 0.48 (95% CI, 0.36 to 0.6) compared with the HDL Cholesterol <40 mg/dL.

**Conclusion:** Adults with low HDL and high LDL had increased risks of CVD, However, the effect of high LDL cholesterol is more important than low HDL, But abnormal levels of HDL and LDL had interaction.

**Keywords:** hypercholesterolemia, cardiovascular disease, coronary artery disease.

### **Cytotoxicity and DNA damage properties of Ascorbyl palmitate (AP) food additive**

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**Objectives:** Ascorbyl palmitate (AP) as food antioxidant is an amphipathic ester of vitamin C, which has been considered as a safe antioxidant additive by the USA Food and Drug Administration (FDA) in food industry, cosmetics, pharmaceuticals, and medical. Because of AP extensive use in food industry and daily intake by edible oil, human exposure with this antioxidant additive is high. Therefore, to distinguish conformational changes in bio macromolecules such as DNA, investigation of its Cytotoxicity and DNA damage can be important. Ascorbyl palmitate (AP) was tested for potential cytotoxicity and genotoxicity upon Human Umbilical Vein Endothelial Cells (HUVEC).

**Materials and Methods:** Cytotoxicity was evaluated by MTT assay and flow cytometry analysis, while genotoxicity was assessed in vitro by Real Time PCR, DAPI staining assays.

**Results:** Ascorbyl palmitate dose- and time-dependently decreased the growth of HUVEC cells. Flow cytometry analyses determined early/late apoptosis in the treated cells. In addition, morphology of DAPI stained cells showed clear fragmentation in the chromatin and DNA rings within the nucleus of cell's treated AP. Also it can be deduced inhibit the growth rate normal cells by inducing apoptosis via Up-regulation of Caspase-3, 9 and Down-regulation of bcl-2.

**Conclusion:** The investigations Cyto/genotoxicity of these food additives are greatly important in food safety and industry In conclusion, the present results suggest that exposure to AP as a food additive at a relatively high dose can stimulate apoptosis and carcinogenicity. Therefore, it is advisable to make a thorough analysis on the widespread use AP in food industry.

**Keywords:** Cytotoxicity, DNA damage, Ascorbyl palmitate, food additive

#### **Effect of pomegranate seed oil on plasma growth hormone and 17 $\beta$ -estradiol levels in women with benign breast disease: a randomized controlled clinical trial**

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**Objectives:** Pomegranate seed oil (PSO) has been recently attracted growing attention for its health beneficial effects on a variety of neoplastic disorders including breast tumor. This study investigated the effects of PSO administration on plasma level of growth hormone (GH) and 17 $\beta$ -estradiol (E2) in women with benign breast disorders (BBD).

**Materials and Methods:** Patients in the intervention group (n=23) received 1000 mg/day PSO capsule and the placebo group (n=23) received 1000 mg/day inert oil-contained capsule during 13 weeks. Levels of GH and E2 were analyzed in fasting plasma collected at baseline and end of study.

**Results:** Plasma level of GH significantly decreased within the PSO group (P<0.05), compared with baseline values. Subjects in both groups showed significant decrease in plasma level of E2, compared with baseline values. However, resultant fall was greater in the PSO group (mean percentage change of -2 1.3%, P<0.05) compared with placebo (mean percentage change of -6.3%, P<0.05)

**Conclusion:** Findings from this study showed that PSO treatment in women with BBD can be effective to decrease plasma levels of GH and E2.

**Keywords:** Benign breast, pomegranate seed oil, growth hormone, 17 $\beta$ -estradiol

#### **Effects of CoQ 10 supplementation on CVD risk factors in rheumatoid arthritis patients**

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**Objectives:** Patients with rheumatoid arthritis experience higher mortality rates from cardiovascular events. This study aimed this to investigate the effects of oral coenzyme Q 10 (CoQ 10) supplementation on cardiovascular diseases (CVD) risk factors in these patients.

**Materials and Methods:** Participants of this randomized controlled clinical trial were rheumatoid arthritis patients (DAS28>3.2). Forty five patients were randomly assigned to CoQ 10 or a placebo group. In addition to their traditional therapies, subjects took 100 mg/day CoQ 10 (n=22) or placebo (n=23) for two months. Body weight, systolic and diastolic blood pressure, serum cholesterol, triglyceride (TG), low density lipoprotein (LDL), and high density lipoprotein



(HDL) were measured before and after intervention. Dietary intake was assessed twice using a three day food record.

**Results:** In comparison to the baseline, body weight and LDL reduced significantly (-0.7 1 kg and -8.58 mg/dL, respectively;  $p < 0.05$ ) in the CoQ 10 group. The placebo group showed a significant decrease in total cholesterol and LDL (-10.40 and -11.33 mg/dL, respectively;  $p < 0.05$ ) and a significant increase in TG (+20.09 mg/dL;  $p < 0.05$ ). No significant differences were seen between groups regarding body weight, blood pressure, and lipid profile.

**Conclusion:** Supplementation with 100 mg/day CoQ 10 during two months showed some indication of reduction in body weight and LDL but overall no meaningful improvement was seen in CVD risk factors. Longer studies with larger number of patients and higher doses of the supplement might indicate suitable effects.

**Keywords:** lipid profile, blood pressure, body weight, coenzyme Q 10, rheumatoid arthritis

#### **Egg white hydrolysate positively affects adipogenic differentiation**

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**Objectives:** Metabolic syndrome, the cluster of several risk factors of hypertension, glucose intolerance, obesity and dyslipidemia, is the worldwide health problem increasing the person's risk of heart disease, and diabetes. Adipose tissue plays a critical role in development of insulin resistance, the key feature of the disease. Insulin promotes differentiation of pre-adipocytes into mature adipocytes which are necessary for lipid and glucose homeostasis. Adipose tissue dysfunction enhances inflammatory markers and inhibits insulin signaling both locally and systemically. There is significant interest in developing therapeutic agents to improve insulin signaling in adipocytes. The insulin-sensitizing drugs thiazolidinediones (TZDs) enhance adipocyte

differentiation and insulin sensitivity. Beneficial effects of egg proteins on metabolic disorders have been repeatedly reported in literature. Research in our lab has shown the potential of egg proteins and peptides against hypertension, oxidative stress and inflammation. Considering the interplay among these risk factors and metabolic syndrome, we aimed to test the effects of egg white hydrolysate (EWH) on adipogenic differentiation, and insulin signaling in 3T3-F442A pre-adipocytes.

**Materials and Methods:** Egg white hydrolysate was prepared using thermolysin and pepsin, centrifuged, freeze dried, and desalted for use in cell experiments. After activation and sub-culturing, the murine 3T3-F442A pre-adipocytes were incubated in standard culture medium in the presence of EWH or insulin for 72 h without changing the medium. Adipogenic changes were determined by the appearance of intracellular lipid droplets (as shown by LipidTox staining), upregulation of peroxisome proliferator associated receptor gamma (PPAR $\gamma$ ) (determined by western blot) and release of adiponectin (measured by ELISA). Insulin was used only as a positive control for inducing differentiation.

**Results:** Our study revealed that EWH could promote adipocyte differentiation through release of adiponectin and upregulation of PPAR $\gamma$ . EWH treatment also showed insulin mimetic and sensitizing effects in adipocytes by enhancing extracellular signal regulated kinase 1/2 (ERK 1/2) and protein kinase B/Akt phosphorylation, respectively.

**Conclusion:** Given the critical role of adipose tissue in the pathogenesis of insulin resistance and metabolic syndrome, EWH may have potential applications in the prevention and management of metabolic syndrome and its complications.

**Keywords:** adipocyte differentiation, egg white hydrolysate, insulin, metabolic syndrome, 3T3-F442A

#### **Chemical composition and protective effect of Pistacia atlantica essential oil in ulcerative colitis: role of $\alpha$ -pinene**

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**Objectives:** *Pistacia atlantica* Desf subsp. *mutica* (F & M) Rech. f. (Anacardiaceae) is traditionally used for gastrointestinal diseases. The present study evaluates the efficacy of *P. atlantica* essential oil on ulcerative colitis as well as chemical composition of the essential oil.

**Materials and Methods:** Chemical composition of essential oil was identified using GC/MS. Acute toxicity of the essential oil was assessed in animal model. Ulcerative colitis was induced by anal administration of acetic acid. Macroscopic (ulcer index and protection rate) and microscopic examination were performed.

**Results:** The GC-MS analysis of the essential oil led to the identification of twenty constituents and  $\alpha$ -pinene is predominant constituent. The essential oil was safe up to 2000 mg/kg. The ulcer index for the essential oil groups was significantly reduced compared to control ( $P < 0.001$ ) with EC50 value of 12.32 mg/kg. In microscopic examination, *P. atlantica* attenuated destruction and necrosis of colon tissue. Current study exhibited protective effect of *P. atlantica* essential oil against acetic acid induced ulcerative colitis.  $\alpha$ -Pinene may be the responsible agent.

**Conclusion:** The present study confirmed the traditional use of *P. atlantica* oleoresin for the management of ulcerative colitis.

**Keywords:** *P. atlantica*, Ulcerative colitis,  $\alpha$ -pinene, medicinal plant.

**High-dose supplementation of vitamin D affects measures of systemic inflammation: reductions in High-Sensitivity C-Reactive Protein level and Neutrophil to lymphocyte ratio (NLR) distribution**

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**Objectives:** The prevalence of Vitamin D deficiency is increasing worldwide, which has been shown to be associated with increased risk of cardiovascular disease (CVD), autoimmune disease and metabolic syndrome. These conditions are also associated with a heightened state of inflammation. The aim of current study was to evaluate the effect of vitamin D supplementation on serum C-reactive protein (CRP) level and Neutrophil-to-lymphocyte ratio (NLR) distribution in a large cohort of adolescent girls.

**Materials and Methods:** 580 adolescent girls were recruited followed by evaluation of CRP and hematological parameters before and after supplementation with vitamin D supplements as 9 of 50000 IU cholecalciferol capsules for 3 months taken at weekly intervals.

**Results:** At baseline, serum hs-CRP level was 0.9 (95%CI: 0.5- 1.8), while this value after intervention was reduced to 0.8 (95%CI: 0.3- 1.6;  $P = 0.007$ ). Similar results were also detected for NLR (e.g., NLR level was  $1.66 \pm 0.72$  and  $1.53 \pm 0.67$ ,  $P = 0.002$ , before and after therapy with compliance rate of  $>95.2\%$ ). Moreover we found an association between hs-CRP and BMI, triglyceride, white blood cell count and lymphocytes. Interestingly we observed that a significant reduction in neutrophil count and CRP level after high dose vitamin D supplementation.

**Conclusion:** Our findings showed that the high-dose supplementation of vitamin D affects measures of systemic inflammation: reductions in High-Sensitivity C-Reactive Protein level and Neutrophil-to-lymphocyte ratio (NLR) distribution.

**Keywords:** vitamin D; supplementation; NLR; CRP.

**Isolation and Identification of Salmonella enterica serovars, Typhi, Typhimurium, and Enteritidis from raw milk and Dairy products**

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**Objectives:** Milk and dairy products provide a rich medium of nutrients for growth of microorganisms such as Salmonella. So, providing the high quality of these products are necessary for community health. Salmonella is one of the important foodborne pathogens which found in most farms and animal species. It can lead to typhoid, enterocolitis, septicemia and death. The purpose of the present study was to determine the contamination rate of raw milk and dairy products to Salmonella Typhi, S. Typhimurium and S. Enteritidis. It is very important in food safety risk assessment and human health.

**Materials and Methods:** A total of 44 1 samples including raw milk and dairy products were obtained from different region of South Khorasan, Iran. After taking the samples, they were kept at 4 °C and transferred to laboratory, immediately. Isolation of bacteria was made by culture and enrichment based-PCR methods.

**Results:** Among the 44 1 tested samples only 4 samples were contaminated with Salmonella spp. in culture method. PCR assay, didn't find any positive sample regarding Salmonella spp. In chi square test, difference of two methods of isolation was significant ( $P < 0.05$ ).

**Conclusion:** In conclusion, the results of present study showed a good hygienic state in dairy farms and markets. Also, absence of Salmonella in raw milk shows the good health state of animals in this region.

**Keywords:** Salmonella, Milk, dairy products

#### **Determinants of the knowledge and attitude between students of Tabriz University of Medical Science regarding with health and food safety**

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**Objectives:** Health and food safety is one of the most important issues of nutritional science. The present study aims to examine the knowledge and attitude towards health and food safety among students of Tabriz University of Medical Science (TUMS).

**Materials and Methods:** This study was conducted through cross-sectional approach using a validated and reliable researcher-made

questionnaire on 300 students of TUMS who were selected through stratified random sampling method. To analyze the data collected, SPSS 16, One Way ANOVA and t-test were applied.

**Results:** More than 50% of students had high attitude and knowledge towards health and food safety and washing hands before cooking. Further, more than 60% of students had low attitude on other items such as unimportance of food additives in food safety. Besides, more than 50% of students had low knowledge about best temperature to store cooked food which is between 5 to 65°C and the most appropriate plastic containers to keep food healthy. About 87.3% of students had good knowledge about food borne diseases. The results of statistical tests indicated that there was a significant relationship between students' attitude and taking courses related to health and food safety ( $p=0.01$ ). Furthermore, we found a significant relationship between students' knowledge and their college ( $p=0.001$ ) and major ( $p=0.02$ ).

**Conclusion:** Obtained results revealed that students from some colleges and some majors had low knowledge of health and food safety. Therefore, it is necessary to hold training programs through workshops or inclusion of courses in curriculum of majors that lack such credits.

**Keywords:** Knowledge, Attitude, Health, Food Safety, Tabriz, University, Student

#### **Malnutrition and stroke disability in hospitalized patient: a community-based study**

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**Objectives:** malnutrition is prevalent in stroke patients and has been associated with poor outcomes in stroke. The present study was performed to assess the nutritional status and the risk of malnutrition in stroke patients. In addition, their relationship with clinical outcomes and three-month follow-up mortality was assessed.

**Materials and Methods:** in this cross-sectional study, 285 ischemic stroke patients were studied.



Each patient responded to a brief questionnaire regarding demographic variables, admission origin, comorbidities and preexisting complications at the time of admission. Furthermore, blood pressure was measured and biochemical tests were performed. Stroke-related disability and nutritional status were assessed by the Modified Rankin Scale (mRS) and the Mini Nutritional Assessment (MNA), respectively. Data were analyzed using SPSS, version 17.0 on a personal computer.

**Results:** one hundred and eighteen (52.6%) patients suffered from dysphagia. About 7.5 and 71% of the patients had mRS scores of 1 and 2, respectively. According to the MNA scores, 12.5, 49.5, and 37.9% of the patients were classified as well-nourished, at the risk of malnutrition, and malnourished groups, respectively. Anthropometric parameters were not different between the groups and all measured biochemical parameters were in the normal range, except FBS. Statistically significant differences were observed for dysphagia and mRS scores ( $p < 0.001$ ) and comorbidity during hospitalization ( $p < 0.001$ ). There was a statistically significant association between MNA score and calf circumference means ( $p < 0.001$ ).

**Conclusion:** the findings of the present study underline the importance of nutritional status in stroke patients. The majority of patients were not well nourished and older patients were vulnerable to malnutrition. There is a serious need to put emphasis on appropriate screening tools and nutritional interventions in these patients.

**Keywords:** stroke patients; modified Rankin scale; Mini nutritional assessment; malnutrition; dysphagia

#### Oral folate and vitamin B 12 in dialysis patients with hyperhomocysteinemia

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**Objectives:** Folic acid and vitamin B 12, alone or in combination have been used to reduce homocysteine levels in dialysis patients. We aimed to assess the efficacy of high doses of oral

folate and vitamin B 12 in reducing plasma homocysteine levels after a 12-week treatment.

**Materials and Methods:** Thirty-two dialysis patients aged 10-324 months screened for hyper homocysteinemia. Then cases with hyper homocysteinemia received oral folate 10 mg/day with sublingual methyl cobalamin 1 mg/day for 12 weeks. In pre- and post-intervention phases, plasma homocysteine concentration, serum folate, and vitamin B 12 levels were measured. Changes in plasma homocysteine, serum folate, and vitamin B 12 concentrations were analyzed by paired t tests, and P values  $< 0.05$  were considered significant.

**Results:** Eighteen (56.2%) patients had hyper homocysteinemia. Vitamin B 12 and folate levels were normal or high in all cases. Two patients were lost due to transplant or irregular drugs consumption. Plasma homocysteine levels were reduced in all, and reached normal values in 50%. A statistically significant differences between first homocysteine levels with levels after intervention was found (95% CI, 5.1-8.9,  $P = 0.0001$ ).

**Conclusion:** Oral folate 10 mg/day in combination with sublingual vitamin B 12, 1 mg/day can be considered as a favorable treatment for hyper homocysteinemia in dialysis patients.

**Keywords:** Hyper homocysteinemia, Folate, Vitamin B 12, Dialysis

#### From Vitamin E Content of Formulas to Vitamin E Intake of Infants

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**Objectives:** The roles of nutrition in the pediatric population cannot be underestimated. Formula, as the sole source of nutrition in some infants should support normal growth and development of infants for at least the first four months of life. Infant formulas are major dietary contributors to an infant's nutritional intake. All formulas must contain minimum amounts of all nutrients known or thought to be required by infants, and increasing emphasis is placed on avoiding specified maximum amounts of each nutrient. Aim of this study was to determine vitamin E



content of infant formulas and compare vitamin E intake from formulas with adequate intakes (AI).

**Materials and Methods:** In this study nine different brands of formulas were supplied from pharmacies in Tabriz. (Five starter formulas and four follow-on ones). One of the starter formulas was special for preterm and low-birth-weight (LBW) infants. Quantification of vitamin E in formula samples was done by HPLC-UV at 296 nm. Vitamin E intake was calculated by the amount of milk recommended to be used in a day and compared to AI. AI-recommended amount to be used in a day-of vitamin E for birth to six month is 4 mg/day and seven to twelve month is 6 mg/day.

**Results:** All formula brands in the most age groups, provided more than 100% of AI for vitamin E, except for one follow-on brand. All brands had vitamin E content in the recommended range (0.5 to 5.0 mg/ 100 Cal) except one LBW infant formula.

**Conclusion:** Although intake of vitamin E was more than AI in most cases, vitamin content of formulas was in the recommended range except for one LBW infant formula. Considering high amounts of all nutrients including oxidant nutrients like iron in LBW infant formulas it is rational to have higher amount of vitamin E as an antioxidant.

**Keywords:** Vitamin E, Infant formula, Adequate Intake, Quantification, High-Performance Liquid Chromatography.

#### **The effect of repeated administration of CRH into Hypothalamic Paraventricular and Central Amygdala nuclei on food intake in adult male rats**

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**Objectives:** Corticotrophin releasing hormone (CRH) is one of the interventional neuropeptide in the Hypothalamic-Pituitary-Adrenal (HPA) axis and one of the important regulatory factors in energy homeostasis. The CRH receptors are

distributed within the effective centers on feeding behavior, Hypothalamic Paraventricular nucleus (PVN), and reward system, Central Amygdala (CeA). Pervious studies demonstrated acute administration of CRH had anorectic effects. Therefore, this study tries to investigate the effect of repeated administration of CRH in two main centers of appetite, PVN and CeA, on food intake.

**Materials and Methods:** Twenty four male Wistar rats were distributed into control, sham, CRH treated PVN and CRH treated CeA groups. The CRH (2µg/kg) was administrated into the PVN and CeA for 8 days, as well as Saline for sham group. The food consumption was measured, after a period of food deprivation about 16- 18 hr.

**Results:** The results showed that cumulative food intake (3-hour consumption) significantly increased ( $P < 0.05$ ) in the CRH treated PVN group when compared to control group. Also, the repeated administration of CRH in the CeA caused a slight and insignificant increase in total food intake compared to control group.

**Conclusion:** It seems, despite of anorectic effect of acute administration of CRH, repeated administration of CRH in both nuclei, PVN and CeA, has orexigenic effects and can promote feeding. It is probable that subchronic administration of CRH in PVN activates the HPA axis and via interacting with orexigenic neural circuits or neuropeptides increases the food consumption. Pervious studies have shown, the activation of CRH receptors in CeA increase the dopamine level in mesolimbic system and subsequently the reward system activation by CRH-dopamine pathway could increase the food intake. Overall, CRH receptors of PVN and CeA nuclei could modulate the feeding behavior with orexigenic outputs, although the exact neural pathways are not clear and additional studies need to be carried out to clarify neuronal pathways by which CRH receptors exerts inhibitory or stimulatory effects on food intake as a function of time.

**Keywords:** Corticotrophin Releasing Hormone, Hypothalamic Paraventricular nucleus, Central Amygdala, Food intake, Rat.

#### **The effect of turmeric derivative, curcumin, on atherosclerosis**

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**Objectives:** Atherosclerosis is one of major cause of morbidity and mortality in the world and it currently takes 17.3 million lives annually supporting the necessity of further attentions to prevent and treat of this disease. Endothelial proliferation is a key factor in atherosclerosis pathology. There are several studies showing the role of thrombin in proliferation of endothelial cells and formation of atherosclerotic plaque. There is growing body of data showing the anti-proliferative effect of curcumin in endothelial cells; however, the molecular mechanism is still unknown. Curcumin, the dried root of turmeric, is an agricultural product that is mainly used as a food coloring and flavoring agent. Here we investigated the mechanism of anti-proliferative effect of curcumin on thrombin-induced cell proliferation in Human Umbilical Vein Endothelial Cells (HUVECs).

**Materials and Methods:** First we analyzed the mechanism of the stimulatory effect of thrombin on overexpression of cyclin D 1, using specific pharmacological inhibitors of Wnt/ $\beta$ catenin and mTOR signaling pathways. Next, to determine the anti-proliferative activity of curcumin the expression level of cyclin D 1 was analyzed in thrombin-stimulated endothelial cells using Western blotting.

**Results:** We showed that thrombin increases expression of cyclin D 1 by activating Wnt/ $\beta$ catenin and mTOR signaling pathways. However, pretreatment of cells with curcumin suppressed proliferative signaling functions of thrombin in HUVEC. Our further studies showed that inhibitory effect of curcumin on thrombin signaling is abrogated in the presence of Dorsomorphin, a specific inhibitor of AMPK signaling, suggesting that activation of AMPK signaling by curcumin is essential in anti-proliferative effect of this compound.

**Conclusion:** Our finding demonstrated that turmeric derivative, curcumin, antagonizes growth and cell-cycle progression through activation of AMP-Kinase and inhibition of Wnt/ $\beta$ -catenin and mTOR in HUVEC cells. These results support curcumin as a novel potential anti-proliferative drug in thrombin-induced cell proliferation in several diseases including atherosclerosis, neurodegeneration and cancer.

**Keywords:** Atherosclerosis, Thrombin, cyclin D 1, Curcumin, AMPK

### **The effects of vitamin D supplementation on glucose control and insulin resistance in patients with diabetes type 2: A clinical trial**

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**Objectives:** Vitamin D deficiency is prevalent in diabetes type 2 and this vitamin may be related to insulin action. This randomized controlled trial study was done to evaluate the effect of vitamin D supplementation on glucose control and insulin resistance in patients with diabetes type 2.

**Materials and Methods:** Participants of this clinical trial study consist of 28 patients with type 2 diabetes who received 100 microgram (4000 IU) vitamin D and 30 diabetic patients who received placebo for 2 months. The effect of vitamin D on glucose control was assessed by measuring HbA<sub>1c</sub> and insulin resistance as HOMA-IR at the baseline and the end of the intervention.

**Results:** The results of this study showed a significant decrease in HbA<sub>1c</sub> ( $p < 0.001$ ) and insulin concentration ( $p = 0.048$ ), but a non-significant decrease in HOMA-IR in vitamin D group. Also, HDL-C level increased significantly in both of vitamin D ( $p = 0.046$ ) and placebo groups ( $p = 0.028$ ).

**Conclusion:** It seems that vitamin D supplementation has beneficial effects on glucose homeostasis and can increase insulin sensitivity in diabetic 2 patients.

**Keywords:** Vitamin D, Diabetes type 2, HbA<sub>1c</sub>, Insulin resistance

### **The relationship between consumption of micronutrients and macronutrients with sleep quality in Adolescents**

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**Objectives:** In order to have a satisfactory performance at school, enough sleep is really critical for children and adolescent. Lacks of sleep, low quality sleep, and insomnia are



ordinary problems among adolescents and have a profound impact on memory and the children's performance at school. Some studies show there is a connection between nutrition and sleep disorders. In spite of this, other studies showed that there is no significant relationship between nutrition and quality of sleep and they suggest that further studies are necessary. Thus, the present study designed and carried out to examine the relationship between macro and micro-nutrients intake and quality of sleep in adolescents.

**Materials and Methods:** This is a descriptive-analytical study which was carried out in the city of Qazvin. Adolescents were selected using multistage random cluster sampling method. Nutritional information was collected by Food Frequency questionnaire. The sleep quality measured by BEARS standard questionnaire. All information was analyzed with student's T-test using SPSS- 16.

**Results:** 319 adolescents were selected for this study & they were 50.8% girls and 49.2% boys. Results showed that there is no significant relationship between sleep quality and calorie or macro-nutrients intake, but there is a significant relationship between sleep quality and omega-3 fatty acids (DHA and EPA) ( $p \leq 0.05$ ). Comparing to the mean of omega-3 fatty acids intake in adolescents with low quality sleep, in people with high quality sleep the mean of omega-3 fatty acids intake is significantly higher.

**Conclusion:** Considering the relationship between omega-3 fatty acids intake and the sleep quality in adolescents, it has been suggested to use fatty acids in the diet of adolescence suffering from sleep disorders.

**Keywords:** Macronutrients, Micronutrients, Quality sleep, Adolescent

#### Various effects of omega 3 and omega 3 plus vitamin E supplementations on serum glucose level and insulin resistance in patients with coronary artery disease

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**Objectives:** Omega 3 and vitamin E are two critical nutrients which include beneficial effects in coronary artery disease (CAD). The aim of this study was to assess the effects of omega 3 alone supplementation or in combination with vitamin E on serum glucose and lipid levels and insulin resistance in CAD patients.

**Materials and Methods:** Participants of this clinical trial included 60 male patients with CAD who selected from Tehran Heart Center in Tehran, Iran in 2014. They received 4 g/day omega 3 plus 400 IU/day vitamin E (OE), 4 g/day omega 3 with vitamin E placebo (OP), or omega 3 and vitamin E placebo (PP) for two months. Serum glucose, lipids and insulin were assessed and HOMA-IR was calculated before and after the trial and effects of these nutrients on the highlighted parameters were compared within the study groups.

**Results:** Serum glucose level increased significantly in OP group ( $P=0.004$ ), but not in OE group. OE and OP groups showed a significant decrease in fasting serum TG ( $P=0.020$  and  $P=0.001$ , respectively). Serum insulin and HOMA-IR decreased significantly in OE group ( $P=0.044$  and  $P=0.039$ , respectively) but did not change significantly in OP group.

**Conclusion:** Although, omega 3 supplementation may include adverse effects on serum glucose level, co-administration of omega 3 and vitamin E can beneficially decrease serum insulin and insulin resistance in CAD patients.

**Keywords:** CAD, Omega 3, Vitamin E, Glucose homeostasis, Insulin resistance

#### Vitamin D Deficiency Mediates the Relationship between Dietary Patterns and Depression: A Case-Control Study

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**Objectives:** Depression, as one of the most common psychological conditions, is a major contributor to disability-adjusted life years lost in the world. Due to the complex interactions between nutrients and foods, nutritional epidemiologists have suggested the use of dietary pattern approach in investigating diet-disease relations. Data have been evaluated the association between dietary patterns and risk of depression are inconclusive. Also some studies suggested hypo-vitaminosis D may represent an underlying biological vulnerability for depression. So, we aim to identify dietary patterns in relation with depression, also investigating if vitamin D as biomarkers mediated this association.

**Materials and Methods:** In this individually matched case-control observational study, 110 depressed patients and 220 healthy individuals were recruited for the extraction of dietary patterns; Patients were diagnosed by psychiatrists as major depressive disorder, using the criteria of the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV). Dietary intakes of the subjects in the last 12 months were assessed using a valid and reliable semi-quantitative food frequency questionnaire. Dietary pattern derived with factor analysis. 43 depressed patients and 43 healthy individuals among all cases and controls were selected randomly for the measurement of serum level 25(OH) D. While evaluating the relationship between quartiles of dietary patterns and depression, vitamin D are considered as potential mediator variable.

**Results:** we observed a significant and negative relationship between depression and serum vitamin D after adjustment for many potential confounders (OR: 0.93 (CI: 0.87-0.99)). We also identified two healthy and unhealthy dietary patterns by factor analysis. The healthy dietary pattern led to significantly lower odds ratio (OR: 0.39 CI: 0.17-0.92), P trend: 0.02) for depression and the unhealthy dietary pattern resulted in significantly higher (OR: 2.6 CI: 1.04-6.08 P trend: 0.02). Additionally, in mediated analysis Healthy dietary pattern is related to decreased depression via increasing the serum level of vitamin D; whereas, the unhealthy dietary pattern is related to increased depression via decreasing the serum level of vitamin D after adjusted for potential confounder including daily energy intake.

**Conclusion:** This study showed that Vitamin D deficiency mediates the relationship between Dietary Patterns and Depression, but further prospective studies are required.

**Keywords:** Vitamin D deficiency, Dietary patterns, Depression

### Evaluation of the Status of Maternal Weight Gain during Pregnancy in East Azerbaijan Province in 2016

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**Objectives:** One of the most important factors associated with low birth weight and Intrauterine Growth Restriction (IUGR) is maternal weight gain during pregnancy. Many studies have reported a positive relationship between gestational weight gain and birth weight. Due to the importance of maternal weight gain during pregnancy for maternal health and development of the fetus, in this study, the rate of maternal weight gain during pregnancy has been investigated in East Azerbaijan Province in 2016.

**Materials and Methods:** In present survey, 39606 pregnant women who had routine care during pregnancy were studied. Maternal weight and height were collected during pregnancy and BMI was calculated and then it was plotted in the forms of weight curves for pregnant women. Mother's weight gain status was determined according to the standard curve.

**Results:** Of 11469 pregnant women evaluated in Tabriz, at the end of pregnancy, 63.4 % had optimal maternal weight gain, 10% had suboptimal maternal weight gain and 26.7 % had weight gain greater than desired. Also, in the entire province, the incidence of optimal weight gain, suboptimal weight gain and weight gain greater than desired were 67.2%, 12.8% and 21.6%, respectively.

**Conclusion:** According to the results, the rate of weight gain less and higher than the desirable had relatively high prevalence. Since excessive and lower weight gain are associated with preterm birth, educational programs and nutrition counseling to pregnant women referred to health centers should be highly regarded.

**Keywords:** Pregnant women, BMI, Weight gain, East Azerbaijan

### Perception of Different Aspects of Nutrition and the Effect of the Spiritual Aspect of Nutrition on Health



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**Objectives:** After centuries paying particular attention to physical health, human attention has been attracted to other aspects of human health meaning the psychological, social, and especially spiritual health in the past decades. Spiritual aspect of health, is the coordinator of other dimensions and improves mental function. spiritual well-being issues such as halal and haram and food purity should also be considered.

**Materials and Methods:** This was a cross-sectional study conducted in Shahid Beheshti university staff. Pearson's correlations were used to calculate variable associations. Linear multiple regression analysis was performed to identify variables contributing to an explanation of different aspects of nutrition and health.

**Results:** In this study, 128 personnel participated. Positive correlations were observed between education and total scores of nutrition aspects ( $r=0.049$ ,  $p\text{-value}<0.05$ ) and physical aspect of nutrition for males ( $r=0.052$ ,  $p\text{-value}<0.05$ ). Also there is a significant correlation between mental aspect of nutrition and social aspect of nutrition ( $r=0.740$ ,  $p\text{-value}<0.01$ ).

**Conclusion:** Age, sex and education, are among the factors that may affect the nutritional attitude. Therefore, using different methods to improve the nutritional practice of society considering its dimensions and taking the factors influencing it into account seems to be essential.

**Keywords:** Nutrition spirituality, Education, Shahid Beheshti university staff, Iran.

#### Association between Disordered Eating Behavior and Sleep Disturbance in Medical Students of Shahid Beheshti University

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**Objectives:** Recent studies have shown that sleep difficulties could be related to the abnormal eating patterns. Eating and sleeping behaviors

both affects human living. Dysregulation of these behaviors leads to distress and negative health and psychological outcome. This study aimed to investigate the association between Disordered Eating Behavior and Sleep Disturbance in the sample of medical students.

**Materials and Methods:** This was a cross-sectional study conducted in Shahid Beheshti University. Pearson's correlations were used to calculate variable associations. Linear multiple regression analysis was performed to identify variables contributing to an explanation of sleep difficulties.

**Results:** Totally, 172 participants were studied. It was observed that BB (bulimic behaviors) and SPE (social pressure to eat) were the dimensions that significantly explained difficulties initiating and maintaining sleep and overall sleep disturbances. Negative correlation between BMI (body mass index) and DMS (difficulties maintaining sleep) was not remarked, found in males.

**Conclusion:** This association is explained by measured confounders such as sex and age. The results of this study indicated that a normal eating behavior had a positive relationship with the quality of sleep.

**Keywords:** Disordered Eating Behavior, Sleep Disturbance, Medical Students

#### Effects of postconditioning with fructose against global ischemia/reperfusion-induced arrhythmias and infarct size in isolated heart

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**Objectives:** Cardiovascular diseases including ischemia/reperfusion (I/R) injuries are one of the main causes of mortality in the world. In the present study, postconditioning effect of fructose on I/R-induced infarct size and arrhythmias were investigated in isolated rat heart.

**Materials and Methods:** Isolated rat hearts were divided into 7 groups, mounted on a Langendorff apparatus at constant pressure then subjected to 30 min global ischemia followed by 120 min reperfusion. In the control group (1), normal Krebs-Henseleit (K/H) solution perfused into the hearts throughout the experiment. In the treatment groups (2,3,4), the hearts were perfused with glucose-free K/H solution in which fructose replaced glucose at concentrations of 12, 24 and 48 mM for 20 min at the beginning of reperfusion time. In the other treatment groups (5,6,7), the hearts were perfused with fructose at



12, 24 and 48 mM coincident with glucose for 20 min then continued perfusion with normal K/H solution. Cardiac arrhythmias including number of ventricular tachycardia (VT), total ventricular ectopic beats, incidence and duration of VT, reversible and irreversible ventricular fibrillation were recorded and analyzed during the first 30 min of reperfusion. Computerized planimetry method was used to determine volume and percentage of cardiac infarct size.

**Results:** Administration of fructose as a postconditioning agent clearly reduced volume and percentage of infarct size in the treatment groups. The effect was statistically significant for groups 4-7 ( $P < 0.05$ ). However, replacing glucose with fructose in K/H solution had no significant effect against reperfusion arrhythmias.

**Conclusion:** The results showed that administration of high concentration of fructose and fructose coincident with glucose reduced infarct size subsequent to global ischemia in isolated rat hearts. Probably, fructose by providing ATP for Na<sup>+</sup>/K<sup>+</sup>-ATPase pump then preventing Na<sup>+</sup> and Ca<sup>2+</sup> accumulation may inhibit cardiomyocytes necrosis and death during I/R injuries.

**Keywords:** Fructose, Postconditioning, Ischemia/Reperfusion, Isolated heart.

### Assessment of nutritional status of mothers at the onset of pregnancy in terms of body mass index (BMI) in east Azerbaijan province

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**Objectives:** One of the most important factors affecting birth weight is maternal weight before pregnancy. Many studies have reported a positive relationship between maternal pre-pregnancy weight and birth weight. The symptoms that are related to pre-pregnancy weight or insufficient weight of the mother during pregnancy are high blood pressure, preeclampsia, gestational diabetes, neonatal macrosomia, premature rupture of membranes, low Apgar score at birth, low birth weight, preterm birth and perinatal mortality. Therefore, in this study we examined the nutritional status of the mother at the onset of pregnancy.

**Materials and Methods:** In this survey, 39606 pregnant women who had routine care during pregnancy were studied. Maternal pre-pregnancy weight and height were collected and BMI was calculated. Based on the calculated BMI the

situation at the beginning of pregnancy was identified.

**Results:** The results showed that of the 1 1469 women surveyed in Tabriz city, 3.6% of mothers were underweight 48.4% of them had normal weight, 32% were overweight and 16.3% of women were obese. Also, in East Azerbaijan province, prevalence of underweight, normal weight, overweight and obesity were 3.9%, 53.5%, 29% and 13.5% respectively.

**Conclusion:** The results of this study showed that the prevalence of overweight and obesity was high at the beginning of pregnancy in East Azerbaijan province. Therefore, nutritional educations were necessitated for overweight and obese women before pregnancy to reduce the risk of pregnancy complications.

**Keywords:** Pregnancy, BMI, East Azerbaijan

### Investigation on the effect of ultrasound processing on yield extraction and physicochemical characteristics of *Elaeagnus angustifolia* kernel

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**Objectives:** This study aims to examine the physico-chemical properties of *Elaeagnus angustifolia* kernel powder and its oil as well as the impact of ultrasound on the extraction efficiency and some qualitative properties of *Elaeagnus angustifolia* kernel oil.

**Materials and Methods:** For this purpose, *Elaeagnus angustifolia* kernel powder (the dominant genotype in Khorasan) was prepared and its moisture, ash, protein, fiber, carbohydrate percentage and the percentage of oil was measured. Then the oil was extracted from the seed powder and the physico-chemical properties of its extraction efficiency of the resulting oil, as well as the specific weight (or density), refractive index, sterol composition and total tocopherol, total phenolic compounds, non-saponification Value, the structure of the fatty acid, Iodine Value, Peroxide Value, Acid Value and color was specified. Ultrasound waves with the intensity of 20 watts per square meter was applied at three intervals of 30, 45 and 60 minutes to examine the effects of ultrasound on physico-chemical properties of *Elaeagnus angustifolia* kernel oil.



**Results:** The experiments were conducted in a completely randomized design with three replications. Average and diagrams were drawn with software MStatC and Microsoft Excel. The results showed that *Elaeagnus angustifolia* seed oil extraction, the percentage using ultrasound were at the time of 30 minutes ( $4.61 \pm 0.06\%$ ), 45 minutes ( $4.75 \pm 0.02\%$ ) and 60 minutes ( $4.85 \pm 0.04\%$ ), in compare with the oil is extracted without ultrasounds by solvent ( $4.2 \pm 0.04\%$ ) and acid value were increased. Also In comparing the physico-chemical properties of the *Elaeagnus angustifolia* kernel oil extracted via using solvents, and using the ultrasound at 30, 45 and 60 minutes, the density, peroxide value, clarity and transparency was unchanged, while the refractive index was increased at 60 minutes of ultrasound. The degree of green and yellow color of the oil decreased by increasing the ultrasound time.

**Conclusion:** As a result of the rise in the incidence rate of *Elaeagnus angustifolia* seed oil extraction using ultrasound process in times 30, 45 and 60 minutes also significant was relatively low.

**Keywords:** *Elaeagnus angustifolia* kernel, extraction, ultrasound

#### **Adherence to Western dietary pattern is related to higher prevalence of aggression**

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**Objectives:** Limited data are available linking diet and aggression. We aimed to examine the association between major dietary patterns and aggression score among Iranian adolescent girls.

**Materials and Methods:** In this cross-sectional study, data on 670 adolescent females were examined. Dietary intake of study participants was assessed using a 168-item self-administered Semi-quantitative Food Frequency Questionnaire which was designed and validated specifically for Iranian population Factor analysis was used to identify major dietary patterns. A validated Persian version of the Buss-Perry questionnaire were used for the assessment of aggression. We analyzed our data using crude and adjusted models.

**Results:** Three specific dietary patterns were identified, that were categorized as: Healthy, Fast food and Western dietary patterns. A significant positive association was found between more adherence to Western dietary pattern and the presence of a high aggression score (OR: 2.00;

95% CI: 1.32-3.05, p-trend= 0.00 1); even after adjustment for potential cofounders, these findings were significant. **Discussion:** However, there was no significant relationship between Healthy and Fast food dietary patterns and the prevalence of a high aggression score. Further studies, particularly longitudinal intervention studies may be required to clarify this relationship.

**Keywords:** Dietary pattern, Adolescent, Aggression, Factor Analyses.

#### **The interaction of VEGF genetic variants with the levels of trace elements intake in risk of metabolic syndrome**

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**Objectives:** The prevalence of metabolic syndrome is increasing and the exact mechanism leading to MS is still unclear. There is a complex interaction between genetic, metabolic, and environmental factors. The aim of this study was to investigate the interaction between dietary intakes of trace elements such as iron, copper, zinc, manganese, selenium and iodine with vascular endothelial growth factor variants (rs692 1438, rs44 16670, rs6993770, and rs 10738760), on the risk of metabolic syndrome.

**Materials and Methods:** A total of 248 cases and 100 controls ranged from 35 to 65 years old were selected from Mashhad, Iran. Dietary intake was measured with a 24 hour recall questioner and the daily average of energy and nutrients intake was calculated by using the Diet plan6 software. DNA was extracted from all participants. The SNPs were genotyped by Geno screen using a Sequenom iPLEX Gold assay. For data analysis the Students't-test, the  $\chi^2$  test and logistic regression were used. Data analysis was performed using SPSS 1 1.5 software.

**Results:** All SNPs in both populations were in agreement with the Hardy-Weinberg equilibrium. There was a significant interaction between low iron intake with rs6993770 ( $\beta = 0.10$ ,  $p < 0.05$ ) and low zinc and high manganese intake with rs692 1438 in association of metabolic syndrome risk respectively ( $\beta = -0.17$ ,  $p < 0.05$ ,  $\beta = -0.30$ ,  $p < 0.05$ ).

**Conclusion:** The main finding of this study is that in association with metabolic syndrome low iron intake had a positive interaction with rs6993770 variant while low zinc and high manganese



intake had a negative interaction with rs6921438.

**Keywords:** Metabolic syndrome, VEGF, polymorphism, SNPs, trace element

### Concurrent use of n-3 fatty acids and Rosa damascena extract (RDE) reduces effectively the symptoms of primary dysmenorrhea

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**Objectives:** Given the insufficient and conflicting results of nutritional supplements on the symptoms of primary dysmenorrhea (PD) and with regard to possible synergistic effects or interactions, the purpose of this study was to investigate the effects of separate and concurrent supplementation of fish oils (FO) containing n-3 fatty acid and Rosa damascene extract (RDE) on PD symptoms.

**Materials and Methods:** In this double blind clinical trial, 105 university students with primary menstrual pain in most recent years, without significant pathology, and moderate/severe dysmenorrhea according to visual analogue scale (VAS); were randomly assigned into one of four groups: (1) 1000 mg/day FO (n=26), (2) 1000 mg/day RDE (n=27), (3) fish oil and RDE concurrently, at the same dose (n=27), or the control group (n=25). All measurements were performed three times; at the beginning, 30th day and 60th day. Symptoms including as nausea, vomiting, diarrhea, bloating, cramp, low back pain, headache, fatigue, anxiety, sweat, weakness, dizziness, drowsiness, and feeling cold, were measured by VAS method.

**Results:** After 2-months treatment, supplementation with RDE significantly reduced severity of bloating ( $p < 0.01$ ) and sweat ( $p < 0.01$ ), but FO supplementation had no significant effect on PD symptoms. Concurrent use of FO and RDE significantly decreased severity of diarrhea ( $p = 0.038$ ), weakness ( $p < 0.01$ ), dizziness ( $p < 0.01$ ) and feeling cold ( $p = 0.049$ ).

**Conclusion:** Our results suggest concurrent supplementation of omega-3 fatty acids and RDE could be more effective than separate use of them in decreasing the PD symptoms; however, larger

trials are needed to confirm these preliminary findings.

**Keywords:** Dysmenorrhea, Rosa, fish oils, symptoms

### Association of Dysglycemia with Mortality in Children Receiving Parenteral Nutrition in PICU

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**Objectives:** One of the most important complications of parenteral nutrition is a high incidence of hyperglycemia. The aim of this study was to assess the effect of parenteral nutrition dysglycemia on clinical outcomes among critically ill children in PICU.

**Materials and Methods:** Charts of 201 critically ill children admitted in PICU during 2012-2015 were reviewed retrospectively. We included patients who were <6 years old and had received at least 60% of total energy from PN for a minimum of 5 days in PICU. The exclusion criteria were patients with diagnosis of diabetes mellitus, primary hypoglycemia, inborn errors of metabolic and patients who received dialyses.

**Results:** We defined  $BS \geq 150$  mg/dl as hyperglycemia and  $BS \leq 60$  mg/dl as hypoglycemia. Based on blood glucose, patients were divided into four groups: "Only hyperglycemia group": having at least one hyperglycemia episode. "Only hypoglycemia group": having at least one hypoglycemia episode. "Glucose variability": having both hypoglycemia and hyperglycemia episodes. "Normoglycemia": all glucose measurements were in normal range. Hyperglycemia and hypoglycemia occurred in 52.8% and 24.9% of all children, respectively. Glucose variability occurred in 13.9% of all children. Multiple logistic regression analysis showed that glucose variability (OR=3.1; 95% confidence interval, 1.13- 16.843) and hyperglycemia (OR=2.14; 95% confidence interval 1.1-4.57) were associated with mortality independently. In "only hypoglycemia" group (n=22) there were only three deaths. There were no significant differences in the quantities of macronutrients prescribed via parenteral nutrition among the four blood glucose groups.

**Conclusion:** Results of this study showed that hyperglycemia and glucose variability are strong predictors of mortality in pediatrics receiving parenteral nutrition.

**Keywords:** Pediatrics, parenteral nutrition, hyperglycemia, Intensive Care Unit

### Western dietary pattern is associated with elevated high sensitive C-reactive protein among Iranian girl adolescents

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**Objectives:** Serum high sensitive C-reactive protein (hs-CRP), is an indicator of low grade inflammation, and is associated with several non-communicable diseases including cardiovascular disease. The effects of diet on inflammation has not been extensively investigated particularly among adolescents. We aimed to examine the association between major dietary patterns and elevated plasma level of hs-CRP among large population of Iranian girl adolescents.

**Materials and Methods:** In this cross-sectional study, a total of 750 adolescent girls were recruited using a random cluster sampling from several schools in different areas of Mashhad city, Iran. The dietary intakes of study participants were collected using a 168-item Food Frequency Questionnaire (FFQ). Anthropometric and biochemical parameters were obtained applying standard protocols. Factor analysis was used to identify major dietary patterns.

**Results:** Three specific dietary patterns were identified, that were categorized as: Healthy, Traditional and Western dietary patterns respectively. A significant, positive association was found between a Western dietary pattern and elevated hs-CRP (after adjusting for potential confounders, OR: 1.68; 95% CI: 1.05-2.69, p-trend= 0.03). However, there was no significant relationship between healthy and traditional dietary patterns and serum hs-CRP.

**Conclusion:** Our results indicate that there is a significant positive association between a Western type dietary pattern and serum hs-CRP among Iranian adolescent girls though healthy and traditional dietary patterns were not found to be significant predictors of elevated hs-CRP among study participants. Further studies,

particularly longitudinal intervention studies may be required to clarify this relationship.

**Keywords:** Dietary pattern; hs-CRP; Cardiovascular diseases; Adolescent.

### Olive Oil: A Novel Regulator of the Hypothalamic-Pituitary-Adrenal Axis

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**Objectives:** Dysregulation of the hypothalamic-pituitary-adrenal (HPA) axis, particularly elevated levels of cortisol, plays a key role in the pathophysiology of depression. This study is the first clinical trial designed to determine the effect of olive oil consumption on salivary cortisol indicators, oxidative stress, blood pressure, and anthropometric indices in depressed patients.

**Materials and Methods:** This research was a multicenter double-blind parallel randomized controlled clinical trial. 73 patients with major depression aged 18-65 years were selected by purposive convenience sampling and assigned to intervention (n = 36) or control (n = 37) groups using stratified block random allocation. The stratification was performed based on the severity of depression (mild, moderate, and severe) and taking antidepressants or not. For 52 days, the intervention group was given 25 milliliters/day extra-virgin olive oil, and the control group was given 25 milliliters/day sunflower oil. Salivary cortisol concentrations and serum malondialdehyde (MDA) levels were measured before and after the intervention. Cortisol concentrations were determined in saliva samples collected immediately (T0) and 30 minutes (T30) after awakening in the morning and used to calculate the cortisol awakening response (CAR) as well as the area under the curve with respect to ground (AUCG) and increase (AUCI). At the beginning, middle, and end of the study, subjects' blood pressure (in duplicate) and anthropometric indices including body mass index (BMI) and waist-to-height ratio (WHtR) were measured by standard equipment. As potential confounders, participants' diet, physical activity, and sleep patterns were monitored by appropriate questionnaires during the study. The paired- and independent-samples t tests and the repeated measures analysis were used for statistical comparisons.

**Results:** Between-group differences were significant for cortisol at T30 ( $P = 0.003$ ), CAR ( $P = 0.028$ ), AUCG ( $P = 0.016$ ), AUCI ( $P = 0.028$ ), and WHtR ( $P < 0.001$ ) and non-significant for cortisol at T0 ( $P = 0.25$ ), MDA ( $P = 0.40$ ), systolic blood pressure ( $P = 0.26$ ), diastolic blood pressure ( $P = 0.25$ ), and BMI ( $P = 0.53$ ).

**Conclusion:** Our findings suggest that extra-virgin olive oil can normalize the hyperactive HPA axis and exert positive changes in body fat distribution without affecting body weight.

**Keywords:** Blood pressure, Body fat distribution, Cortisol, Malondialdehyde, Olive oil

### The effect of Ramadan Fasting on Pro-oxidant and Anti-oxidant Balance in Patient with Non-Alcoholic Fatty Liver Disease

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**Objectives:** Ramadan is a famous month in the Islamic calendar during which people abstain from eating, drinking, and smoking from sunrise to sunset. This study was performed to investigate the effects of Ramadan fasting on Pro oxidant And Anti-oxidant Balance.

**Materials and Methods:** Overall, 50 patients with NAFLD, aged between 18 and 65 years, during June-July 2014 (Islamic calendar: 25 Shaban-8 Dhul Al-Qi'dah 1435) in Mashhad, Iran were recruited in this study. One week before Ramadan, 10 cc venous blood samples were drawn after 8- 10 hours of fasting; the same procedure was undertaken at the end of Ramadan (27th day). Some portions of serum samples were used immediately to measure pro-oxidant-antioxidant balance.

**Results:** The results have indicated that significant decrease in oxidative stress level ( $P$  value  $< 0.001$ ). Moreover, gender did not have any significant relationship with changes in oxidative stress level.

**Conclusion:** It seems that Ramadan fasting does have a significant effect on oxidative and pro-oxidant-antioxidant balance in Non-Alcoholic Liver patients; however, further studies are required to confirm this results.

**Keywords:** Oxidative Stress, Pro-Oxidant-Antioxidant Balance, Ramadan Fasting

### Effects of multispecies probiotic supplementation on glycaemia, blood lipids, anthropometric indices and blood pressure in prediabetic patients: A randomized clinical trial

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**Objectives:** Hyperglycemia that lacks diagnostic criteria for type 2 diabetes is called prediabetes, which is a high-risk condition for type 2 diabetes. Prediabetes is directly associated with overweight and obesity, lipid abnormalities and hypertension. Probiotics are live organisms that when consumed adequately, exert health benefits to their host. The present study aimed to evaluate effects of probiotic supplementation on glycaemia, blood lipids, blood pressure and anthropometric indices in prediabetic patients.

**Materials and Methods:** Sixty prediabetic patients were recruited from Isfahan Endocrine and Metabolism Research Center. Demographic and medical data were collected at baseline. Fasting blood samples were collected at baseline and after 8 weeks for biochemical analyses. Anthropometric measurements were done at the beginning and after 8 weeks of trial. Dietary assessment was done using food frequency questionnaire in the beginning. Physical activity was measured through three 1-day physical activity records. SPSS 16 was used for statistical analyses.

**Results:** Markers of blood lipids did not change significantly in either probiotic or placebo group. Fasting plasma glucose had a marginally significant reduction in probiotic group ( $p=0.08$ ) but glycosylated hemoglobin did not have any significant change in this group. BMI was significantly reduced in both groups. AC was reduced significantly in both groups with a marginally significant between group difference. WHR was significantly reduced in intervention group.

**Conclusion:** The present study could not show any beneficial effects of probiotics on blood lipids although these products were able to show favorable effects on fasting blood glucose, anthropometric parameters. Probiotics showed beneficial effects on systolic blood pressure although this significance disappeared after adjusting for confounders.

**Keywords:** probiotic, prediabetes, blood lipids, glycemia, anthropometric indices, randomized clinical trial

### The Relationship between Weight-Efficacy of Life style and Overweight and obesity

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**Objectives:** Self-efficacy beliefs are one of the most important predicting indices of a wide range of health behaviors, include eating behaviors. We examined weight-efficacy of lifestyle in overweight or obese individuals, comparing them to normal individuals to determine whether overweight or obesity is associated with decreased weight-efficacy in overweight or obese individuals.

**Materials and Methods:** In this case-control study, 108 individuals with BMI  $\leq 25$  as the overweight and obese group and 122 individuals with BMI between 18-25 as the normal group were selected using convenience sampling from among medical students of ShahidBeheshti Medical University in 1395-96. Data was gathered using the "Weight-Efficacy of Life style (WEL) questionnaire", the reliability of which had been evaluated and its validity was assessed using different methods. Data were analyzed by spss software (version 22) and using Kolmogorov-Smirnov Test, Mann-Whitney Test.

**Results:** Mean scores of Weight-Efficacy of Life style in four settings of social pressure, negative emotions, physical discomfort and positive emotions in the overweight and obese group were lower than those of the normal group.

**Conclusion:** Weight- Efficacy of Life style in the overweight or obese group compared to the normal weight individuals is low, especially in the settings of social pressure, negative emotions, physical discomfort and positive emotions . it seems that it is of crucial importance to consider the self-efficacy in weight loss programs.

**Keywords:** Weight- Efficacy of Life style, overweight, lifestyle, medical student

### Challenges for Quantitative Analysis of Food Samples Using Electrochemical Techniques

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**Objectives:** Kojic acid (KA) widely used as a food additive and preservative due to its effective function against microbial and chemical degradation through inhibiting the formation of dihydroxyphenylalanine from tyrosine in the

process of melanin biosynthesis. Moreover, it used as pesticide, antibiotic and plant growth regulator and plays an effective role in fermentation process. KA as a natural metabolic product of several species of the economically valuable genus aspergillus, penicillium and acetobacter, recently received extraordinary attention because of its valuable properties such as antibacterial function, chemical intermediate, enzyme inhibitor which deteriorates foods. In the current work, a fast, selective, high sensitive and simple electrochemical strategy was developed for trace analysis of KA in food samples by modified carbon paste electrode using cyclic voltammetry (CV) and square wave voltammetry (SWV) techniques.

**Materials and Methods:** Carbon paste electrode (CPE) was modified with ZnFe<sub>2</sub>O<sub>4</sub> nanoparticle and 1-butyl-3-methylimidazolium tetrafluoroborate (BMITFB) as a binder. Electro-oxidation behavior of KA on the modified electrode was investigated which indicated that the nanostructured modified electrode could efficiently promote electrocatalytic oxidation of KA. The electrochemical investigations were carried out using square wave voltammetry (SWV) and cyclic voltammetry (CV) techniques.

**Results:** After optimization of electrochemical analytical conditions using a ZnFe<sub>2</sub>O<sub>4</sub> /NPs/ 1B3MITFB/MCPE at pH 6.0 phosphate buffer (0.1 M), the oxidation peak current was found to vary linearly with its concentration in the range of 5.0-650.0  $\mu$ M for KA and satisfactory lower detection limit of 2.4  $\mu$ M KA. The ZnFe<sub>2</sub>O<sub>4</sub>/NPs/ 1B3MITFB/MCPE showed several advantages such as good reproducibility, low limit of detection (LOD) and simple preparation. Scanning electron microscope (SEM) and X-ray powder diffraction (XRD) studies were applied to characterize the synthesized ZnFe<sub>2</sub>O<sub>4</sub> nanoparticles.

**Conclusion:** The presence of 1B3MITFB and ZnFe<sub>2</sub>O<sub>4</sub> nanoparticles helped KA to have a favored orientation and reduce the effective electron transfer distance. The oxidation peak potential of the KA at a surface of ZnFe<sub>2</sub>O<sub>4</sub>/NPs/ 1B3MITFB/MCPE revealed that the designed biosensor can be useful in food analysis.

**Keywords:** Food samples, ZnFe<sub>2</sub>O<sub>4</sub> nanoparticle, Voltammetric sensor, Kojic acid analysis.

**The effects of Allium cepa aqueous-alcoholic extract on tracheal responsiveness to methacholine and ovalbumin in asthmatic rats**  
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**Objectives:** *Allium cepa* (*A. cepa*) or onion is a plant belonging to family Alliaceae. Antioxidant, antimicrobial, anti-hyperglycaemic, anti-diabetic and anti-inflammatory effects of this plant have been shown previously. In this study, effects of *A. cepa* aqueous-alcoholic extract on tracheal responsiveness to methacholine and ovalbumin (OVA) in asthmatic rats were examined.

**Materials and Methods:** Wistar rats were randomly divided into the control group (C), asthmatic group (A), A treated with *A. cepa* extract (AC, 0.175, 0.35, and 0.7 mg/ml) and dexamethasone (D, 1.25 µg/ml). The extract of *A. cepa* and dexamethasone were added to the animal's drinking water during sensitization period. Tracheal responsiveness to methacholine and OVA were assessed.

**Results:** The results indicated that tracheal responsiveness to methacholine and ovalbumin were increased in asthmatic animals compared to group C ( $p < 0.001$ ). In treated groups with two higher concentrations of extract of *A. cepa* and dexamethasone, tracheal response to methacholine and OVA were significantly decreased compared to asthmatic group ( $p < 0.05$  to  $p < 0.001$ ).

**Conclusion:** Findings of this study suggested that *A. cepa* extract has preventive effects on tracheal responsiveness in asthmatic animals. It can be concluded a potential therapeutic effect for *A. cepa* on allergic disorders and airway diseases such as asthma.

**Keywords:** *Allium cepa*, animal asthma model, tracheal responsiveness, methacholine, ovalbumin

### The effects of *Allium cepa* aqueous-alcoholic extract on lung inflammation

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**Objectives:** Bronchial asthma is the most common chronic diseases worldwide. Many inflammatory cells are involved in the pathogenesis of asthma. These cells release inflammatory mediators that it participates in the pathology of asthma. *Allium cepa* (*A. cepa*, an anion) belongs to the family Liliaceae contains pharmacological constituents that play roles as anti-allergic, anti-inflammatory and anti-oxidant against different progressive disorders. In this study, effects of *A. cepa* aqueous-alcoholic extract on lung inflammatory cells and phospholipase A2 (PLA2) level in bronchoalveolar fluid (BALF) of asthmatic rats were examined.

**Materials and Methods:** The 36 rats were divided into six groups of rats ( $n = 6$  in each groups): a) Control rats, Untreated sensitized rats, (group S), c) Sensitized group treated with dexamethasone 1.25 µg/ mL (group S+D) and Sensitized groups treated with *A. cepa* extract at 3 doses (AC 35, 70 and 140 mg/kg /day).

**Results:** PLA2 level, total and most differential WBC count were increased but lymphocytes decreased in asthmatic animals compared to group C ( $p < 0.05$  to  $p < 0.001$ ). Treatment of sensitized rats with dexamethasone and all concentrations of *A. cepa* lead to significantly decrease in total WBC and PLA2 level compared to asthmatic group ( $p < 0.001$ ). Two higher concentrations of *A. cepa* also significantly decreased neutrophil and eosinophil counts but led to significant enhanced of lymphocyte compared to asthmatic group ( $p < 0.05$  to  $p < 0.001$ ). Treatment of sensitized group with high concentration of *A. cepa* also significantly reduced monocyte count compared to asthmatic group ( $p < 0.001$ ).

**Conclusion:** *A. cepa* extract improved lung inflammatory cells in BALF of asthmatic rats. Based on these results, the plant showed a possible therapeutic potential on asthma.

**Keywords:** Bronchial asthma, *Allium cepa*, inflammatory cells, phospholipase A2 (PLA2)

### Dietary antioxidant and fiber intakes in relation to lower prevalence of depression in female adolescents

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**Objectives:** Depression is a major cause of morbidity and its global burden is increasing. However, studies suggest that there may be a relation between dietary nutrients and depression. The aim of this study is to assess the relationships between dietary antioxidant and fiber intakes with depression presence in female adolescents.

**Materials and Methods:** This cross-sectional study was carried out among 988 females between the ages of 12 and 18 that were selected from schools in Iran. Excluded cases are those with a history of auto-immune diseases, cancer, metabolic bone disease, hepatic or renal failure, cardiovascular disorders, malabsorption or thyroid, parathyroid or adrenal diseases. A validated food frequency questionnaire was used to evaluate dietary intake during the year. A Persian version of the Beck Depression Inventory (BDI) was applied for depression screening. Logistic regression was used to investigate the relationship between quartiles of antioxidants and fibers intakes and depression presence.

**Results:** There were no significant differences in age, weight, BMI, WC, physical activity, menstruation, hs-CRP, FBG, HDL-C, LDL-C, TC, and TG between depressed and healthy individuals. Lower intakes of beta-carotene, alpha-carotene, lutein, vitamin C, soluble and insoluble dietary fibers were seen in depressive patients compared to healthy subjects.

**Conclusion:** Our study showed that there are inverse relationships between more antioxidants and fiber intakes and depression presence. Further investigations are required to confirm these relationships and explore the basic molecular mechanisms of antioxidants and fiber in depression presence.

**Keywords:** Diet; Antioxidant; Dietary fibre; depression; adolescence

### Evaluation of serum adiponectin level and its association with nutrition status and serum lipids in the polycystic ovary syndrome women

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**Objectives:** Adiponectin, an adipocyte-secreted hormone, has important effects on the reproductive axis. However, the relationship between these adipocytes and polycystic ovarian syndrome (PCOS) has not been fully evaluated. The aim of study was to determine the potential association between serum adiponectin levels with anthropometric, hormonal and biochemical parameters in PCOS women compared to women with normal ovulatory cycles.

**Materials and Methods:** In this analytical descriptive study, 35 women with PCOS and 35 controls matched for body mass index (BMI) and age were studied. Anthropometric parameters were assessed. Serum lipid profiles and adiponectin levels were also measured.

**Results:** Serum adiponectin levels were significantly lower in PCOS women when compared to controls ( $P < 0.0001$ ). Obese PCOS women demonstrated significantly lower adiponectin levels than normal-weight women with PCOS and controls ( $P < 0.05$ ,  $P < 0.001$ ). Multiple regression analysis showed that there was a significant negative correlation between adiponectin levels with BMI ( $\beta = -0.32$ ,  $P < 0.05$ ) and WC ( $\beta = -0.38$ ,  $P < 0.001$ ) values in women with PCOS.

**Conclusion:** The findings suggest that serum adiponectin is inversely linked to the obesity in PCOS women. Nevertheless, more studies are required to confirm the results of this study.

**Keywords:** Adiponectin, Anthropometric, Lipid profile, PCOS.

### Implementing Image Analysis in Pomegranate Seed Clustering

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**Objectives:** Recent advances in computer image analysis made applicable the approach of automated quantitative analysis in order to group cultivars according to minor differences in seed traits that would be indiscernible in ocular inspection.

**Materials and Methods:** In this work, in order to cluster twenty cultivars of pomegranate seed, 9 image features and 21 physicochemical properties of them were extracted. The aim of this study was to evaluate if the information extracted from image of pomegranate seeds could be used instead of time consuming and partly expensive experiments of measuring their physicochemical properties. After data reduction with principal component analysis (PCA), different kinds of overlapping between these two types of data were controlled.

**Results:** The results showed that clustering base on all variables of image features contain more similar cultivars with clustering base on physicochemical properties. Therefore, by applying image analysis technique, the seeds almost were placed in different pomegranate clusters without spending time and additional costs.

**Conclusion:** It is possible to apply the information extracted from image of pomegranate seeds instead of time consuming experiments of measuring physicochemical properties of them.

**Keywords:** Pomegranate seed, Clustering, PCA, Image analysis

### Investigating the Viscoelastic Aspects of Samanu: A Functional Dessert

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**Objectives:** Nowadays, interest in whole-food nutrition including functional foods is a leading trend in the food processing area. In this study, Samanu as a rich nutritional dessert has been characterized by rheological assessments.

**Materials and Methods:** The viscoelastic aspects of a prepared Samanu sample was compared with traditional and trade mark samples.

**Results:** Burgers model was fitted to the creep curves of the Samanu samples at adequate level. Instantaneous elastic modulus of the Maxwell element and elastic modulus of Kelvin-Voigt element ranged between 102.60- 1559.0 Pa and 28.790- 1553 Pa, respectively. Although internal viscosity of experimental, traditional and trade mark Samanus ranged between 2.7 13- 579.0 Pa.s, and residual viscosity of the samples were between 195. 1- 4386 Pa.s. Moreover, the

normalized model of Peleg & Normand was the best model to fit the data of stress relaxation tests. The initial decay rate and hypothetical value of the asymptotic normalized force for experimental, traditional and trade mark Samanus ranged from 4.944 to 23.26 s and 1.276 to 2.184, respectively.

**Conclusion:** All Samanu samples studying in this research showed typical viscoelastic response to transient and dynamic rheological measurements. Frequency sweeps revealed weak gel behaviour of samples. In addition, complex viscosity versus frequency plots for all Samanu samples had shear-thinning power law-type characteristics.

**Keywords:** Dessert, Functional, Rheology

### Distinctive effects of two different types of sub-chronic psychological stress on food intake in food deprived rats on food intake in food deprived rats

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**Objectives:** Stress is well known to alter feeding behavior. It is noticeable that appropriate regulation of energy homeostasis and feeding behavior under stress condition is necessary for survival. In other words, the system that regulates food intake plays an important role in stress response too. According to this fact, stress can cause changes in food intake patterns, hyperphagia or hypophagia, dependent on the types and duration of the stressor. Therefore, this study was designed to find out the effects of two kinds of sub-chronic psychological stress on food intake in food-deprived rats.

**Materials and Methods:** Eighteen male Wistar rats (200-250gr) were selected in three experimental groups, including control, isolation stress, and social stress groups. Rats were under psychological stress for 7 days. At the end, food intake was measured for three continuous hours after 16- 18 hour of food deprivation period.

**Results:** The results showed that food intake decreased at the first hour of measurement in

both social and isolation stress groups compared to control group, although this decrease was only significant ( $P < 0.05$ ) in the social stress group compared to the control group. In the isolation stress group, the average consumption of food at the second hour decreased significantly ( $P < 0.001$ ) compared to social stress and control groups. Changes in food intake at the third hour were not significant between all groups. Overall the cumulative food intake (3-hour consumption) in the social and isolation stress groups showed a decrease in food intake in comparison with the control group, but this decline was only significant ( $P < 0.05$ ) in as an isolation stress group.

**Conclusion:** These findings indicate that psychological stress has a large influence on feeding behavior. It seems that the interactions between the hypothalamus-pituitary-adrenal (HPA) axis and the anorexigenic or orexigenic neuropeptides released by satiety or feeding centers in response to stress are involved in the alteration of food intake. However, other factors like type, duration, and intensity of the psychological stress, factors that are difficult to manipulate in humans, are important in metabolic response to stress and changes feeding patterns.

**Keywords:** Food intake, Isolation stress, Social stress, Rat.

#### The effect of active form of 1,25VitD3 on T reg/Th 17 ratio in patients with Unexplained Recurrent Pregnancy Loss (URPL)

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**Objectives:** Unexplain Recurrent pregnancy loss (URPL), defined as three or more consecutive pregnancy losses before the 20th week of gestation, occurs in 1%-5% of women of reproductive age. CD4+CD25+ CD 127- FoxP3+ Treg cells constitute a minority of the CD4+ T-cell population in peripheral blood. T helper 17 (TH 17, CD3+ CD8- IL- 17+) cells involve in pathogenesis of chronic inflammatory diseases as well as URPL. Treg/Th 17 ratio increases in patients with RPL compared to healthy pregnant women. Vitamin D3 has been shown to inhibit Th 17 cell responses and to induce differentiation of T regs and/or expansion of fork head box protein 3 (FOXP3) regulatory T cells. Considering the imbalance of Th 17/Treg in RPL patients, and the effects of Vitamin D3 on these two cell subsets. The aim of this study was to evaluate the effect of vitamin D on the alternation of Treg/Th 17 ratio in patients with recurrent spontaneous abortion.

**Materials and Methods:** 10 patients with RPL were sampled for 10 ml whole blood to isolate peripheral blood mononuclear cells (PBMCs) using Ficoll-Hypaque density gradient centrifugation. Isolated cells were cultured in the presence of 50 nM 1,25VitD3. T reg and Th 17 cells were analyzed by flowcytometry after and before treatment with 1,25VitD3.

**Results:** The results indicated that vitamin D increase Treg/Th 17 ratio. There was a significant difference between The percentage of CD4+CD25bright CD 127- T cells before and after treatment with vitamin D (cells (0.59% vs 1.24%  $P < .05$ ).

**Conclusion:** This study showed that the role of vitamin D3 seems to be to provide an anti-inflammatory condition which is in favor of pregnancy maintenance. So we can conclude this metabolite can exert as a *supplementary therapeutic* in patients with URPL.

**Keywords:** URPL, T regulatory cells, Th 17 cells, 1,25VitD3

#### Starch applications in various pharmaceutical, food and non-food industries

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**Objectives:** Starch is the main component of cereal grain and root with a wide variety of applications in pharmaceutical, food, and non-food industries. Starch, in its native form, suffers from the physicochemical properties needed to certain types of processing due to its inherent weakness of hydration, swelling, and structural organization.

**Materials and Methods:** Modifications are aimed at introducing desirable alteration in starch structure and properties and offer significant characteristic to develop a variety of products. Moreover, the use of these modifications may allow for the production of a slowly digested starch that could be used for the treatment of certain medical modalities. Starches are often modified by physical, chemical and enzymatic processes to promote specific functional properties.

**Results:** Starch has numerous applications in different fields. In recent years, starch has been taken as a new potential biomaterial for pharmaceutical application including pharmaceutical excipient, tablet disintegrant, controlled/sustained release polymer for drugs and hormones, plasma volume expander, bone tissue engineering and also in artificial red cells. Also, starch is utilized in the food industry as a thickener, gelling agent, and stabilizer for making snacks, meat products, fruit juices and flavor encapsulation. Modified starches are now well-established polymer, which is used in non-food based industries like textile, paper, biofuels, and bioplastic.

**Conclusion:** The aim of this review is to give a short literature overview of the applications of starch in different pharmaceutical, food, and non-food industries. The results indicate the importance of starch utilization in various industries.

**Keywords:** Starch applications; Modified starch; Pharmaceutical industry; Food industry.

### **A practical recommendation for processing Kilka oil as a by-product from fishmeal plants: n-3 PUFAs concentration and encapsulation**

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**Objectives:** Consumption of concentrated fish oil leads to the intake of higher content of n-3 polyunsaturated fatty acids (n-3 PUFAs) when a

certain amount of the oil is consumed. Therefore, it leads to a reduction in the intake of saturated and monounsaturated fatty acids (SFAs and MUFAs). The concentrated product is a rich source of n-3 fatty acids (49.62%); thus, it is prone to oxidation. Encapsulation is a useful technique, which has been widely used in foods to protect food bioactive components against adverse reactions.

**Materials and Methods:** *Candida rugosa* lipase (CRL) was used to concentrate n-3 PUFAs through releasing non-n-3 PUFA as much as possible in Kilka fish oil. Our next aim was to encapsulate this oil by a mixture of nature whey proteins and sodium caseinate. The emulsification was carried out using ultrasonication in different powers (180 and 380 W) and times (1 and 3 min).

**Results:** According to full factorial optimization results, the maximum recovery levels of DHA (98.18 %) and EPA (50.47 %), as well as minimum recovery levels of SFA (36.06 %) and MUFA (30.75 %) in the glyceride product, were obtained by water-to-oil ratio of 1, 0.50 % enzyme and 1 h. Based on scanning electron microscopy (SEM), sonication could possibly inhibit the presence of oil at the surface of powder particles as compared with the samples prepared without sonication (control). SEM observations were confirmed by higher amounts of encapsulation efficiency (88–94%) for the powders produced by sonication than those recorded for the control (68%). The highest oxidation rate was found for the unencapsulated oil stored in air atmosphere followed by the control powder, the powders from sonication treatment and the unencapsulated oil under N<sub>2</sub>, respectively. According to factorial design optimization, a sonication treatment with 380 W power for 3 min was recommended to prepare parent emulsions during the process of fish oil encapsulation.

**Conclusion:** The Kilka fish oil was successfully enriched in a large scale and under mild conditions. The encapsulated product can be used for various food applications, such as nutritional supplements, as well as for enriching various food products.

**Keywords:** Kilka fish oil; *Candida rugosa* lipase; n-3 polyunsaturated fatty acids; Encapsulation; Full factorial optimization.

### **In vitro antimicrobial effects of corn starch bioactive films incorporated with *Bonium persicum* and *Zataria multiflora* essential oils**

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**Objectives:** Nowadays, biodegradable packaging such as edible coatings and films is a common alternative to plastic compounds and synthetic packaging since they can act as carriers for food additives (e.g. natural ingredients) and they do not cause any environmental contaminations. An antimicrobial bioactive film is a special type of packaging that carries antimicrobial agents that can reduce the risks of food pathogens and consequently, increase the shelf life of the foodstuff.

**Materials and Methods:** The antimicrobial effect of biodegradable starch film containing *Zataria multiflora* and *Bunium persicum* (concentration range from 1 to 20 mg/ml) essential oils was examined on four species of bacterial pathogens including *Staphylococcus aureus*, *Escherichia coli*, *Listeria monocytogenes* and *P. aeruginosa* using disk diffusion and plate count assay methods.

**Results:** The results of disk diffusion method showed that the highest antimicrobial effect for *Zataria multiflora* and *Bunium persicum* essential oils was related to the concentration of 20 mg/ml, which in this concentration the maximum diameter of the inhibition zone for *S. aureus* (most sensitive bacteria) was recorded at 3 1.3 mm and 22.3 mm respectively. Also, *E. coli* was determined as the most resistant bacteria with the diameter of the inhibition zone of 26. 1 mm and 19 mm for *Zataria multiflora* and *Bunium persicum* respectively. The results of plate count assay showed that there was a significant difference between the number of colonies counting of *L. monocytogenes*, *S. aureus* and *P. aeruginosa* under the influence of film, using lowest concentration of *Zataria multiflora* essential oil and control sample ( $P < 0.05$ ).

**Conclusion:** In conclusion, the cornstarch bioactive films incorporated with essential oils of *Zataria multiflora* and *Bunium persicum* can be used as the safe antimicrobial compounds in the food packaging industry.

**Keywords:** Starch film; *Zataria multiflora*; Black caraway; Antimicrobial.

#### **Plant mediated synthesis of silver nanoparticles and investigation of its antimicrobial effects against foodborne pathogens**

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**Objectives:** Silver nanoparticles (Ag-NPs) are among the most widely used nanoparticles that show a broad spectrum of antibacterial activity. Recently, the use of plants as a natural reducing agent has been increasingly developed in the biosynthesis of antibacterial Ag-NPs due to its safety and eco-friendly.

**Materials and Methods:** In this study, we have produced Ag-NPs using an aqueous extract of *Rheum turkestanicum*. The formation of nanoparticles was confirmed by the surface Plasmon resonance (SPR) band illustrated in UV-vis spectrophotometer. The morphology and size of the Ag-NPs were determined using high magnification transmission electron microscopy (TEM). The crystalline structure of obtained nanoparticles was investigated using the powder X-ray diffraction (PXRD) pattern.

**Results:** These green synthesized Ag-NPs were found to show higher antibacterial activity against foodborne pathogens.

**Keywords:** Silver nanoparticles; *Rheum turkestanicum*; Antimicrobial; Foodborne Pathogens.

#### **Investigation of the effect of corn zein coating along with different antioxidants (Thymol and Carvacrol) on the aflatoxin production of peanut**

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**Objectives:** Mycotoxins are metabolites produced by molds, which have toxic effects on humans and animal tissues. Corn zein has unique features in comparison with other plant-based proteins used in the preparation of edible films and coatings. It has a high percentage of nonpolar amino acids and a relatively small amount of acidic amino acids. After transformation to film, zein has less water permeability compared to



other films made of plant-based proteins. Carvacrol (CAR) with antimicrobial, antioxidant, and favorable flavor-related properties and thymol, with antimicrobial, antifungal, and antioxidant properties are mainly found in thyme and have made them an ideal substance to be used in foods. The aim of the study was to evaluate edible zein coating along with thymol and carvacrol phenolic compounds on aflatoxin production of peanut during three months of storage.

**Materials and Methods:** After preparation of corn zein (16.5%), thymol (500, 1000 and 1500 ppm) and carvacrol (0.5%, 1% and 1.5%), peanuts were sprayed with different coating solutions for 1 minute. After 5 hours, they were placed in an oven at 35 °C to remove the excessive moisture and finally each 50 grams of peanuts were packed in polyethylene bags. Sampling was performed at the beginning and after three months of storage. The level of aflatoxin was measured by HPLC method according to ISO 6872.

**Results:** levels of aflatoxin B 1, B2, and total aflatoxin changed significantly within and between groups during storage ( $p < 0.001$ ). Treatments containing zein, thymol 1500 and carvacrol 1.5% showed the best result in terms of aflatoxin formation prevention comparing with other treatments.

**Conclusion:** This investigation concludes that zein biofilm containing polyphenols such as thymol and carvacrol can be recommended as a suitable coating for peanuts promoting their health benefits. Further researches are suggested on other nuts.

**Keywords:** Zein; Aflatoxin; Thymol; Carvacrol; Mycotoxin.

### Production and properties of synbiotic ice cream using fibers from fruit wastes and *Lactobacillus casei* LC-0 1

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**Objectives:** A nutraceutical food may provide expanded utility beyond its nutritional benefit. These benefits can be both physical and mental and are commonly attributed to the active components of the food. Fruit wastes are a rich source of dietary fibers that have beneficial effects on human health. Also, they can improve

the growth and viability of probiotic bacteria in food matrix and therefore used for the production of synbiotic food products.

**Materials and Methods:** In this study, the effect of adding fiber obtained from apple, banana and mango wastes at levels of 0.5, 1 and 1.5% on physicochemical and sensory features and the viability of *Lactobacillus casei* LC-0 1 in ice cream during 60 days at -18°C was investigated and compared with control with no added fiber.

**Results:** Based on obtained results, pH and specific gravity of samples containing banana and mango fibers were lower than control and sample with apple fiber added. Using fibers had no significant effects on overrun values where viscosity and melting resistance of ice cream samples increased with increasing fiber amounts. The most reduction in *Lactobacillus casei* LC-0 1 population after freezing and during storage period was associated to control sample and adding all fibers improved cell viability. Minimum cell reduction after freezing and during storage period occurs in the sample with 1.5% mango fiber that was 0.03 and 0.48 log respectively. Also, the most cell counts after 60 days at -18°C ( $5.12 \times 10^6$  CFU/g) was observed in the sample with 1.5% apple fiber. Sensory properties of samples containing apple fiber were good and comparable with the control sample.

**Conclusion:** The viability of *Lactobacillus casei* LC-0 1 in ice cream improved by incorporating fibers obtained from apple, banana and mango wastes during storage for 60 days at -18°C. Adding fibers in ice cream formulation had no negative effect on physicochemical properties and the maximum sensory scores were obtained for samples with apple fiber added. So it can be used for the production of synbiotic ice cream.

**Keywords:** Fiber; Ice cream; Probiotic; Synbiotic.

### An optimum pH reagent for Microbial Time-Temperature Indicator (MTTI) in intelligent packaging of milk

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**Objectives:** Milk is the most valuable foodstuff that contains almost all the essential ingredients for human growth and provides most of the

human body needs. Due to its high sensitivity to chemical and microbial degradation, determination of shelf life and the best time of consumption for this product is the subject of research by many experts in the food industry. Accordingly, intelligent packaging and time-temperature indicators (TTI) are the new technologies introduced to identify and ensure the health of this consumer-worthy product. Among the various types of time-temperature indicators, the microbial type is preferable to the other ones, Because of the direct correlation between the indicator and the food microbial degradation.

**Materials and Methods:** In this study, with the aim of design a microbial TTI based on lactic acid bacteria growth, the effects of four types of pH reagents including Bromocresol green, Chlorophenol red, Phenol red, and Litmus were investigated in the color changes of the indicator. The indicator formulation contains a nutrient broth, 103 CFU/ml lactic acid bacteria, 2% glucose, 0.5% yeast extract and 1.5% pH reagent. Since the microbial population of milk is doubled at 25 °C after 24 hours and the milk is corrupted, the color changes of each MTTI sample were checked at 25 °C. Under optimum conditions, the color changes of the MTTI should be commensurate with the progression of the microbial contamination of the raw milk and could be detected by the eye. For this purpose, the optical parameters of the MTTI were monitored using Hunterlab with three indexes of L\*, a\* and b\*.

**Results:** According to the analyzed results, color variations of two indicators including Bromocresol green and Chlorophenol red were significant. However, Phenol red and Litmus showed no significant color changes at the tested pH range.

**Conclusion:** The color variations of two indicators including Bromocresol green and Chlorophenol red were significant.

**Keywords:** Microbial time-temperature indicator; b\*; pH reagent; Raw milk.

#### Antibiotic residues in food

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**Objectives:** Antibiotics as a type of pharmaceutical compounds are widely used in modern medicine and veterinary industries. Despite the beneficial effects of antibiotics in the

treatment of infectious diseases, their residuals in food such as meat, milk and its transmission to human body have harmful effects. Use of food products of animal origin containing antibiotics residues has led to much concern in consumers. The aim of the present study is a review of past studies about antibiotic contamination in the food of Iran.

**Materials and Methods:** The present study is a review of the literature related to the topic from the internal and foreign database such as Iranmedex, Irandoc, SID, Google Scholar, Scopus and Science Direct, with keywords of antibiotic, milk, meat, food, Iran and review during 1984 to 2016. Base on the content of titles and abstracts, 52 articles were selected and analyzed.

**Results:** Results of the studies showed that food contamination with antibiotics has been increasing over the last three decades, with the highest frequency remaining in the tetracycline, beta-lactam and aminoglycosides groups.

**Conclusion:** The results of this study showed that the most studied there were positive contaminants, Therefore Training required by institutions and individuals Animal husbandry. Designing methods to remove this group of contaminants from food groups, especially milk and dairy products. Since major studies in this field have only been used to identify and measure antibiotics, and so far, no plans have been made to eliminate or reduce these contaminants in foods, it seems that strategies for future studies have been devised for ways to eliminate and reduce them.

**Keywords:** Antibiotics; food; Iran.

#### Antimicrobial susceptibility of staphylococcal strains isolated from raw vegetables

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**Objectives:** Food contamination with antibiotic resistant bacteria is a major public health problem. The aim of the present study was to investigate the pheno and genotypic antibiotic resistance patterns of staphylococcal strains isolated from raw vegetables.

**Materials and Methods:** In total, 134 *Staphylococcus* isolated were recovered from 62 raw vegetable samples (from 5 local stores in Shiraz, Iran) which were then assessed for phenotypic susceptibility to penicillin G and gentamicin using disc diffusion method. The resistant isolates were further analyzed for the presence of the genes encoding resistance to  $\beta$ -lactams (*mecA*) and aminoglycosides (*aac(6')Ie-aph(2'')Ia*).

**Results:** While 78% of the isolates exhibited resistance to penicillin G, only 18 staphylococcal strains (13%) were resistant to gentamycin. None of the isolates were positive for *aac(6')Ie-aph(2'')Ia* suggesting the other resistance mechanisms. The *mecA* gene was detected in 4 isolates.

**Conclusion:** High prevalence of resistant to penicillin G in the *Staphylococcus* isolated from raw vegetables is of great concern. The problem is more noticeable considering that such foods are consumed without any further treatment, which can, in turn, lead to the transfer of antibiotic resistances to human strains. The monitoring of antibiotic resistance of food-related bacteria is a major component of the antibiotic stewardship program.

**Keywords:** *Staphylococcus*; Vegetable; Antibiotic resistance; *mecA*, *aac(6')Ie-aph(2'')Ia*.

### **Berberine protects against glutamate-induced oxidative stress and apoptosis in PC 12 and N2a cells**

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**Objectives:** Neurodegenerative diseases have been associated with glutamatergic dysfunction. Berberine, an isoquinoline alkaloid broadly present in different medicinal herbs, has been reported to have a neuroprotective effect. In the present study, the effects of berberine against glutamate-induced oxidative damage and apoptosis were investigated.

**Materials and Methods:** The cultured PC 12 and N2a cells were pretreated (2 hr) with varying concentrations of berberine (50- 1000  $\mu$ M), followed by exposure to glutamate (10 mM) for 24 hr. The cells viability, intracellular reactive oxygen species (ROS), lipid peroxidation, glutathione (GSH) content, superoxide dismutase (SOD) activity, DNA fragmentation and the expressions of pro-apoptotic (cleaved caspase-3 and Bax) and anti-apoptotic (Bcl-2) proteins were then measured.

**Results:** In both cell lines, pretreatment with berberine (especially at low concentrations) significantly decreased ROS generation, lipid peroxidation, and DNA fragmentation, while improving glutathione content and SOD activity in glutamate-injured cells. Moreover, berberine showed anti-apoptotic effects by reducing the glutamate-evoked caspase-3 and Bax/Bcl-2 overexpression.

**Conclusion:** The results of present study suggest that berberine protects against glutamate-induced PC 12 and N2a cells injury by decreasing oxidative stress and subsequently inhibiting apoptosis. This is relevant to berberine treatment in neurodegenerative disorders, such as dementia (Alzheimer's disease), seizures, and stroke.

**Keywords:** Berberine; ROS; Glutamate-induced; PC 12 and N2a cells.

### **Heavy metals concentration Lead, Cadmium, and Arsenic in Iranian Rice**

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**Objectives:** The accumulation of heavy metals in agricultural soils is a growing concern to the public as well as government agencies, due to the food safety issues and potential health risks. Heavy metals such as arsenic, cadmium, and Lead are of primary concern in soil and food contamination, particularly in rice cropping system, because of their toxicity. These toxic elements accumulate in the soils, induce a potential contamination on the food chain, and endanger the ecosystem safety and human health. The aims of this study are to determine

Lead, Cadmium, and Arsenic contamination level of Iranian rice in the Khoramabad city.

**Materials and Methods:** The study was performed in the Food and Drug Laboratory of Lorestan University of Medical Sciences. In this cross-sectional study, 100 samples from 10 trademarks rice were collected from Khoramabad shopping centers. Each sample was washed, and then they have been dissolved with nitric acid. Data were analyzed by SPSS 16 software using One-sample and Independent T-tests.

**Results:** Average amounts of Lead, Cadmium, and Arsenic in rice samples tested were  $0.91 \pm 0.23$ ,  $0.08 \pm 0.06$  and  $0.06 \pm 0.02$  respectively. Arsenic concentration in Iranian rice is less than Iran national and WHO/FAO standards. Cadmium concentration in 28.8 % and Lead concentration in 100% of Iranian rice is higher than Iran national standard.

**Conclusion:** The level of heavy metals in some of the analyzed rice was higher than the standard levels. Considering the possible health outcomes due to the consumption of contaminated rice, it is required to take proper actions for avoiding chronic exposure of people.

**Keywords:** Cadmium; Lead; Rice.

#### **Effects of guar and xanthan on physicochemical properties and acceptance of reduced sugar pomegranate pastille**

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**Objectives:** Pomegranate is a fruit that belongs to the Punicaceae family. Clinical assays have shown that juice, flower and fruit extracts of Pomegranate have positive effects on blood glycemic, insulin and pressure. The development of products as functional food enriched with pomegranate peel active compounds could be useful for the treatment of certain diseases such as diabetes.

**Materials and Methods:** The objective of this study was to produce a reduced sugar pomegranate pastille with pomegranate and to analyze its physical, chemical and sensory properties. Effect of hydrocolloids (guar (G), xanthan (X)) on pastille was studied.

**Results:** Results showed similar values for Brix, Aw, though the pH of Pomegranate pastille was lower than control.

**Conclusion:** In conclusion, the use of hydrocolloids was useful in producing low-calorie pomegranate pastille.

**Keywords:** pomegranate; guar; xanthan; reduce sugar pastille.

#### **Fat replacers in dietary biscuits**

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**Objectives:** Biscuit is one of the most general bakery products and the most important products of flour due to its availability, nutritive composition, low-cost and high shelf life. Basic constituent materials are flour, sugar, and fats. Fats in food products have an important role in emulsion stability, reduction in baking loss, improvement in retaining water, textural properties and brittleness. In other hand fats cause increase in cardiovascular diseases, different kinds of cancers and increase in blood cholesterol. So food producers take action in using new substitutes in food formulations. However, because of the key role of fat in biscuit, a suitable substitute should be selected in order to remain its quality characteristics. These fat replacers can be based on fat, protein or carbohydrate.

**Materials and Methods:** In current research Tragacanth and whey protein concentrate (WPC) were used as fat replacers that are based on carbohydrate and protein, respectively. Substitution levels were 12.5, 25, 37.5 and 50% and biscuits were analyzed for color indices, moisture, ash, protein, water activity (aw) and fat content. Textural attributes, sensory properties and density of product were also evaluated.

**Results:** Results indicated that increasing the substitution level, aw reduced in all samples comparing to control sample indicating better shelf life using replacers, however at 50% substitution level of WPC aw showed an increase which was lower than the control sample. Moisture content showed an increase in samples containing Tragacanth as the fat replacer and no significant differences for WPC. Ash increased using WPC or Tragacanth. Protein content, volume, and density of samples showed an increase in increase in substitution level for both replacers. As was expected fat content decreased significantly in all samples. L\* index increased in sampled containing WPC indication better luminosity of biscuits but no significant





differences observed for Tragacanth samples. No significant differences observed in flavor and texture of samples comparing to control.

**Conclusion:** According to the study results, it can be claimed that Tragacanth and WPC can be used in biscuit formulation as suitable fat replacers.

**Keywords:** Biscuit; Fat replacer; Whey protein concentrate; Tragacanth.

#### Optimization of enzymatic extraction of pectin from orange juice waste

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**Objectives:** Enzymatic extraction is an environmentally friendly method which due to omitting the organic solvents. In addition, an enzymatic method has a good potential for extracting of pectin. Since the structure of the cell wall is complex and is consisting of the pectin (15-45%), cellulose (30-60%), hemicellulose (15-25%) and glycoprotein (10-15%), some enzymes including cellulose and hemicellulose could be employed for extracting of pectin.

**Materials and Methods:** The objective of this research was to investigate the effect of enzyme dose (0-20% v/w) of Celluclast and Rohament CL, solid/liquid ratio (S/L ratio) (1:10 to 1:50 g/ml) and extraction time (1-18 h) on the yield of the extracted pectin from orange waste. In addition, the yield, degree of esterification, galacturonic acid, emulsifying properties and viscosity behavior of the pectins extracted in the optimum conditions by the enzymes were compared to the extracted pectins by a conventional method.

**Results:** The results indicated that the most yield of pectin by using Celluclast and Rohament CL enzymes were obtained at enzyme doses of 15 and 17.5 %, S/L ratio of 1:20 and 1:40 (g/ml) and time of 3 h for both, which were 5.92 and 10.70 %, respectively. The emulsifying activities of the extracted pectin by conventional methods was 67.18%, although the pectins extracted by enzymatic method had not any emulsifying activity. In addition, the emulsions were maintained more than 90% stable after 30 days of storage at both 4 and 25°C. The viscosity of the pectins extracted by a conventional method at the concentration of 2% was higher than those obtained by the enzymatic method.

**Conclusion:** The yield of extracted pectin by enzymatic method was comparable with those extracted by a conventional method, but it had not good viscosity and emulsifying properties rather than the conventional method.

**Keywords:** Enzymatic extraction; Pectin yield; Emulsifying properties; Viscosity.

#### Effect of contact surface area and two common storage temperatures on the oxidative stability of walnut

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**Objectives:** Walnuts (*Juglans regia* L.) are belonged to Juglandaceae family, including nearly 15 species. Walnut among other fat-rich nuts, is sensitive to oxidation, which is believed to be the most common mechanism leading to quality deterioration. The level of polyunsaturated fatty acids (PUFA) in walnuts (62 to 75% of the total fats) has a direct relationship with their oxidation sensitivity, which in turn affects the nut storage life.

**Materials and Methods:** Oxidative stability of walnut was evaluated over a period of 1-year storage in various conditions. The whole walnuts, walnut kernels, walnut chopped kernels, walnut kernels packaged in polyethylene (PET) under vacuum and polypropylene (PP) contain CO<sub>2</sub> were kept in a normal condition (temperature, 19-30°C and relative humidity (RH), 35-45%). The whole walnuts and walnut kernels were also kept in a refrigerator (4°C, RH 75%). Some quality parameters for the oil extracted from walnut kernels were measured throughout the storage.

**Results:** Peroxide value of whole walnuts, walnut kernels, and walnut chopped kernels pass over 2 meq O<sub>2</sub>/kg after 12, 10 and 8 months storage, respectively. Peroxide value of the packaged nuts and the nuts stored in cold storage were increased only 1 meq O<sub>2</sub>/kg over a period of 1-year storage. According to the statistically analyzed results, the effect of storage condition and storage time on oxidative stability of walnuts was significant (p<0/05). No significant difference (p<0/05) was observed between the oxidative stability of the nuts stored in vacuum packaging and CO<sub>2</sub> contained packaging, also,



between the whole walnuts and walnut kernels stored at 4°C.

**Conclusion:** Based on the investigated quality parameters, a sequence including cool storage > packaging > walnuts shell > contact surface of walnut kernels with the environment was defined to maintain the quality of walnut kernels during long term storage.

**Keywords:** Walnut, Storage period, Peroxide value, Ultraviolet absorption, TBA value, Acidity

#### **Dietary intake of sodium and fat in Shiraz, Iran: A comparison of two assessment methods**

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**Objectives:** In order to assess the nutritional status of individuals, it is essential to make accurate measures of habitual diet. Abundant evidence shows that high sodium intake leads to high blood pressure. Furthermore, high intake of saturated fat, trans fat, and cholesterol is related to increased risk of coronary heart disease. So, the objective of this study was to determine the dietary daily intake of total sodium and fat by Shiraz University students using food frequency questionnaires (FFQ) and duplicate portion sampling (DPS) with instrumental analysis.

**Materials and Methods:** A sample of 67 students, with a mean age of 23 years, was recruited from Shiraz University of Medical Sciences. First, students completed an FFQ. Afterwards, the duplicate portions of all food items were collected in 3 days. The salt and fat content of the samples was determined by Mohr and Soxhlet method, respectively. Data were analyzed using descriptive analysis.

**Results:** In This study, daily mean intake of salt was 18/63± 10/20 gr. The mean intakes of fat estimated by the FFQ were significantly higher than those obtained from DPS method (P<0/05). Although differences in mean daily intakes of sodium estimated by FFQ and DPS were not significant.

**Conclusion:** Overall, the present study showed that the use of FFQ-based dietary assessment methods is not suitable to evaluate the daily dietary intake of fat. In order to make reliable estimates, only direct methods based on the instrumental analysis of the food and drinks consumed during a 24-h period are recommended. Moreover, the intake of sodium and proportion of daily calorie derived from them were higher than the recommended dietary allowances. So, this finding highlights the role of nutrition education as a potential tool to improve dietary habits among college students.

**Keywords:** Dietary intake; Sodium; Fat; Food frequency questionnaire.

#### **Prevalence of foodborne pathogens in raw vegetables collected from market sites in Shiraz, Iran**

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**Objectives:** Vegetables are proposed to be a major component of a healthy diet, however, they are associated with microbial food safety concerns. Therefore, the evaluation and control of microbial safety hazards are one of the key research priorities of scientists.

**Materials and Methods:** In the present study, 62 raw vegetable samples were collected from local stores in Shiraz. The samples were investigated for the presence of Salmonella spp., Listeria monocytogenes, and Escherichia coli O 157: H7 according to the FDA standard protocols. The isolates were finally confirmed using Polymerase chain reaction (PCR) method.

**Results:** This study results showed that after following traditional culturing methods and PCR assays, Salmonella spp. Was isolated from 62 samples (5.5%), while Listeria monocytogenes and Escherichia coli O 157: H7 were not recovered from any vegetable.

**Conclusion:** The potential for a wide range of pathogens to be transmitted from foods to

humans arises the need to control pathogen transmission using good hygienic practices from the farm to the consumer. This is more noticeable considering that raw vegetables are consumed without any heat treatment.

**Keywords:** Microbial contamination; Salmonella; Listeria monocytogenes; Escherichia coli O 157; H7; Vegetables.

### Functional Bread formulation and its nutritive and sensory evaluation

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**Objectives:** Bread is one of the oldest and largest consumed foodstuffs. However, wheat is a good source of calories and other nutrients but its protein is poor. Today, consumer awareness of the need to eat high-quality and healthy foods known as functional foods, that is, foods which contain ingredients that provide additional health benefits beyond the basic nutritional requirements is increasing. Therefore, the tendency is to produce specialty bread made from whole grain flour and other functional ingredients known as health bread or functional foods. Soybeans contain 30 to 45% protein with a good source of all essential amino acids. The objectives of this study were to formulate functional bread from whole wheat flours composited with soybean flour and to assess food products, sensory quality, and overall consumer acceptance.

**Materials and Methods:** The whole wheat flour with varying inclusions of 0, 8, 16 and 24 % of the soybean flour was mixed. The proximate composition of the flour blends used for the preparation of the bread was determined by using standard methods. The wheat flour, soybean flour, and bread were chemically analyzed to determine moisture content, protein content, fat content, crude fiber, and ash.

**Results:** The protein content in bread increased from 7.0% ( 100% wheat flour) to 10.0% in composite flour containing 24% soybean flour. Crude fiber and mineral contents increased from 3 to 4.00% and 1.50 to 2.10 % respectively. With the progressive inclusion of the soybean flour, the sensory analysis showed that there was no significant difference observed between the whole wheat bread and the soybean enriched bread samples in texture and crumb appearance. The organoleptic test showed that the substitution of 8% soybean flour into whole-wheat flour was more acceptable comparing with all quality characteristics.

**Conclusion:** In conclusion, composite bread with soybean flour substitutions was found to be nutritionally preferable (have higher protein, fat and crude fiber content) to whole wheat bread.

**Keywords:** Functional bread; Mineral contents; Sensory evaluation.

### Advances in authenticity assessment of food flavors

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**Objectives:** Food flavors and essential oils are natural materials which widely used in many fields all over the world and have become an integral part of everyday life. There is increasing demand for essential oils, which has resulted in cases of adulteration. Authentication is thus a matter of critical importance for both consumers and chemical companies. The authenticity of flavors in foods and beverages is of great importance for the producers of jams, ice creams, soft drinks, yogurt, etc. Regulations regarding the authenticity of flavors in foods and beverages will help consumers choose the best suitable foods.

**Materials and Methods:** In order to enhance this goal, we have used stereoselective gas chromatography to determine the enantiomeric ratios of chiral flavor and fragrance indicators present in the raw materials and in the products.  $\gamma$ -Decalactone in peach and (E)- $\alpha$ -ionone in raspberry and linalool and linalyl acetate in bergamot, are used as indicators in the stereoselective analysis of commercial foods and beverages. In the fresh fruit aromas, only one enantiomer was predominant or enantiomerically pure. In many commercial fruit products, we detected racemic mixtures of the above-mentioned chiral flavor compounds.

**Results:** The results suggest that stereoselective chiral gas chromatography (e-GC/FID) and comprehensive two-dimensional gas chromatography (GCxGC) could be useful tools for differentiating natural flavor compounds from synthetic ingredients in quality control of foods and beverages.

**Conclusion:** Stereoselective chiral gas chromatography (e-GC/FID) and comprehensive two-dimensional gas chromatography (GCxGC) are useful tools for differentiating natural flavor compounds from synthetic ingredients in quality control of foods and beverages.

**Keywords:** Food flavors; Gas chromatography; Essential oils.

### Assessment of exposure to heavy metals and its health risk assessment in rice types available in the local market in residents Mashhad city

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**Objectives:** This study was conducted to determine the concentrations of the heavy metals (As, Pb, Cd and Hg) in imported and cultivated rice in local Mashhad market, to compare the levels of these with the international limits (JECFA, CODEX, EC) and national standard, and to compare it with a provisional tolerable weekly intake (PTWI), and finally to assess potential human health risk considering the estimated weekly intake (EWI), Estimated daily intake (EDI), Target hazard quotient (THQ).

**Materials and Methods:** Samples collected during the last months of the year 2015. These samples were the main brands in Iran and local market. A total of 5 different brands was selected from each major group (imported and cultivated), randomly. These samples were dried at 105 degrees Celsius and became ash with an increasing temperature rate. The indigested solution was analyzed by atomic adsorption model Varian AA240FS and, finally the heavy metals concentrations were calculated based on mg/kg DW.

**Results:** The amounts of heavy metals were compared in two major groups and observed no significant differences between them. EWI of these metals in accordance with JECFA (Joint WHO Expert Committee on Food Additives), and also recommended amount by agency Standard and Industrial Research of Iran for Iranian population (ISIRI) was less than PTWI. The trends of EDIs for heavy metals in rice are in the order of Pb > As > Hg > Cd. The THQs no values for individual element more than one in any types of rice (except Arsenic). For all types of rice, the THQs of heavy metals from rice consumption is in decreasing order of As > Pb > Hg > Cd.

**Conclusion:** Our results show that As intake has the highest potential health risk of adverse effects and Cd ingestion has the minimum risk.

**Keywords:** Heavy metal; Rice; Estimated weekly intake (EWI).

### The effect of adding sorghum malt powder on rheological properties of dough and quality and shelf life of gluten-free moulded bread based on potato flour

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**Objectives:** The most common disease caused by wheat protein (Gluten) ingestion is celiac, and the only effective treatment is strict adherence to a 100% gluten free diet for life. Therefore, the acceptance and quality of gluten-free food production for these patients is important.

**Materials and Methods:** The aim of this study was to evaluate the effects of gluten-free sorghum malt powder (SMP) at 0, 1, 2, 3, 4 and 5 percent on the rheological properties of dough and qualitative and quantitative properties of gluten-free bread obtained from potato flour.

**Results:** Results of dough rheological properties in the Farinograph showed that adding of SMP at different levels leads to increased water absorption and dough stability, while the degree of dough softening and arrival Time decreased. The evaluation of bread characteristics results showed that with increasing SMP in gluten free bread formulation, the amount of moisture and L\* and a\* color index of bread shell increased. While maximum specific volume, porosity, and the lowest firmness in the period of 2 and 72 hours after baking, were obtained in the samples containing 3% SMP.

**Conclusion:** The results of sensory characteristics showed that most general acceptance was observed in the sample containing 3% to 4% SMP. Also by continuing to increase of this compound in bread formulation, the desirability of quantitative and qualitative properties of the final product was reduced.

**Keywords:** Malt powder; Gluten-free bread; Sorghum; Celiac disease; Moulded bread.

### Assessment of the effect of a multidimensional intervention on sustainable weight loss, metabolic syndrome and Ghrelin/ Obestatin adipocytokine parameters in an obese woman

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**Objectives:** Weight return is the main barrier to long-term, maintaining weight in the most obese patients. Despite the high cost of treatment and care of obesity, almost of the all therapeutic interventions have failed to provide a functional approach. Therefore, a multidimensional intervention with a new narrative therapy approach can be used to solve this problem. The aim of this study is to determine that the participants can achieve a persistent weight loss with the positive impact of narrative therapy on attitude and perception and lifestyle modification, based on dietary habit modifications and increased physical activity to promote mental health.

**Materials and Methods:** In this clinical trial, 60 women aged 18 to 50 years old were randomly divided into two intervention groups, which group 1 received diet, physical activity and narrative therapy, and group 2 received diet and physical activity. Questionnaires of Osgood's semantic differential, appetite, food frequency and physical activity were completed and anthropometric parameters were measured. Serum concentrations of ghrelin and abstatin hormones were measured by blood samples from the participants.

**Results:** In group 1 the participants weight at the end of the study had a significant decrease compared to the beginning of the study which this decrease was also significant in comparison with group 2 ( $P < 0.001$ ). The concentration of lipid profiles and Fasting blood sugar (FBS) levels was decreased in both groups significantly. The concentration of ghrelin hormone in the group 1 was significantly decreased compared with group 2 ( $P < 0.003$ ) and the concentration of

abstatin in this group showed a significant increase ( $P < 0.001$ ).

**Conclusion:** The present study showed that multidimensional interventions based on diet, physical activity, and narrative therapy are More effective in reducing sustained weight and improving metabolic syndrome parameters and ghrelin and abstatin hormones compared to other common intervention.

**Keywords:** Obesity, Multidimensional Intervention, Ghrelin.

### Isolation and characterization of *Lactobacillus plantarum* and *Enterococcus faecium* from a traditional fermented fish sauce (Mahyaveh) in Iran

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**Objectives:** Mahyaveh is a type of fish sauce obtained traditionally from fermentation in southern parts of Iran. Lactic Acid Bacteria (LAB) have commonly been used as dominant microorganisms in fermented fish products. These bacteria develop organoleptic characteristics of fermented foods and play a significant role in promoting their quality and safety. The present study aimed to identify LAB isolated from Mahyaveh using 16S rDNA gene sequences.

**Materials and Methods:** Mahyaveh samples were collected from different regions of Fars province. Then, LAB colonies were isolated using specific environments, microscopic observations, and biochemical tests. Afterwards, DNA was extracted from the bacteria using DNA extraction kit, 5 DNA achieved from isolation was extracted, PCR was done by general primers of 16SrDNA, and the bacteria were recognized.



**Results:** In the study, 10 colonies including 5 bacilli and 5 cocci were purified. The results showed that the 16s rDNA sequence of all isolates was related to *Lactobacillus plantarum* and *Enterococcus faecium* type strains. These strains were Gram-positive and catalase negative cocci.

**Conclusion:** This study indicated the importance of these strains in the development of the sensory properties of Mahyaveh and their ability in increasing the product's safety and health benefits and enhancing its commercial value. Yet, further studies are needed to select the most suitable strains to act as starters for controlled fermentation of Mahyaveh.

**Keywords:** Isolation, Lactic acid bacteria, Mahyaveh, *Lactobacillus Plantarum*, *Enterococcus faecium*.

#### Quality Control of Infant Formulas: vitamin E, a cause for concern?

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**Objectives:** Nutrition in the pediatric population is the most important determinant of the development and health of the childhood and lifelong health. Infants who are not breastfed usually are fed a formula. Commercial baby and toddler meals are major dietary contributors to an infant's nutritional intake. According to the European Food Safety Authority, currently, there are no reliable data or robust guidelines available in relation to the macronutrient composition of infant foods. The aim of this study was to determine the vitamin E content of the formulas used in Tabriz city and compared to the label values.

**Materials and Methods:** In this study, nine different brands of formulas were supplied from pharmacies in Tabriz. (Five starter formulas and four follow-on ones). One of the starter formulas was special for preterm and low-birth-weight (LBW) infants. Vitamin E extraction was carried

out using Dispersive Liquid-Liquid Micro Extraction (DLLME) method. Quantification of vitamin E was done by HPLC-UV at 296 nm. After method validation, it was applied to determine vitamin E level in infant formula samples. Then, the vitamin E content of the formulas was compared to the label.

**Results:** Results showed significant differences between the label and the determined amount of all of the samples ( $p < 0.05$ ). Two of starter formulas, including the one special for LBW infants, and three of follow-on formulas had more vitamin E than label and two of starter and two of follow-on formulas had less vitamin amount than a label.

**Conclusion:** Instability of vitamin E and variation in analysis methods in a complex matrix such as milk might have caused the differences between the measured level and the label value.

**Keywords:** Quality control; Infant formula; Vitamin E.

#### Evaluation of the oxidative and physical stability of endemic Perilla oil encapsulated in nanoliposome system

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**Objectives:** In recent years, deficient in  $\alpha$ -linolenic acid (ALA) content which increases the n6/n3 ratio in the human diet resulted in a negative effect on human health. So, the addition of the fatty acid to the diet is necessary. Due to the restricted source of rich omega-3 oil; introducing the native Iranian sources is needed more than ever. Perilla seeds are a source of ALA, also no data reported this valuable source. Besides, poly unsaturated fatty acids (PUFAs) are also very sensitive to auto-oxidation. Different strategies have been used to protect PUFAs from oxidation. The use of liposomes, the multiple or single phospholipid bilayers surrounding an aqueous medium, as a biocompatible delivery system may be a suitable and promising method to increase the bioavailability and stability of PUFAs and to overcome their drawbacks. Overall,



the objective of this research was to provide information about the endemic Perilla oil encapsulated in a nanoliposome system.

**Materials and Methods:** The evaluation of physical stability and oxidative stability of omega-3 carriers in storage period was investigated. The nanocarrier was nano-sized ( $\approx$  120 nm), fairly spherical in shape and unilamellar.

**Results:** The liposome resulted in increase oxidative stability of omega-3 during 30 days storage at the accelerated oxidative condition, i.e. 45°C.

**Conclusion:** This study presents a simple and feasible approach to enhance the stability in storage period or digestion in lipid-based delivery systems.

**Keywords:** omega-3 fatty acid; Perilla seed oil; Nanoliposome; Oxidative stability.

#### **The production of functional cake with the advantage of biological and pharmaceutical properties of saponin extract of Chubak plant**

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**Objectives:** Functional food refers to a foodstuff that has effects on human health more than its nutritional value or nutrient content. Studies show that today's consumers in many parts of the world prefer to choose their nutritional needs from functional food. Chubak root has abundant saponin compounds, which account as major components in this plant root. Saponins have a high surface and interface activity, act as an emulsifier and produce a stable foam in water. The purpose of this study was to produce a functional cake by replacing the egg white with Chubak extract.

**Materials and Methods:** In practice, extraction was carried out on Chubak plant by ultrasound method, and then 25, 50 and 75 wt.% Egg white was replaced with this extract in the formulation of sponge cake and the effects of this replacement on the physicochemical, sensory and rheological properties of batter and cake were studied.

**Results:** The results showed that replacement of 75% by weight of egg white with Chubak extract did not have any significant effect on specific gravity and flow behavior index of batter ( $p > 0.05$ ) But significantly decreased pH and

consistency coefficient ( $p < 0.05$ ). In the case of cake, although the application of this level of replacement did not significantly reduce the specific volume, porosity, and sensory properties of color, texture and overall ( $p > 0.05$ ), and in relation to maintaining moisture and delaying the staling phenomenon during storage periods, the results were better than the control sample, but significantly decreased the sensory properties of the flavor ( $p < 0.05$ ).

**Conclusion:** Applying the 50% replacement level not only did not have adverse effects on the qualitative characteristics of the finished product, but also to some extent improved its quality and made it possible to process a kind of functional cake.

**Keywords:** Functional food; Saponin; Chubak extract.

#### **Ohmic extraction of pectin from orange juice waste: electrical conductivity, energy efficiency, and the pectin yield**

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**Objectives:** Ohmic or Joule heating is a novel technology in which food is inserted between two electrodes and by the passage of alternating electrical current through it, heat is volumetrically generated due to the electrical resistance of the foods. The main advantages of this technology are the speed and uniformity of heating with high-energy efficiency. One most applicable of ohmic heating is the extracting of bioactive components from plants.

**Materials and Methods:** The objective of this study was to investigate the effect of voltage gradient (5-30 v/cm), pH (1.5- 4) and solid/liquid ratio (S/L ratio) (1: 10 - 1:40) during ohmic heating up to 90°C on the heating rate, electrical conductivity, system performance coefficients (SPCs) and the pectin of the orange juice waste. Furthermore, the yield of pectin at the best condition of ohmic heating was compared with the conventional heating.

**Results:** The results indicated that with decreasing of pH and increasing of voltage gradient, the rate of heating was increased. The range of electrical conductivity was 0.17 to 2.26 S/m depend on pH and voltage gradient. The highest SPC was 84.4% which was obtained at the highest voltage gradient and lowest pH. The



yield of pectin extracted by ohmic heating (as a novel technology) at 15 v/cm during 30 min (14.32 g/ 100 g d. m.) was significantly ( $p < 0.05$ ) higher than the pectin yield obtained by conventional method (13.53 g/ 100 g d. m.)

**Conclusion:** Extraction time during ohmic heating up to 90°C was shorter (15 s) than the conventional heating (200s). In addition, the pectin extracted ohmically during 30 min had a good quality. Therefore, Ohmic heating had a good potential for pectin extraction.

**Keywords:** Ohmic extraction; Pectin yield; Electrical conductivity; System performance coefficients.

#### **Sugar substitutes in low-calorie dietary biscuits**

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**Objectives:** Biscuit is one of the bakery products which is used widely through stratum. Approximately 100-gram biscuit contains 77-gram carbohydrate, 8-gram protein, and 13.5-gram fat and produces 465 Kcal energy. Sugar is one the most important ingredients in biscuit formulation and possess the highest amount in formulation after flour and has a major role in the creation of a desirable sweet flavor, obtaining moisture, the creation of texture, reduction in retrogradation and increase in shelf life of the product. However, sugar has a lot of harmful effects such as diabetes, tooth decay, obesity and cardiovascular diseases. So decreasing sugar content in food formulation is very vital. Considering the key role of sugar a proper substitute should be selected so that quality characteristics of the product maintained. Stevia has sweetening amount about 300 times than sucrose because of its diterpenoid glycosides. Sugar alcohols or alditols such as sorbitol and erythritol are polyols that can be used in food formulations as low-calorie low- digestion sweeteners.

**Materials and Methods:** In current research stevia, sorbitol and erythritol were used as sugar replacers. Substitution levels were 25, 50 and 75% and biscuits were analyzed for color indices, moisture, ash, sugar and aw content. Textural attributes, sensory properties and density of product were also evaluated.

**Results:** Results indicated an increase in ash content of samples including stevia but no significant differences for sorbitol and erythritol. Also moisture content increased in all samples including sweeteners. As was expected significant decrease was observed in sugar content of the samples by increasing substitution level and thus a decline in calorie content of the product. Observations demonstrated a decrease in aw and density of the samples. Increase in L\*, a\*, and b\* in samples containing sorbitol and erythritol and b\* in samples containing stevia was observed. No significant differences observed in flavor and texture of samples comparing to control.

**Conclusion:** Therefore, it can be claimed that sorbitol, erythritol, and stevia can be used in biscuit formulation as a suitable sugar substitute.

**Keywords:** Biscuit, Sugar substitutes, Erythritol, Sorbitol, Stevia

#### **Soy-based bioactive peptides in cake**

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**Objectives:** Flour, sugar, egg, and fat are major components in cake production and each has the key role in structure and quality of the product. Chicken eggs have a large effect on color, flavor and nutritional value of cake. On the other hand, eggs have an important role on rheological properties and quality characteristics of dough and textural attributes in the final product, because of its emulsifying properties, aeration agent and thermal coagulation of its protein moiety. The egg is the most expensive ingredient in cake formulation and its high cholesterol content is a serious danger for cardiovascular diseases. Elimination or partial substitution of eggs with other ingredients (with the purpose of cholesterol reduction) would cause a disorder in quality and quantity of products. Therefore finding a proper substitute for egg in cake formulation would be important from the nutritional and economical point of view. Bioactive peptides are specific protein derivatives that have physiological and functional properties, therefore, these are used in food and pharmaceutical products. Among herbal foods, soy has attracted the highest

attention and research because of its known functional properties and broad use and holds the greatest discovered bioactive component.

**Materials and Methods:** In current research soy flour and isolated soy protein as a source of cereal bioactive peptides were substituted with egg at 12.5, 25, 37.5 and 50% levels. Sensory properties, textural attributes, Colour indices, moisture and protein content, aw and weight loss were evaluated.

**Results:** Results showed that moisture content and aw reduced in all samples containing bioactive peptides comparing to control sample. Cake weight loss increased using soy peptides. As expected protein content increased significantly compared to the control sample. L\*, a\*, and b\* showed a decline with the increase in substitution level using soy bioactive peptides. No significant differences observed in flavor and texture of samples comparing to control.

**Conclusion:** Considering the remarkable functional properties of bioactive peptides based on soy, it can be claimed that use of a mixture of egg and soy peptides in food formulations can prevent the emergence of unfavorable qualitative changes in the product, making it a potentially great functional product.

**Keywords:** Cake; Egg; Bioactive peptide; Soy flour.

#### Replacing NaCl with KCl and its effect on the Aroma and Taste of Barbari Bread

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**Objectives:** The reduction of salt consumption in populations is considered one of the most cost-effective measures to improve public health. High consumption of bread and the high amount of salt in it, cause it be mentioned as a key product to reduce salt intake in the community. As so far no studies have been carried out on reducing salt concentration in Barbari bread, The aim of present study was to produce low-salt bread by replacing part of NaCl with KCl in Barbari bread and survey of its effect on aroma and taste of the studied samples.

**Materials and Methods:** In present study, 4 types (treatments) of Barbari breads including: a control treatment containing 1%NaCl and 3 experimental treatments including adding a mixture of NaCl and KCl (NaCl: KCl) at the ratio of 2: 1 (w/w) in three levels (0.25, 0.5 and 1%) were studied. Aroma and taste of samples evaluated according to opinions of 15 trained evaluators, using the method of traditional Iranian bread. The tests performed with three

replications in each treatment and the results obtained as mean  $\pm$  SD. ANOVA was used to study the differences between treatments. Comparison of the mean of the results studied using Duncan test at 95% confidence level. Data were analyzed using SPSS 19 software.

**Results:** Taste scores of aroma evaluation in 1%NaCl, 1%NaCl: KCl, 0.5%NaCl: KCl, and 0.25%NaCl: KCl treatments were 4.32 $\pm$ 0.17a, 4.07 $\pm$ 0.07a, 4.19 $\pm$ 0.27a, and 4.16 $\pm$ 0.08a, respectively. Scores of taste evaluation were 4.14 $\pm$ 0.07a, 4.07 $\pm$ 0.08a, 4.17 $\pm$ 0.23a, and 4.13 $\pm$ 0.17a for 1%NaCl, 1%NaCl: KCl, 0.5%NaCl: KCl, and 0.25%NaCl: KCl treatments, respectively.

**Conclusion:** According to the results of present study, regarding two important characteristics of aroma and taste evaluation, replacing of NaCl with KCl in the mentioned ratio in Barbari bread is completely possible.

**Keywords:** Barbari; NaCl; KCl; Aroma; Taste.

#### Survey of Effect of Reducing NaCl concentration on the Aroma and Taste of Barbari Bread

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**Objectives:** Decreasing the salt consumption of population is considered as one of the most cost-effective measures to improve public health. High consumption of bread and the amount of its salt, makes it a key product in reducing salt intake. So far, no studies have been done to reduce salt in Barbari bread, one of the most desirable and popular Iranian bread. Therefore, the present study carried out to investigate the effect of reducing NaCl concentration on the aroma and taste of Barbari bread.

**Materials and Methods:** In the present study, 4 types (treatments) of Barbari bread were produced including a control (containing 1%NaCl) and three experimental groups (treatments via adding NaCl in 0.25, 0.5% as well as a treatment without any added salt). Aroma and taste of bread evaluated based on the opinions of 15 trained evaluators, using the method of traditional Iranian bread. The tests performed with three replications in each treatment and the results obtained as mean  $\pm$  SD. ANOVA was used to study the differences between treatments. Comparison of the mean of the results studied using Duncan test at 95% confidence level. Data were analyzed using SPSS 19 software.

**Results:** Scores of aroma evaluation in the samples were 4.32 $\pm$ 0.17a, 4.16 $\pm$ 0.10ab, 3.92 $\pm$ 0.09b, 4.10 $\pm$ 0.23ab for 1%NaCl, 0.5%NaCl, 0.25%NaCl, and without-salt treatments,

respectively. Taste scores of the taste of 1%NaCl, 0.5%NaCl, 0.25%NaCl, and without-salt treatments were  $4.14 \pm 0.07a$ ,  $4.07 \pm 0.12ab$ ,  $3.89 \pm 0.08b$ ,  $3.84 \pm 0.20b$ , respectively.

**Conclusion:** According to the results of two important characteristics of aroma and taste evaluation, reducing the amount of salt in Barbari bread to about half the present value is possible.

**Keywords:** Barbari; NaCl; Aroma; Taste.

### Investigating the Effect of Reducing NaCl concentration and its Replacement with KCl on the Bread Score of Barbari Bread

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**Objectives:** World Health Organization (WHO) considers the decline in salt consumption as one of the most cost-effective measures to improve public health. Considering the high consumption of bread and the amount of salt in it, reducing its salt can play a key role in reducing salt intake in populations. Barbari bread is one of the most desirable and popular Iranian bread, and so far no studies have been done to reduce Barbari bread salt content. Therefore, this study was conducted to investigate the effect of reducing NaCl concentration and its replacement with KCl on the Bread Score (Bread Quality Number) of Barbari bread.

**Materials and Methods:** In present study, 7 types (treatments) of Barbari bread including a control treatment containing 1%NaCl and 6 experimental treatments including 1) adding NaCl in 2 levels (0.25 and 0.5%), 2) adding a mixture of NaCl and KCl at the ratio of 2: 1 (w/w) in 3 levels (0.25, 0.5 and 1%), and 3) a treatment without any added salt were produced. Bread quality number evaluated reviewing the opinions of 15 trained evaluators, using the method of traditional Iranian bread. The tests performed with three replications in each treatment and the results obtained as mean  $\pm$  SD. ANOVA was used to study the differences between treatments. Comparison of the mean of the results studied using Duncan test at 95% confidence level. Data were analyzed using SPSS 19 software.

**Results:** Scores of different sensory characteristics in the treatments were  $4.12 \pm 0.09a$ ,  $4.06 \pm 0.03a$ ,  $3.89 \pm 0.04b$ ,  $4.03 \pm 0.00ab$ ,  $4.13 \pm 0.14a$ ,  $4.01 \pm 0.10ab$ ,  $4.01 \pm 0.07ab$  for 1%NaCl, 0.5%NaCl, 0.25%NaCl, 1%NaCl:KCl, 0.5%NaCl:KCl, 0.25%NaCl:KCl, and without-salt treatments, respectively. Except 0.25%NaCl treatment, none of the treatments had a

significant difference with 1%NaCl bread (control) ( $p > 0.05$ ).

**Conclusion:** According to the results, reducing the amount of salt in Barbari bread to about half the present value and replacing it with KCl in mentioned amount is possible in terms of Bread score.

**Keywords:** Bread quality number; Barbari; NaCl; KCl.

### Color and organoleptic properties of functional Nabat (rock candy) containing encapsulated Crocin at different storage condition

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**Objectives:** Crocin, the carotenoid pigment of saffron, is sensitive to pH changes, temperature and light, so food products containing Crocin, mostly have a short shelf life because of destroying Crocin. Microencapsulation technique could be utilized to improve its stability. Nabat is a kind of rock candy that is so popular confection in Iran and one of the native souvenirs of Mashhad.

**Materials and Methods:** In this study, encapsulated Crocin was added to Nabat and colorimetric ( $L^*$ ,  $a^*$ ,  $b^*$ ,  $\Delta E$ , and  $C$ ) and organoleptic properties (Transparency, Aroma, Color, Overall acceptability) of samples were determined in light and dark conditions during 60 days of storage. Nabat containing pure Crocin (NPC) was considered as the control in all tests.

**Results:** According to the results, the difference between color properties of Nabat containing Encapsulated Crocin (NEC) and NPC was significant. NPC samples showed higher  $L^*$  and Lower  $b^*$ . Microencapsulation of Crocin preserved all sensory properties as acceptable. Aroma and color properties of NEC exposed to the light allocated higher rank than NPC during storage.

**Conclusion:** The light showed significant effects on color and organoleptic properties of samples, so it can be concluded that hermetic packaging is necessary to protect NEC and NPC from direct light.

**Keywords:** Nabat; Crocin; Saffron.





### Multi-objective optimization of pumpkin spread formulation using genetic algorithm

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**Objectives:** Pumpkin (*Cucurbita moschata*) is a valuable herbal fruit with nutritional characteristics including rich in potassium, high Beta-carotene, and polyphenol content. Raw or unprocessed pumpkin is not desirable for most consumers due to its unpleasant taste and flavor, also fresh pumpkin has low shelf life. Fruits processing into sweet spreads helps to improve the flavor and tasty with the enhanced shelf life of the product. The next step after product properties modeling is to define the desirability function, based on the goals of optimization. Genetic algorithm is a powerful technique to solve the desirability function because it can be used to search the big solution spaces with the very low risk of stuck in the local minimum. In this study, modified starch and micro-crystalline cellulose were used to develop a pumpkin spread formulation based on central composite design, finally, genetic algorithms were used to find optimum criteria.

**Materials and Methods:** pumpkin puree was prepared by mild heat treatment of chopped fresh unpeeled pumpkin. After filtration, the puree was mixed with milk, sugar, and spices as fixed ingredients, while continually heated. Finally, lemon juice was added and the homogeneous mixture heated until 38°C was reached. In each treatment, modified starch and micro-crystalline cellulose were variable ingredients based on central composite design. Physical properties of the samples were quantified and modeled using quadratic polynomial regression. Desirability function with the goals of minimum water activity, elasticity, gumminess, b\* color value as well as maximum cohesiveness, L\* and a\* color values, taste and total acceptance was defined. Genetic algorithms were further used to find the optimum condition resulting in minimum desirability function value.

**Results:** Pumpkin spread properties were modeled with high coefficients of determination. Applying genetic algorithm on desirability function in the variables range criteria, led to an optimum condition of 1.5% micro-crystalline cellulose and 0.1% modified starch.

**Conclusion:** It was concluded that Genetic algorithm was an effective function for

formulation optimization and can be used for other fruits spreads development.

**Keywords:** Genetic algorithm; Modified starch; Pumpkin spread.

### Survey and comparison on Microbial contamination of Turmeric (bulky and packaging forms) supplied in Zabol, 2017

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**Objectives:** Spice and dried herbs are natural products that give a tasty and color to many foods. Consumption of Spices prevents and treat diseases and cancers region of the stomach, intestines and digestive system. Due to the production of these products carry out in the traditional way in our country, it may have a wide range of bacterial infections (from vegetative and spore forms), yeasts and molds. This study aimed to survey and compares the microbial turmeric bulky and packaging forms supplied in Zabol city.

**Materials and Methods:** 27 samples of Turmeric (6 samples Packaging and 21 samples pile) were selected from of the centers of Supplier spice in Zabol city randomly. Then, the survey of experiments were conducted following bellow: total count of Microorganisms from National Standard No. 5272, the contamination of samples to coliforms from Standard No. 9263, the survey of E. coli based on Standard No. 2946, the count of Bacillus cereus based on Standard No. 2324, Clostridium perfringens based on Standard No. 2197 and The search of mold according to the National Standard No. 10899-2.

**Results:** The results showed that 88.89% of samples from the total count of microorganisms, 62.97% from the count of coliforms, 59.25% about the count of Bacillus cereus, 55.56% from count of Clostridium perfringens and 44.44% from the count of molds are higher than from the limited defined by National Standard Organization of Iran. Also, the contamination to E.coli was found in 9 samples (33.34% of samples).

**Conclusion:** The Spices are used extensively on a daily and in a wide range in our country, and Turmeric is the most common among them. Due to its high infection rate in this study, attention to principles of Sanitary is essential in its production process, transmission, storage, and supply.





**Keywords:** Spices; Bacillus cereus; Clostridium perfringens; E. coli; mold.

### **Kinetic studies of bovine serum albumin interaction with Ascorbyl palmitate (AP) as a food additive**

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**Objectives:** Ascorbyl palmitate (AP) is one of the food additives that derived from the ascorbic acid and widely used as a commercial antioxidant in edible oils. Recently, due to the importance of interaction bioactive small molecules such as vitamins, nutrients, ligands, hormones, drugs and food additives with bovine serum albumin, as a model of the main protein of blood, has attracted more attentions. In this study, for the first time, we have reported the kinetic study of BSA interaction with AP as a food additive.

**Materials and Methods:** The interaction of AP with BSA was determined using surface plasmon resonance (SPR) methods under the imitated physiological conditions (pH 7.4) of the body. BSA immobilization on carboxymethyl dextran (CMD) hydrogel chip sensor has been performed after activation with N-hydroxysuccinimide/N-ethyl-N-(3-diethylaminopropyl carbodiimide). The dose-response sensor grams of BSA upon increasing concentration of AP were attained in SPR analysis. The high affinity of AP to BSA was demonstrated by a low equilibrium constant (KD) value ( $9.58 \times 10^{-5}$  at 40°C).

**Results:** The process of kinetic values changing showed that affinity of BSA to AP decreased with rising temperature. The positive value of both enthalpy change ( $\Delta H$ ) and entropy change ( $\Delta S$ ) showed that hydrophobic force plays a major role in the BSA interaction with Ascorbyl palmitate. The positive value of free energy change ( $\Delta G$ ) was indicative of nonspontaneous and enthalpy-driven binding process.

**Conclusion:** The binding of these food additives to protein albumins are much more important in food safety, food chemistry, food science, nutrition, etc. Therefore, it is recommended to

provide a comprehensive evaluation of the worldwide usage of Ascorbyl Palmitate and Ascorbyl Stearate in the food industry.

**Keywords:** Kinetic; Bovine serum albumin; Interaction; Ascorbyl palmitate.

### **Boiling process ability in drinking water arsenic removing**

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**Objectives:** Drinking water quality is a global concern and has the greatest impact on human health. Drinking water can be deteriorated by toxic chemicals such as heavy metals during transport, storage, and handling before use by the consumer. The heavy metals have high stability and can generate toxicity in the organisms. The consumption of contaminated drinking water was associated with disease and death in developing countries. Therefore, providing safe drinking water to maintain public health is an essential and important principle. Boiling process is a classic technique to water treatment, which plays an important role in the removal of water pollutants. In this study, the ability of the boiling process in arsenic removing was investigated.

**Materials and Methods:** In the winter of 20 16, samples from drinking water were drawn and in an equal number, some of the samples were taken as control and boiled for 5 minutes. Then both groups of samples were measured by ICP mass and for the concentration of arsenic.

**Results:** The results obtained from the present study showed a significant difference in concentration of heavy metal of arsenic in drinking water before and after the boiling process. The efficiency of arsenic removal from water was estimated by boiling 50%. The primary and secondary standards for arsenic in drinking water are 10 and 0 ppb, respectively. The amount of arsenic in control samples was higher than the primary standard, which decreased after boiling for 5 minutes.

**Conclusion:** The increase of population and pollution can change the amounts of heavy metals in water, hence their measurement should



be considered as a continuous and important approach for future studies. Also, the use of easy and feasible health care processes to ensure the safety and health of drinking water and educating consumers about their important role can be effective in this regard.

**Keywords:** Drinking water; arsenic; boiling process.

### Investigation of the effect of alkaline extraction method on physicochemical, nutritional and functional properties of quinoa protein isolate

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**Objectives:** In recent years much attention has been paid to the quinoa due to diverse functional properties, high nutritional value and (gluten-free) feature rather than other protein grains. The quinoa protein can be used as a nutritional supplement and a valuable food source for babies, children, and adults in the formulation of sauces, sausages, soups, etc. The study intends to extract quinoa protein by the alkaline method and to investigate the physicochemical, nutritional and functional properties of the produced protein isolate.

**Materials and Methods:** The protein solubility was obtained by alkaline pH value (11), followed by precipitation at an acidic pH value (4.5). After drying, the protein isolates obtained has been reviewed by the percentage of moisture, fat, protein, carbohydrate, ash, and functional properties including water absorption capacity, fat absorption, foaming and its stability, emulsifying capacity and emulsifying stability and color properties.

**Results:** Based on the results, the protein isolate of quinoa contains averagely 83.07% proteins, 0.99% fats, and 15.68% carbohydrates based on dry weight. The quinoa protein showed water absorption (2/43 ml/g) and (4.2 ml/g) oil absorption. The foaming capacity of quinoa protein isolate was (13.06% in average) and the foaming capacity was increased with the increase in the protein concentration. Quinoa protein isolate registered 13.72% foam stability after 60 min. Emulsion ability index was ranged from 17.33% for 1% protein suspension.

The average of emulsion stability index was (57.77%).

**Conclusion:** We can conclude that the quinoa protein is a promising nutritive source and candidate for using as a food supplement and functional food but still needs more advanced research to improve its functional properties to be suitable for use in food processing.

**Keywords:** Quinoa; Emulsion ability; foaming capacity; water absorption.

### The movement "slow food" From the perspective of Iranian traditional medicine

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**Objectives:** these days, a movement has fallen way to the name of "slow food" in Europe. The movement says that people need to eat and drink slowly and to have enough time for the tasting of their food and pass time without any hurry with their family and friends. The phrase "slow food" is used as the counterpoint of the phrase "fast food" and requirements that are in the style of life. This article is written with the goal of explaining this issue from the perspective of Iranian traditional medicine.

#### **Materials and Methods:**

this article has a descriptive-analytical method and is based on a published library resource.

**Results:** At least 15 health principle when using food and 7 the principle in health of water drinking is considered in Iranian traditional medicine resources, that correction of the wrong food habits and relaxation during and after of the meals and drinking water, and in other words the same «slow food», is only a part of it.

**Conclusion:** Promoting and benefiting from nutritional health principles, in the texts of Iranian traditional medicine and its teachings, including the "slow food"; can have an important role in disease prevention, health promotion and in other words, modifying society lifestyle.

**Keywords:** Iranian traditional medicine; nutrition; slow food.

### Macronutrients intake and its association with dyslipidemia in adolescents

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**Objectives:** Blood lipids disorders are the most important factors which lead to cardiovascular disease. Studies showed that many children are suffering from blood lipids disorders. Researches show there is a connection between people's nutrition and the level of blood lipids. Thus, the goal of this study is to identify the amount of macro-nutrients intake and its relation with blood lipids disorders in teenagers living in the city of Qazvin.

**Materials and Methods:** This is a descriptive and analytical study. 32 adolescent between 10 to 18 years old living in Minudar of Qazvin, were selected using multistage random cluster sampling method. Personal, nutritional, and biochemical information, as well as anthropometric measurements collected from them. The information was analyzed with Chi-squared, student's T-test, correlation analysis, variance analysis, and Tukey's test using SPSS-16.

**Results:** 51% of the adolescents were girls and 49% were boys. The total mean age of the adolescents was  $15.07 \pm 2.42$ . There was a significant reverse relationship between the levels of HDL in adolescents blood and their protein ( $P = 0.006$ ;  $r = -0.256$ ) and carbohydrate ( $P = 0.036$ ;  $r = -0.119$ ) intake.

**Conclusion:** These people's nutrition and especially the amount of energy they get from macro-nutrients must be adjusted.

**Keywords:** Lipids Disorder; Macro-nutrients; Diet.

### The toxicity study of the dietary plant of *Allium rotundum*. L

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**Objectives:** Due to the nutritional and herbal applications of *Allium rotundum*. L. it has been used widely as a dietary plant Iranian's diet. So, understanding the possible adverse effects and toxic activities could be of a major importance. This study aims to examine the acute and sub-chronic toxicity profile of *Allium rotundum* on male and female Wistar rats.

**Materials and Methods:** The hydro-ethanolic extract of *Allium rotundum*. L was performed for acute and sub-chronic studies. The study on acute toxicity was conducted on the 5000 mg/kg body weight of the extract and sub-chronic toxicity was carried out at three doses of the extract (250, 500, and 750 mg/kg body weight/day).

**Results:** The hydro-ethanolic extract of this dietary plant exhibited no adverse effect and toxic activity after short-term administration of the extract. It revealed that the LD50 value of the extract is up to 5000 mg/kg body weight. The long-term administration of three doses of the extract supported the acute study and revealed abnormality and toxic sign within sub-chronic study period in the Wistar rats of either sex. All the biochemical and hematological parameters of the treated rats were in normal range and did not alter after long term administration of the extract. According to the histopathological study, no lesion and abnormality could be observed in the tissue of vital organs (kidney, liver, heart, lung, and spleen). The NOAEL value of this extract was high enough (greater than 750 mg/kg body weight/day) to conclude the non-toxic nature of this extract.

**Conclusion:** This study confirmed the safety of this dietary plant within both acute and long-term administration and suggested that this plant could be a proper choice as an effective nutritional due to its high nutritive value and inherent therapeutic properties, respectively.

**Keywords:** *Allium rotundum*; Dietary plant; Acute Toxicity; Sub-chronic Toxicity.

### The relationship between quality of life with lipid and blood sugar levels in diabetes type II patients

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**Objectives:** Metabolic disorders including obesity, metabolism disorders, especially diabetes and impaired lipid metabolism,

especially lipid of the major health problems in human societies. Studies that have been done in our country in recent decades indicate high prevalence of obesity, diabetes, hyperlipidemia and cardiovascular diseases. Preventing such problems requires extensive and comprehensive studies to be based on a broad level for community prevention programs developed and implemented. This study aimed to determine the relationship between quality of life with lipid profile and blood sugar levels in diabetic patients attending to governmental hospitals and Diabetes Research Center in Hamadan City in 2016.

**Materials and Methods:** This study is a cross-sectional study. The study population included patients with type II diabetes who governmental hospitals mission, referred Farshchian and Diabetes Research Center of Hamadan. A total of 112 students were randomly selected using a questionnaire consisting of three parts. The demographic characteristics, quality of life, blood glucose and blood lipids and HbA<sub>1c</sub> was determined that the patient test results. Quality of life includes four dimensions: physical health, mental health, public health, environmental health. The quality of life-based on the score obtained was divided into two groups, undesirable (scores below 54) and high (scores equal to or greater than 54). Data using descriptive statistics and inferential statistics, mean, standard deviation, variance, and t-test, Pearson correlation coefficient, ANOVA using SPSS 20 software were analyzed.

**Results:** 50% of men (n = 56) and 50% of the women (n = 56) is formed. The average age of men  $4/12 \pm 8/57$  years and the average age of women  $2/15 \pm 1/55$  years. This study showed that the quality of life of 53/6 percent of poor people and 46/4 percent has been favorable, While 54/5 percent physical health has a poor quality of life, while the 66/1 percent in social health, 58/9 percent in the psychological domain had the desired quality of life. HbA<sub>1c</sub> hemoglobin level was significantly higher in men and HDL levels were significantly higher in women. A significant correlation between blood cholesterol levels, blood sugar level of quality of life was seen. Educational status, economic status, blood pressure and diabetes duration were the statistically significant correlation with quality of life.

**Conclusion:** Due to unsatisfactory quality of life for half of the diabetics and the relationship between quality of life and some demographic variables-care approaches to improve the quality of life including education programs for patients with diabetes is recommended.

**Keywords:** Metabolic diseases; Diabetes Mellitus type II; Hyperglycemia; Dyslipidemias; Quality of life.

### **Mechanisms, Molecular Pathways, Formulations and Treatment Potential of Curcumin in Breast Cancer**

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**Objectives:** To elucidate the role of nutrition in the treatment of cancer, we investigate the relation of curcumin with pathways and molecular mechanisms that have been implicated in breast cancer.

**Materials and Methods:** Searching for related publications has been done using keywords including "Curcumin" AND "Breast cancer" AND "Molecular mechanisms" AND "Pharmacological action" AND "Formulations" in PubMed, Google Scholar, Scopus and Web of Science databases. We also have searched these keywords in Persian in order to evaluate Persian articles.

**Results:** Some characteristics have been made curcumin act as an effective anti-tumor substance including anti-inflammatory, anti-neoangiogenesis, anti-metastasis, decreasing anti-apoptotic proteins, enhancing apoptotic proteins, inhibition of cell cycle, reducing drug resistance, hypersensitivity to radiotherapy of tumor cells and reducing side effects of normal cells. Curcumin also plays a role in the regulation of estrogen receptors (ER) and human epidermal growth factor receptor 2 (HER2) within the complex molecular signaling. Curcumin has pleiotropic characteristics, which make it effective in treatment, not only in combination



with other drugs and treatments, but also in different formulations of curcumin including nanocrystallization, liposome, and polymers.

**Conclusion:** Based on studies, our investigations exhibits that curcumin plays an important role in molecular pathways of breast cancer. Using Curcumin in combination with drugs or other treatments would be useful to cure breast cancer.

**Keywords:** Curcumin; Breast Cancer; Molecular Mechanisms; Therapeutic effects; Formulations.

### The relationship between dietary patterns and irritable bowel syndrome in adolescent Iranian girls

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**Objectives:** Dietary factors are associated with the development of irritable bowel syndrome (IBS) in adults, but there have been no studies in which the relationship between dietary patterns and the risk of IBS has been evaluated among adolescent.

**Materials and Methods:** In this cross sectional study a total of 750 adolescent girls aged between 12 to 18 years old were recruited using a random cluster sampling method from several schools in different areas of Mashhad city, Iran. A validated food frequency questionnaire (FFQ) and the modified version of Rome III questionnaire were used to assess dietary intakes and IBS, respectively. Socio demographic data and anthropometric variables were obtained as well. Factor analysis was used to identify major dietary patterns.

**Results:** Three specific dietary patterns were identified in this study: Healthy, Traditional and Western dietary pattern. An inverse, but the non-significant association was found between the healthy dietary pattern and IBS (OR: 0.83; 95% CI: 0.47, 1.48). The relationship between traditional and western dietary patterns and IBS symptoms were also non-significant.

**Conclusion:** No statistically significant associations were found between dietary patterns and irritable bowel syndrome among

Iranian girl adolescents. Further studies, particularly longitudinal intervention studies with a larger sample size may be required.

**Keywords:** Dietary patterns; factor analysis; gastrointestinal function; irritable bowel syndrome; adolescents.

### Healthy dietary pattern is inversely associated with depression among adolescent girls

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**Objectives:** Currently, psychological disorders have become one of the most serious public health concerns worldwide. A growing interest focused on preventing depression by means diet. However, the effect of dietary patterns on depression among adolescents has not been extensively investigated. Thus, the aim of this study was to evaluate the association between dietary patterns and depression among Iranian adolescent girls.

**Materials and Methods:** This cross-sectional study was based on the obtained data of 988 adolescent girls recruited by a random cluster sampling from several schools in different areas of Mashhad and Sabzevar cities, located in the north-east of Iran. Dietary intakes of study participants were collected applying a 168-item valid and reliable food frequency questionnaire (FFQ). Beck's depression inventory II was used to assess depression. Biochemical markers and anthropometric variables were obtained using standard protocols. Physical activity information was obtained by using the validated Modifiable Activity Questionnaire (MAQ). Factor analysis was used to identify major dietary patterns.

**Results:** Three major dietary patterns were identified classified as Healthy, Fast food and Western dietary patterns. There was a significant





negative association between the healthy dietary pattern and depression in both crude and adjusted models (After adjusting for potential confounders, OR: 0.56; 95% CI: 0.35-0.92, P-trend=0.02). However, there was no significant relationship between fast food and western dietary patterns and depression.

**Conclusion:** Our results highlighted that healthy dietary pattern might be useful in reducing depression among adolescent. Further studies, particularly longitudinal intervention studies with a larger sample size may be required to clarify this relationship.

**Keywords:** Dietary pattern; Psychological disorders; Depression; Adolescent.

### Diet and mental health

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**Objectives:** Recent evidence suggests that good nutrition is essential for our mental health and that a number of mental health conditions may be influenced by dietary factors. One of the most obvious, yet under-recognized factors in the development of major trends in mental health is the role of nutrition. The body of evidence linking diet and mental health is growing at a rapid pace. As well as its impact on short and long-term mental health, the evidence indicates that food plays an important contributing role in the development, management, and prevention of specific mental health problems such as depression, schizophrenia, attention deficit hyperactivity disorder, and Alzheimer's disease.

**Materials and Methods:** This study is a systematic review article on the site and journals and related books have been made. 40 articles by searching electronic databases, SID, Magiran, Pubmed and Iranmedex from 2000 to 2017 found that 20 articles were reviewed.

**Results:** A balanced mood and feelings of well-being can be protected by ensuring that our diet provides adequate amounts of complex carbohydrates, essential fats, amino acids, vitamins and minerals, and water.

**Conclusion:** Good nutrition is essential for our mental health.

**Keywords:** Diet; mental health.

### Association between dietary patterns and Inflammatory Bowel Disease: A systematic review

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**Objectives:** Inflammatory bowel disease (IBD) encompasses Crohn's disease (CD), and ulcerative colitis (UC) are chronic inflammatory conditions, which are increasing in incidence, prevalence, and severity, in many countries. Some of the most common symptoms of the IBD are abdominal pain, diarrhea, and weight loss. While there is a genetic susceptibility to IBD, the probability of disease development is modified by diet, lifestyle, and endogenous factors, including the gut microbiota. It is believed that Specific nutrients or foods have been inconsistently associated with UC or CD risks. Nevertheless, Dietary clinical trials have been reported disagreement in this field. Within this article, we review roles of diet in the etiology and management of IBD based on published studies.

**Materials and Methods:** Pubmed and Scopus searched systematically for randomized controlled trials (RCTs) and systematic reviews, which considered the effect of diet on IBD management. Reviewers where assess articles for eligibility according to prespecified selection criteria, after which 2 independent reviewers performed data extraction and quality appraisal.

**Results:** Various dietary regimes may modify disease symptoms, in part through their actions on the host microbiota, mucosal immune system, and epithelial function.

**Conclusion:** A diet imbalance with high consumption of sugar and soft drinks and low consumption of vegetables was associated with IBD risk. Also, high meat and low fiber diets may promote colonic inflammation and potentially impact treatment responses. Nevertheless, Dietary patterns may be even more important to disease susceptibility than the levels of individual foods or nutrients. A reasonable approach to dietary recommendations for patients with IBD is to propose a well balanced, healthy (low fat, low sugar) diet prepared from fresh ingredients, such as the Mediterranean diet, with exclusions of self-identified foods that worsen or trigger IBD-related symptoms.

**Keywords:** Dietary pattern; Diet; IBD; Inflammatory bowel diseases.

### The effects of clinical nutrition on improvement of burn patients

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**Objectives:** Burning is a major challenge in public health, which needs ongoing intensive care for a long time in hospitals. The studies show that the clinical nutrition has direct effects on wound healing and improvement of general health in burn patients. This study is to survey effects of clinical nutrition on burn patients in hospitals.

**Materials and Methods:** The study is an objective study in two hospitals during two periods of time. The first period was in Tohid Hospital (Burn Hospital) in Tehran between 1996 and 2000. The second period was in Motahari Hospital (Burn Hospital) in Tehran between 2016 and 2017. The nutrition status of more than 60 burn patients was discussed in the study.

**Results:** Weight loss is a common result in many burn patients. Electrolyte imbalance is related to weight loss. Therefore, attention to enough calorie intake, protein and electrolytes balance can lead to improving weight control.

High catabolism in burn patients causes a decrease in Albumin and transferrin in serum. Therefore, Nutrition support for burn patients should be parenteral in early days of burning with high calorie and protein. Early nutrition support is needed to supply enough energy and protein intake and anorexia improvement. Of course, Zinc deficiency is related to anorexia in burn patients, then Zinc supplements may be needed for them. Overall, the nutrition clinical standards suggest RDA for burn patients be more than 50% of normal RDA. Moreover, protein intake for all burn patients should be from short chain protein. In this case, polymeric formulas such as Boost, Compleat, fiber source, Casec, Promod, Resource protein powder, Microlipi are suitable for burn patients in hospitals.

**Conclusion:** Select of correct support nutrition as parenteral is necessary for early days of hospitalization. Moreover, oral nutrition must consistent nutrition needs of burn patients. Also, oral nutrition has to start as soon as possible after the sustainable public health of burn patients.

**Keywords:** Burn patients; Clinical nutrition; parenteral nutrition; Nutrition support; Oral nutrition.

#### **A study of malnutrition prevalence among hospitalized patients in Yasuj, 2016**

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**Objectives:** Malnutrition describes any imbalance in nutrition; from over-nutrition to under-nutrition and it can reduce body performance. Chronic and acute diseases are important factors, which can influence nutritional status. Assessing the prevalence and severity of malnutrition in hospitalized patients could be used for determining health care needs and planning for controlling this problem by managers.

**Materials and Methods:** In this cross-sectional study, subjects (18 years old and above) were selected by nonprobability convenient sampling among the hospitalized patients in different wards of two hospitals during 2 months. For each subject checklists consisting of demographic data, anthropometric measurements such as weight, height, BMI, mid-arm circumference, triceps skinfold thickness, waist circumference, arm fat area and arm muscle area and also subjective global assessment questionnaire were filled out by educated nutritionists and subjects fell into 14 groups according to the main diagnosis. Statistical analysis was conducted by SPSS 19. The descriptive statistics, charts, cross tables and chi square test were used.

**Results:** 600 subjects were included (306 females vs 294 males, mean  $\pm$  SD for age:  $47.9 \pm 19.0$  years, mean  $\pm$  SD for BMI:  $25.0 \pm 5.1$  kg/m<sup>2</sup>). Malnutrition prevalence among hospitalized patients was 49.3% according to BMI (underweight: 6.6% vs overweight and obesity: 42.8%). According to SGA, malnutrition prevalence was 29.9% (425 subjects (70.8%): well-nourished (SGA A), 138 subjects (23.0%): mildly to moderately malnourished (SGA B) and 37 subjects (6.2%): severely malnourished (SGA C)). The overall malnutrition prevalence and the severity of malnutrition were significantly increased with age ( $P < 0.05$ ). The highest mean of waist circumference, abdominal obesity and therefore the risk of metabolic complications was among the patients with metabolic disorders (diabetes type 2, hypertension, hyperlipidemia, fatty liver) and cardiovascular diseases.

**Conclusion:** In this study, over-nutrition was much more common than undernutrition in hospitalized patients. We suggest the nutritional assessment of vulnerable groups of patients at least at the time of admission and then the introduction of an appropriate nutritional support for patients with undernutrition and educational and counseling intervention for the patients with over-nutrition by nutritionists and other health care professionals.



**Keywords:** malnutrition; nutritional assessment; hospitalized patients; subjective global assessment; body mass index.

### Role of branched-chain Amino acid as new leverage in weight loss: Friend or Foe?

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**Objectives:** Overweight and obesity, accelerating are major risk factors for coronary heart disease and associated with higher risk of most of the chronic disorders. In 2014, more than 1.9 billion adults, 18 years and older, were overweight. Of these over 600 million were obese and 41 million children under the age of 5 were overweight or obese. Nutrition as one of the lifestyle factors has important roles in prevention excess body weight. Among all possible nutrients related to obesity or weight loss, type of amino acids especially branched chain amino acids (BCAA) including leucine, isoleucine, and valine might have an important role, which in the present study, it has been viewed meticulously.

**Materials and Methods:** This study was a library-based by using the published articles in scientific databases like PubMed, Google Scholar, and SID from 2010 to 2017 as the period of time on BCAA and weight loss.

**Results:** Both animal and human studies have shown significant inverse associations between BCAA intake and overweight status/obesity. It has shown that higher branched-chain amino acid intake is associated with a lower prevalence of being overweight or obese in middle-aged East Asian and western adults. In the gastrointestinal tract and in fat deposits, BCAAs regulate the release of hormones (for example, leptin, GLP-1, and ghrelin) that can potentially affect food intake and glycemia levels. Despite these benefits, increased levels of BCAAs have been linked to the metabolic syndrome and cardiovascular disease. In clinical studies, increased blood levels of BCAAs positively correlate with insulin resistance HOMA index and levels of HbA1c.

**Conclusion:** Although a number of studies have suggested that BCAA supplementation or BCAA-rich diets are beneficial for promoting lean body mass in obesity or catabolic disorders, or for increasing satiety for body weight loss, acceptance of this idea has been tempered by the associations between increased circulating levels of BCAAs and insulin-resistant obesity and type 2 diabetes, as well as the observations that these

increases might predict future insulin resistance or diabetes.

**Keywords:** leucine; isoleucine; valine; obesity; weight loss.

### Study of overweight and obesity prevalence in children under six in urban, suburban and rural areas covered by health center No.3 of Mashhad.

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**Objectives:** Childhood obesity in developed and developing countries continues to grow. Since a relationship between obesity and overweight with the risk of non-communicable diseases has been found and consequently, another related physical, social and psychological problems cause a large economic burden on the community, this study was designed and implemented in 2017 to investigate the prevalence of overweight and obesity in children under the age of 6 years in urban, suburban and rural areas that are covered by Health Center No. 3 of Mashhad.

**Materials and Methods:** This cross-sectional study was conducted on 8407 children under six years old using the cluster-sampling method. The data were collected by measuring weight and height of the children with standard tools and completing the relevant questionnaires. EPI6 software was used in analyzing the data.

**Results:** This study showed that the rate of overweight and obesity (WAZ z.score  $\geq 2$ ) was in the rural area 2.1%, in the suburban areas 2.4%, in the urban area of 3.2% and in the total area covered 2.5%. The results show the lowest rates in the rural area and the highest in the urban area.

**Conclusion:** According to the results of the study, it seems that factors such as relative welfare, unhealthy food patterns, unhealthy consumption of food, fast food consumption, low exercise, low-energy and high-calorie snacks in children, on the one hand, and negligence of parents to obesity and weight gain as a nutritional problem, on the other hand, has caused this problem. While the prevalence of obesity and overweight in the suburban areas is roughly the same as in rural areas. The control and reduction of each of the above factors require the design and implementation of specific interventions. Meanwhile, identification of other possible causes of obesity and overweight is also necessary.

**Keywords:** overweight; obesity; children under 6 years.

### Macronutrients and risk of Esophagus squamous cell carcinoma

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**Objectives:** The squamous cell carcinoma of the esophagus (ESCC) is prevalent in developing countries, especially in white men. Smoking, low socioeconomic status, environmental factors, and diet have been reported as risk factors for ESCC. The etiological role of nutritional habits has long been under suspicion, especially in the regions with higher prevalence of ESCC risk factors such as Iran. While most micronutrients have been reported to have inverse associations with ESCC, data shows inconsistency about macronutrients. Therefore we aimed to review the impact of macro nutrients on ESCC risk.

**Materials and Methods:** We performed a literature search in databases regarding the significance of macro-nutrients in ESCC. The following keywords were used in combination: "esophagus squamous cell carcinoma" or "ESCC" and "macro nutrients" or "nutrition" to review studies evaluating the significance of macro nutrients in ESCC.

**Results:** It has been shown that diets rich in Omega-3 fatty acids, carbohydrate, and dietary fibers would have protective impacts on ESCC risk. In fact, high consumption of saturated fatty acids, cholesterol, total fat, red/processed meat, butter, eggs, and discretionary calories are related to increased risk of ESCC which the latest has been shown to result in 1.5 folds higher risk. Findings of the role of protein consumption are inconsistent, however, positive associations have been reported in the majority of studies.

**Conclusion:** Carbohydrate consumption and fat intake are negatively correlated. As a matter of fact, the reduced risk of ESCC might reflect higher intake of foods with plant origin and lower fat

consumption. Additionally, the decreased risk associated with high intake of dietary fibers would be confirmatory evidence for this premise.

**Keywords:** Esophagus squamous cell carcinoma; Macronutrients; Cancer risk; Nutrition.

### Micronutrients and Esophagus squamous cell carcinoma: friends or foe?

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**Objectives:** Oesophageal cancer (EC) is one of the least studied cancers. it ranks eighth among all cancers in prevalence. The squamous cell carcinoma (SCC) of the esophagus is the predominant histological type and highly prevalent in the north of Iran. many studies reported this cancer influenced by life style and environmental factors. smoking and alcohol consumption are among the major risk factors for ESCC. Several studies have assessed the role of nutrition and diets in esophageal SCC. Strong evidence has approved the relationship between reduced risk of esophageal SCC and intake of fruits and vegetables. As these substances are rich in micronutrients, we aimed to review their impact on ESCC.

**Materials and Methods:** The search was done in electronic databases using the following keywords in combination: "esophagus squamous cell carcinoma" or "ESCC" and "nutrition" or "micronutrients" to identify studies evaluating the significance of micro nutrients in ESCC.

**Results:** Micronutrients deficiency would have same effects as radiation on DNA and results in oxidative lesions and/or breaks in DNA strands. The majority of the evaluated micronutrients are associated with reduced risk of ESCC, such as folate, iron, zinc, selenium, calcium,  $\beta$ -carotene, vitamins B6, E, C, and, D, riboflavin, niacin, lycopene, lutein, and, zeaxanthin. While sodium,





here, and tinol are associated with increased risk of ESCC.

**Conclusion:** The strongest protective effect against ESCC risk was associated with higher folate consumption. The observed difference in the impacts of some nutrients such as heme and retinol, which are rich in foods with the animal origin, compared to micronutrients with inverse associations to risk of ESCC, which are rich in foods with plant origin, seems to suggest that all micronutrients with plant origin are related to reduced risk of ESCC.

**Keywords:** ESCC; Micronutrients; Diet; Nutrition.

### Effects of Curcumin on Immune Responses

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**Objectives:** Turmeric has a great background in traditional medicine as a remedy for a variety of ailments. Curcumin, which is a pigment extracted from turmeric, has been attributed to most pharmaceutical properties of turmeric. It has been shown that curcumin represents strong anti-inflammatory, anti-cancer, and antioxidant/pro-oxidant characteristics. With this background, curcumin is suggested to have both inhibitory and inducing effects on immunological mechanisms of the cells. The aim of this study is to give an overview of the effects of curcumin on immune responses.

**Materials and Methods:** We searched electronic databases regarding the impact of curcumin on immune responses. The following search terms were utilized: "curcumin AND immune response" or "curcumin AND inflammation."

**Results:** Curcumin has regulatory effects on innate and Cell-mediated immunity (CMI) responses and thereby enhance humoral-immunity. Several pro-inflammatory cytokines such as TNF- $\alpha$ , IL-1 $\beta$ , IL-6, IL-8 has been reported to be inhibited by curcumin which are the consequences of its inhibitory impact on

mitogen-activated protein kinase (MAPK) and nuclear factor kappa-B(NF- $\kappa$ B) translocation. Other suggested pathways for curcumin's anti-inflammatory impacts are including prevention of Arachidonic acid production and inhibition of Janus kinase (JAK)-STAT signaling cascade. The apoptotic induction of curcumin has been assessed in multiple studies and its underlying mechanisms included decreasing Bcl-2, Bcl-XL, and cIAP and increasing BAX. Curcumin increases lymphoid cell populations. Its effects on antigen-presenting features of dendritic-cells would result in decreased T-cell-mediated immune responses.

**Conclusion:** Dietary bioactive components such as curcumin, with immune-interfering impacts, have considerable potential for protective effects against complications such as cancer. Data shows inconsistency regarding the role of curcumin in humoral or cell-mediated immune responses. However, according to present evidence, curcumin acts as a suppressor for innate-immunity, which might contribute, to relieving inflammation and type 1 immune-response disorders.

**Keywords:** Curcumin; Immune response; Turmeric.

### Epileptogenic and Ocular Parasite from Pork

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**Objectives:** Cysticercosis is an infectious disease which is transmitted by the larval form of *Taenia solium*. Pork consumption is the important reason for this disease. The nervous system is one of the sites for *T. solium*. Our purpose is the determination of hazardous effects of Cysticercosis on the disorders occurrence.

**Materials and Methods:** studies were collected from PubMed, Google Scholar, and Elsevier and then those were assessed.

**Results:** Studies showed that Cysticercosis is an epileptogenic parasite and those indicated that mesial temporal lobe epilepsy (MTLE) is the prevalent type of epilepsy and association between hippocampal sclerosis (HS) and MTLE by Calcified Neurocysticercotic lesions (CNLs) was declared. This parasite can involve eye parts and if untreated it can propel to blindness.

**Conclusion:** In conclusion, scholars have stated that Cysticercosis is an epileptogenic and ocular parasite. So it has hazardous effects on the humans' health. By focusing on the researches on the dispersion of this disease, we found that this





parasitic disease has been recognized as a main factor of epilepsy in endemic regions. Eradication and prevention of this epileptogenic and ocular parasite via lack of pork consumption are very necessary.

**Keywords:** Cysticercosis; Epileptogenic; Ocular; Parasite.

### **Pre- and post-diagnosis body mass index and breast cancer prognosis**

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**Objectives:** Prognostic effect of body mass index (BMI) before and after diagnosis for breast cancer (BC) survivors can be clinically valuable. This study aims to review relevant observational and clinical studies.

**Materials and Methods:** This paper was provided as a review by selecting related items, which were published between the years 2010-2017. Documents were collected from databases, PubMed and Google Scholar.

**Results:** Pre-diagnosis BMI of 25-30 kg/m<sup>2</sup> and >30 kg/m<sup>2</sup> were each reported to increase the risk of recurrence, death from BC, and overall mortality in pre/postmenopausal women with BC, with a greater increase before menopause than post-menopause. There was no significant increase in mortality risk for pre-diagnosis underweight women (BMI < 18.5 kg/m<sup>2</sup>). Post-diagnosis weight gain and weight loss conferred substantial risk for BC-specific and overall survival. The BMI increment before diagnosis was found to increase the risk of BC and overall mortality more than after diagnosis.

**Conclusion:** Being overweight or obese before diagnosis appears to be associated with poorer survival in both pre- and postmenopausal BC. Weight maintenance after BC diagnosis may help to minimize adverse BC prognosis.

**Keywords:** Breast cancer; mortality; body mass index; survival.

### **Association between vitamin D and stunting**

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**Objectives:** Malnutrition and micronutrient deficiency may cause growth abnormality. Vitamin D plays a major role in calcium absorption and bone formation. The present study aimed to estimate the prevalence of stunting and its correlates and to explore the role of vitamin D in stunting.

**Materials and Methods:** The present investigation was conducted among 988 school-going adolescents (12-18 years old girls) settled in the Razavi Khorasan province. The vitamin D status was assessed by means of commercial vitamin D assay kit. For stunting assessment (Height-for-age below 10 percentile) CDC charts were used.

**Results:** The overall prevalence of stunting were found to be 14.8%. A high prevalence of vitamin D deficiency was found among this population (95.8%) and 4.2% of them were the potential deficiency. The highest prevalence of stunting was observed among 18 years old subjects (37.5%). In stunting subjects, 14.1% and 20.6% suffered from vitamin D deficiency and/or were the potential deficiency, respectively. As well as, the association between vitamin D and stunting was 0.007 and showed the strong correlation between them.

**Conclusion:** There was a very high prevalence vitamin D deficiency and stunting among the school-children girls. Nutritional intervention is necessary to ameliorate their nutritional status. The results of the present investigation will help policy makers to formulate various developmental and health care programs.

**Keywords:** Adolescent; stunting; anthropometry; vitamin D deficiency.

### **The effectiveness of intervention program based on lifestyle self-efficacy on the prevention of overweight and obesity among secondary school female students**

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**Objectives:** Overweight and obesity are risk factors for developing chronic diseases. Self-efficacy beliefs are predictive of a wide range of health behaviors. This study aimed to determine the effectiveness of intervention program based on lifestyle, self-efficacy in the prevention of overweight and obesity in the secondary school female students.

**Materials and Methods:** This was a quasi-experimental study with a control and experimental group, which was conducted on 70 secondary school female students who were randomly assigned to experimental and control groups. The data were collected by using the weight efficacy lifestyle questionnaire (WEL). Educational programs were implemented in the experimental group and the results were evaluated after the intervention. Data were analyzed by SPSS software.

**Results:** Before the intervention, the two groups were not significantly different in terms of the mean scores of self-efficacy in controlling eating behavior in situations associated with positive or negative emotions, availability of food, social pressure and physical discomfort ( $P>0.05$ ). But after the intervention, mean scores in the experimental group increased and no significant difference was observed in all situations ( $P<0.001$ ). In the control group no significant difference in any of the situations ( $P>0.05$ ).

**Conclusion:** The use of educational intervention based on lifestyle self-efficacy improves adolescents' self-efficacy in situations characterized by positive emotion or negative emotions, availability of food, social pressure and physical pain, which could provoke overeating, and helps weight control and prevention of obesity.

**Keywords:** Overweight; Obesity; Self-efficacy; Students.

### Changing of BMI among women in the north of Iran, 2004-20 13: results of two cross-sectional studies

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**Objectives:** Obesity is a cardiovascular risk factor and this study aims to compare the body mass index (BMI) distribution in rural women and its relationship with economic status and educational levels between 2004 and 20 13 in the north of Iran.

**Materials and Methods:** Two cross-sectional studies carried out on the 2839 and 2478 of women, in 2004 and 20 13, respectively. 20 villages were chosen by random sampling from 1 18 ones and they are the same in two stages. The data were recorded by 20 trained interviewers using a questionnaire. Subjects were weighted by balance and their height was measured by a tape meter. Obesity was defined based on BMI according to the World Health Organization classification. The data from two stages were combined and SPSS 19.0 software was used for statistical data analysis. P-value under 0.05 included significations.

**Results:** The prevalence of obesity and overweight was seen in 33.5% and 20. 1% of subjects, respectively, in 20 13. The mean of BMI increased 0.9 kg/m<sup>2</sup> in 20 13 compared with 2004 ( $P=0.031$ ). Generally, overweight and obesity increased 3.6% and 5.2% from 2004 to 20 13, respectively and statistical differences are significant among them ( $P=0.001$  for all). In 20 13, the results of logistic regression analyses showed that the risk of obesity was 2. 130 (95% CI, 1.703- 2.664) in "≥25- year group" compared with "< 25- year group". Also, the risk of obesity was 2.398 (95% CI, 1.787-3. 193) and 1.5 15 (95% CI, 1. 160- 1.978) in good and in the moderate economic group compared with the poor economic group, respectively, however, the odds ratio was not significant among educational levels.

**Conclusion:** Obesity has been remaining as a health problem in rural women in the north of Iran and it was averagely increased 1% annually from 2004 to 20 13, however, the variation was remarkable in older women. Contrary to educational levels, economic status was a risk factor for obesity.

**Keywords:** BMI; Economy; Education; Women; Rural.

### A review of the role of nutrition in the prevention of periodontal diseases during pregnancy

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**Objectives:** Pregnancy increases the risk of tooth decay and other periodontal diseases, and due to the fact that periodontal diseases are one of the

most common epidemics in the world (40 to 90 percent), prevention and treatment management is important. Changes in the state of pregnant women's hormones, (the most prominent of which are elevated estrogen and progesterone levels), also changes in salivary composition, changes in food habits to prevent vomiting and the effects of stomach acid due to repeated vomiting, increase the acidity of the mouth which ultimately causes swelling and increased gingival sensitivity, tendency to bleed, periodontitis, and dental plaque formation.

The purpose of this article is to investigate evidence of the relationship between nutrition, diet and periodontal disease during pregnancy, and provide nutritional advice for prevention.

**Materials and Methods:** By searching for the key words in the Pubmed, Science Direct, Wiley databases, the available articles were examined in English from 1950 to 2016, and finally, out of a total of 65 articles, 28 eligible sources were selected. Then they were criticized.

**Results:** According to research conducted, oral and dental health during pregnancy is mainly influenced by a healthy diet. In order to achieve this goal, regular oral care, education, and control by the dentist is also important. During pregnancy, the use of simple carbohydrates, the food containing organic acids, such as fruit juices, and use of fast food, increases the risk of periodontal diseases. Preventing and treating periodontal diseases during pregnancy requires proper diets, which is recommended to reduce the frequency of cariogenic foods and increase the use of prophylactic foods (which contain enough vitamins and mineral compounds).

**Conclusion:** In this article, the role of each of the vitamins (A, B, D, C, E, K), minerals (Ca, Mg, Iron, zinc), carbohydrates, proteins in the prevention of periodontal diseases during pregnancy is reviewed. Due to the role of nutrition in periodontal diseases during pregnancy, nutritional recommendations for prevention and treatment are presented.

**Keywords:** Nutrition; Periodontal; Pregnancy.

### Dietary intake and survival in women with breast cancer

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**Objectives:** Dietary intake is a modifiable factor that may decrease breast cancer (BC) recurrence and extend disease survival. However, estimation of regimen eaten by BC survivors remains a

controversial subject. This study aims to review relevant observational and preclinical studies.

**Materials and Methods:** This paper was provided as a review by selecting related items, which were published between the years 2010-2017. Documents were collected from databases, PubMed and Google Scholar.

**Results:** An inverse association was reported between dietary fat and BC survival, which was not significant after energy adjustment. Nutrients provided by fruits and vegetables had the inverse relationship with BC survival. The majority of studies revealed that a dietary pattern high in vegetable oils, soups/bouillons vs. unhealthy dietary pattern (high intake of red and processed meat and deep-frying fat) were inversely associated with BC recurrence and all-cause mortality. Limiting intake of red and processed meat was found to be related to lower risk for overall mortality. However, intervention with a diet high in vegetables, fruit, and fiber and low in total fat did not reduce BC recurrence/survival during the follow-up period.

**Conclusion:** the Pre-diagnostic healthy diet that has adequate vegetables and fruit, and limiting red/processed meat and dietary fat may reduce the risk of recurrence and overall mortality in BC women. Less information exists to indicate the role of nutritional agents in BC survival after diagnosis.

**Keywords:** Breast cancer; survival; dietary intake.

### Properties of Pistacia Atlantica in the Prevention and Treatment of Diseases

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**Objectives:** Pistachio Atlantica with two to seven meters in height grows in countries such as Iran, Afghanistan, South Australia, Turkey and several other countries. Apart from its numerous environmental values, this plant has a wide range of pharmaceutical and industrial applications. Such application is well established. The tree resin has a lot of medicinal and industrial applications and its fruit is used as a medicinal herb. The purpose of this study is to determine the properties of Pistachio Atlantica in the prevention and treatment of diseases.

**Materials and Methods:** This review study was conducted by searching the keywords of Pistacia Atlantica, Prevention, Treatment, Disease in

Pubmed, Scopus, Magiran, Isi, Sid, Science Direct database from 20 10 to 20 17. Finally, from 15 papers identified by the search, only eight articles which met the review criteria were examined.

**Results:** The use of tree oil prevents atherosclerosis and cardiovascular diseases and the antioxidant activity of Pistacia Atlantica extract prevents the spread of gastric carcinoma protein. This herb is the promising source of anticancer drugs. Oral and rectal administration of its oil can be useful in the treatment of ulcerative colitis. Tropical medication of the oil gel is effective in wound healing. The tree can provide a natural antioxidant as much as Kilka fish does. Its natural antioxidant effect increases the stability of unsaturated oil of Kilka. Its seed oil prevents the hydrolysis and oxidative reactions of Canola oil, which results in the production of primary and secondary oxidizing products. Ten percent of its mixture can prevent the formation of triglycerides and oxidized triglycerides and synthetic antioxidants of TBHQ. A group of studies on mice has shown that the oil can modify hyperthyroidism. This oil has more saturated fatty acids than olive or sunflower oil because its saturated fatty acids are Palmitic acids. The acid can prevent blood clotting in the veins, and increase the shelf-life of foods. The plant contains essential amino acids such as iron, zinc, magnesium, manganese, copper, selenium, phosphorus, calcium, and sodium.

**Conclusion:** Based on the studies reviewed, low cost and the health benefits of the tree make it a good alternative to edible oils in meals.

**Keywords:** Prevention; Treatment; Disease, Pistacia Atlantica.

#### Evaluation of antioxidant activity of horseradish (*Armoracia rusticana*) extract

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**Objectives:** Horseradish (*Armoracia rusticana*) is a perennial herb belonging to the Brassicaceae family and contains biologically active substances. It has been known since ancient times as a folk medicinal herb and as a plant of nutritional value and culinary interest. The traditions to use the horseradish plant for the medicinal purpose are still applied in many countries. Horseradish is a rich source of a number of bioactive compounds. The aim of the

current research was to explore the antioxidant effect of water extract root.

**Materials and Methods:** After extraction of the root, the resulting solution was passed through 1KD cut-off ultrafiltration membrane and then freeze dried. Angiotensin converting enzyme (ACE) inhibitory activity and different antioxidant activities of the extract were in vitro evaluated and IC50 values were determined.

**Results:** 2,2-diphenyl- 1-picrylhydrazyl (DPPH) radical scavenging activity was 14.42 (mg/ml), 2,2-azino-bis(3-ethylbenzthiazoline-6-sulphonic acid (ABTS+) radical scavenging was 10 (mg/ml). Metal ion chelating was 0.5 (mg/ml). The ACE inhibitory activity of the extract was also examined and results showed that it has no ACE inhibitory activity.

**Conclusion:** the root extract can act as A potent natural antioxidant, but it does not have ACE inhibitory activity.

**Keywords:** Antioxidant activity; Horseradish; DPPH; ABTS+; ACE.

#### The effect of melatonin supplementation on sleep quality and delirium in the critically ill patients: A systematic review

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**Objectives:** Intensive care sleepiness and delirium is a challengeable problem in critically ill patients. Delirium is a dependent to high mortality, increased mechanical ventilation, nosocomial infections and length of stay (LOS) in the intensive care unit (ICU). Many investigations have indicated that critically ill patients have abnormal levels of melatonin and sleep disturbance. Melatonin is one of the major regulators of normal sleep patterns that have neuroprotective effects and antioxidant properties. There have been interests in the utilization of exogenous melatonin as an approach to improve the quality of sleep. However, there is no consensus on melatonin supplementation in ICU patients. The objective of the present study was to determine the effects of melatonin supplement on the Delirium and duration of sleep in critically ill patient.

**Materials and Methods:** An integrative approach was used for this systematic review in order to evaluate the available evidence on this issue, which has not a complete assessment yet. In this review article, the PubMed, MEDLINE, google scholar and Scopus databases were searched for articles which are related to melatonin supplementation effects on the



Delirium and duration of sleep in critically ill patients. Results were then filtered for English language and critical ill populations (18 yr. Age) using either descriptive or experimental study designs. Then, data related to this topic were extracted, evaluated and summarized.

**Results:** In general, sleep period was not significantly reduced, but snooze sleep is prolonged and Delirium was reduced. A balance melatonin level as well as improving neurotransmitters production may contribute to the decrease of Delirium. Environmental factors that affect the outcomes are high sound levels, frequent visits, and medications. Considerable heterogeneity in data exists between patients and studies affecting generalizability.

**Conclusion:** There are several pieces of evidence indicating that melatonin supplementation could significantly improve sleep disruption and delirium in the ICU patient. Comprehensive investigations may be needed for recognizing the effects of melatonin supplementation on delirium and sleepless for intensive care patients. Therefore, further clinical trial studies using more physiological actions of melatonin and improving variables are required.

**Keywords:** Melatonin; Sleep disruption; delirium.

### **Study of Vitamin D Supplementation Effects on First and Second High School Grade Girls in Urban Areas Covered by Health Center No.3 Mashhad**

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**Objectives:** According to the results of a study of Poura, a research on the micronutrient in Iran (2012), a high prevalence of vitamin D deficiency in all age groups has been observed. Inspired by the widespread role of vitamin D in health, the aim of this study is to evaluate the effect of vitamin D supplements on female students in 2014.

**Materials and Methods:** This clinical trial study was conducted in 10 schools randomly selected. The students were selected by cluster sampling method and 137 students entered the study after providing written consent. Educational training sessions were conducted for students and their parents and initial blood sampling was performed. Subsequently, the distribution of 9 pills of vitamin D3, 50,000 units monthly started. At the end of the supplemental course, a second blood sampling was performed. Data analysis was done by SPSS software.

**Results:** Based on the results of experiments of the supplementation of vitamin D megadoses in female students (Implemented by the Research Deputy of Mashhad University of Medical Sciences), at the start of the study, 73% of the students had serum levels of 25 hydroxyvitamin D3 less than 20 ng/ml. However, at the end of the study, the percentage dropped to 27.4% of students, which is statistically significant.

**Conclusion:** This study showed that supplementation with vitamin D megadoses has been effective in improving serum levels of hydroxyvitamin D3. Continuing supplementary in students can have a beneficial effect on their vitamin D status.

**Keywords:** vitamin D supplementation; students.

### **Nutrition and Depression: how to fight depression naturally with nutrition**

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**Objectives:** The most common mental disorders that are currently prevalent in numerous countries are depression, bipolar disorder, schizophrenia, and obsessive-compulsive disorder (OCD). Few people are aware of the connection between nutrition and depression. Nutrition can play a key role in the onset as well as severity and duration of depression. These may include poor appetite, skipping meals, and a dominant desire for sweet foods.

**Materials and Methods:** This article tries to study based on reliable articles of SID, Pubmed, WebMD, and Science direct.

**Results:** The most common nutritional deficiencies seen in patients with mental disorders are essential vitamins, minerals (Chromium, Iodine, Iron, Lithium, Selenium, Zinc, Magnesium), Omega-3 fatty acids and amino acids (tryptophan, tyrosine, phenylalanine, methionine). Also, Consumption of diets low in carbohydrate tends to precipitate depression.

**Conclusion:** When we take a close look at the diet of depressed people, an interesting observation is that their nutrition is far from adequate. Deficiencies in neurotransmitters such as serotonin, dopamine, noradrenaline, and  $\gamma$ -aminobutyric acid (GABA) are associated with depression. When tryptophan consumed alone on an empty stomach, a precursor of serotonin is



converted to serotonin. Tyrosine and phenylalanine are converted into dopamine and norepinephrine. Methionine combines with adenosine triphosphate (ATP) to produce S-adenosylmethionine (SAM), which facilitates the production of neurotransmitters in the brain.

In depressed patients, daily consumption of dietary supplements of omega-3 fatty acid that contain 1.5-2 g of EPA has been shown to stimulate mood elevation. Randomized controlled trials that involve folate and vitamin B 12 suggest that patients treated with 0.8 mg of folic acid/day or 0.4 mg of vitamin B 12/day will exhibit decreased depression symptoms. Strong evidence exists for the use of herbal supplements containing extracts of passionflower or kava and combinations of L-lysine and L-arginine as treatments for anxiety disorders. Based on the available evidence, it appears that nutritional and herbal supplementation is an effective method for treating anxiety-related conditions without the risk of serious side effects.

**Keywords:** nutrition; depression; mental disorders.

### **Nutritional Aspects to Non-alcoholic fatty liver disease (NAFLD) in Iranian Traditional Medicine**

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**Objectives:** The NAFLD is an important progressing liver damage epidemic. There is an increase in the use of complementary and alternative medicine (CAM), especially food therapy, by the patients including those with liver diseases. In this study, we review the TM textbook and new research, reporting the effectiveness of medicinal food in the treatment of NAFLD.

**Materials and Methods:** We searched international database PubMed, EMBASE, Cochrane library, and databases in Iranian SID, Magiran, and textbook of TM including Kamel al-Sanaat al-Tibbyyah, Al-Qanun fi al-Tibb, and Zakhireh Kharazmshahi were reviewed. Using a searching strategy that key words (2000-2015). Analysis of data extraction and quality evaluation of the Literature were performed with content analysis methods.

**Results:** Food medicine is a part of various brands of traditional medicine, extending back to a long time ago. Over the time, a variety of foods were added to the database of Medicine. The TPM with its dynamic treasure of novel medicinal

foods has introduced various options for gastrointestinal system ailments, ranging from prevention to treatment fields, in this regard, liver—as a vital organ—has a fundamental position. They are recommended: Light foods, easy digestion and nutrition with Eat slowly and chew well, and Stew treatment includes: Plum Bukhara, Spinach, Artichoke, Celery plant, Barberry, Avoid cold and cold fruits, avoid Meat products and eating fast food. Many other commands are also suggested.

**Conclusion:** Medicinal foods have proven to be effective for the correction of the metabolic profile of NAFLD patients, with few reports of adverse effects. Nonetheless, few studies have addressed the effect of foods remedies on the histopathological characteristics of patients with NAFLD. Well-designed clinical trials with adequate participants and histopathological investigations are needed to evaluate both efficacy and safety of these food products.

**Keywords:** Medicine, Traditional, Non-alcoholic fatty liver disease (NAFLD), Food

### **Nutritional choices of Ahwaz people in 1396** Sahebdel M<sup>1</sup>, Salmanzadeh SH<sup>1</sup>, Mosayebi A<sup>1</sup>, Taghi Zadeh SM<sup>1</sup>, Abdollahi Z<sup>2</sup>

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**Objectives:** The traditions of the past and the new way of life has led to changes in dietary patterns, reduced the correct choices communicable diseases such as obesity, nutrition, cardiovascular disease, cancer, and diabetes. This study was conducted to verify the correct use of food at the household.

**Materials and Methods:** In this cross-sectional study of 120 households were selected by cluster sampling step, the data collection instrument was a questionnaire survey of knowledge, attitudes, and practice of urban and rural households on Nutrition (NUTRIKAP2) in 1396 has been completed in a home interview. The data have been collected was analyzed using descriptive statistical methods.

**Results:** It was observed that the use of daily snacks: 60% per day of fruit, 30% of milk and 12.5% use some form of bread and cheese for snacks. While the Daily 3 1.7% of cakes and biscuits, and 13.3% of the puff consumed as a snack. It was also observed regarding food use The food was observed on the using skinless chicken 76.9%, Low-fat meat 85%, low-fat dairy products, pasteurized 48%. The daily and weekly

frequency of food consumption: Poultry consumption 9 1.7%, fish 8 1.7%, legumes (beans, lentils, etc.) 85.8%, fresh vegetables (salad and fresh herbs) 95.9%, milk, yogurt or cheese 100%, Dough 87.5%, The use of rarely and never sausage 89.2%, Pizza 94. 1% and beverages, 68.3% is. Daily and weekly food consumption of the poor 89. 1% sugar can be cited.

**Conclusion:** Fortunately, much / most of the food daily food intake appropriately inappropriate that it is due to the increasing knowledge of nutrition and training Families through health centers, social media, and press. We hope that by raising the correct choices in the community, we control noncommunicable diseases. The high consumption of sugar, which is influenced by culture education and information on energy saving and prevention of diseases, especially diabetes, is useful.

**Keywords:** Correct nutritional choices; Snack; Ahvaz.

#### **Study the effect of sugar beet fiber and micro-encapsulation on the viability of Lactobacillus casei LC-0 1 in probiotic yogurt**

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**Objectives:** The benefits promoted by probiotic bacteria are increasingly explored in various types of foods, however, cell viability in these products is often low and the ability to survive and multiply in the digestive tract strongly influences the benefits that probiotics can produce. Microencapsulation and using prebiotic compounds are two promising techniques for bacterial cell protection in food systems and also against a harsh condition of the digestive tract. Sugar Beet waste is obtained from sugar industry and usually is used for animal feeding. However, it is a rich source of dietary fibers can promote health condition. The aim of this study was to examine the abilities of microencapsulation and adding sugar beet fiber on the viability of Lactobacillus casei LC-0 1 and physicochemical properties of probiotic yogurt.

**Materials and Methods:** Microencapsulation of Lactobacillus casei LC-0 1 cells was done in calcium alginate beads by emulsion method. Sugar beet fiber was prepared by alcoholic

extraction of sugar beet pulp along with drying at 50°C for 12 hours. The fiber was added to yogurt at levels of 0.5, 1 and 1.5% with free or microencapsulated Lactobacillus casei and cells were enumerated after 1, 7, 14 and 21 days of storage at 4°C. Also, physicochemical properties of probiotic yogurts were evaluated 1 day after production.

**Results:** Using Sugar beet fiber and microencapsulation of Lactobacillus casei LC-0 1 improved cell viability during cold storage. Maximum cell population ( $3.87 \times 10^8$  CFU/g) was found in probiotic yogurt containing 0.5% fiber and microencapsulated cells. No significant difference was observed between pH of all samples where the acidity of fiber contained yogurts were higher than samples with no fiber added. Adding fiber and increasing its amount decreased yogurt syneresis significantly ( $p < 0.05$ ).

**Conclusion:** It was concluded that sugar beet fiber can improve the growth and survivability of probiotic bacteria in yogurt so it contains prebiotic compounds which can use for production of synbiotic products. However, microencapsulation is a more effective tool for the protection of Lactobacillus casei LC-0 1 cells in yogurt.

**Keywords:** Microencapsulation, probiotic, Sugar beet fiber, Yoghurt.

#### **The comparison of Waist Circumference, Waist to Hip ratio and Waist to Height Ratio among adults' women in the North of Iran between 2004 and 2013**

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**Objectives:** Central obesity is a common health disorder and the objectives of this research are to compare the changes in central obesity among rural women in the north of Iran from 2004 to 2013.

**Materials and Methods:** Two cross-sectional studies were established in the 2839 and 2478 subjects in 2004 (first stage) and 2013 (second stage), respectively. Among 118 villages, 20 were selected by random sampling; they were similar in two studies. The data were recorded by 20 trained interviewers using a questionnaire. Central obesity based on the World Health



Organization classification was defined as WC>88 cm, WHR>0.8 and WHtR>0.5. SPSS software (version 18.0, Chicago 11, USA) was used for statistical data analysis and P-value under 0.05 was included as significant.

**Results:** The prevalence of central obesity in 2013 based on WC, WHR and WHtR was 37.4%, 73.5%, and 67.8%, respectively. Compared with 2004, the prevalence of central obesity based on WHR increased 5.4% ( $p=0.001$ ), whereas morbid obesity (WHtR>0.6) based on WHtR decreased 3.7% in 2013 ( $p=0.004$ ). Central obesity based on WHR significantly decreased in  $\leq 24$  y group ( $P=0.003$ ) while it significantly increased in older groups ( $P=0.001$  for all). Moreover, morbid obesity in all ages, economic and in education groups (except uneducated one) has significantly decreased ( $P<0.05$  for all).

**Conclusion:** Central obesity remained as the main health problem in the north of Iran and the heterogeneous trend was seen among WC, WHR and WHtR indices in this area. In spite of the increase in WHR and WHtR obesity has been decreased from 2004 to 2013. This study revealed that height as a determining factor of WHtR resulting in WHtR declining.

**Keywords:** Central Obesity, Trend, Women, Socio-demography, Iran

### Curcumin inhibits cell growth and migratory behaviors of human hepatocellular carcinoma cells

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**Objectives:** Hepatocellular carcinoma is the most common type of liver cancer with poor prognosis. There is a growing body of data evaluating the antitumor activity of Curcumin in different tumor types. The aim of the current study was to explore the effect of curcumin in 2 and 3-dimensional models of Huh 7.

**Materials and Methods:** Huh 7 was cultured. MTT assay was employed to evaluate the viability of the cells. The cytotoxicity of curcumin was investigated in 3-dimensional cell culture models (spheroid). Invasion assay was used to assess the invasive behavior of Huh 7 cells before and after

treatment with curcumin. The expression levels of some genes involved in apoptosis, migration, as well as the markers of the Wnt pathway, was evaluated by real-time quantitative RT-PCR.

**Results:** Our data showed that curcumin suppressed cell growth via modulation of the Wnt pathway. We observed tumor shrinkage after 5 days in Huh 7 cells treated with curcumin at IC50 and 5xIC50 values. Curcumin was able to decrease the invasiveness of Huh 7. Moreover, Curcumin reduced the expression of CyclinD 1 in Huh7 cells.

**Conclusion:** We demonstrate the antitumor activity of curcumin in a liver cancer cell line, supporting further investigations on the role of this novel anticancer agent in hepatocellular carcinoma.

**Keywords:** liver cancer, curcumin, anti-tumor effect, spheroid, RT-PCR.

### Inhibitory potential of *Acroptilon repens* against key enzyme involved diabetes and its antioxidant activity

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**Objectives:** The *Acroptilon repens* (L.) DC (locally known as 'Russian knapweed') belongs to the family Asteraceae and has essential oil and is a medicinal plant with antipyretic properties and antimicrobial activity against gram-positive bacteria. Furthermore, it is a rich source of different antioxidants, which is advised in the treatment of various diseases such as inflammation. This study was devoted to the determination of anti-amylase and antioxidant activities of *A. repens* using various extraction solvents.

**Materials and Methods:** The air-dried and grounded leaves *A. repens* were extracted by using two solvents: methanol (70%) and acetone (70%). The antioxidant activity of the extracts was measured by DPPH radical scavenging activity and ferric-reducing antioxidant power. Also, total phenol and flavonoid contents of samples determined. The anti-amylase activity of the extracts was measured by the DNS method according to Bernfeld.

**Results:** The results indicated that extract obtained by 70% acetone has the highest DPPH radical scavenging activity and reducing power (with IC50=3.26±0.85 mg/ml and 0.74±0.049 mM Fe (II)/g DW, respectively). In addition, the same extract also exhibited the highest total phenol content (6.89±0.65 mg GAE/g DW) and the highest total flavonoid content (3.37±0.17

mg QE/ g DW). Furthermore, the results showed that acetone extract of *A. repens* strongly inhibited  $\alpha$ -amylase activity (with  $IC_{50}=0.399$  mg/ml).

**Conclusion:** To conclude, in this paper the enzyme inhibitory effects and antioxidant of *A. repens* is reported. Among the obtained extracts, acetone extract presented high phenolic content and higher anti-amylase and antioxidant activities. Hence, it is suggested that *A. repens* could suitably as a hypoglycemic agent. However, to precisely evaluate the safety and efficacy of this plant, in vivo studies are needed.

**Keywords:** *Acroptilon repens*, Anti-amylase, Antioxidant, phenolic contents.

### You are what your mother eats! A narrative review on the effect of maternal preconception diet on fetal sex ratio

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**Objectives:** Baby sex selection is an old but controversial subject. Traditionally mentioned by grandmothers, new evidence shows that there is an association between maternal preconception diet and the fetal sex ratio. Awareness of real relationships between maternal diet and sex ratio can be useful to find out the reasons of some problems occurred by noticeable changes in people's diet, for example the falling proportion of male births in industrialized countries that is claimed to be the result of maternal poor diet and consequently to help us improve the current situation. In this study, we aimed to find out if there are such relationships and if so, using them in order to solve the problems caused by the unbalanced proportion of males to females in countries involved.

**Materials and Methods:** A narrative review and synthesis were undertaken including English articles published before August 20 17 in PubMed, Google Scholar and Scopus databases based on the relevant medical subject headings (MeSH) of maternal preconception diet, fetal sex ratio, baby sex determination and fetal gender selection. Finally, 10 articles were eligible to be included in our narrative review out of about 50 articles found at initial search.

**Results:** Based on articles reviewed, there are nutritional factors among other factors (like environmental temperature, changing in hormonal profiles in women near conception and

the insemination timing) which are mentioned to have effects on sex ratio.

**Conclusion:** Eating breakfast (especially cereals), increase in the level of blood glucose, a high level of maternal testosterone that may be due to environmental stressors, consumption of mineral resources (especially sodium, potassium and weakly calcium and magnesium) and totally, a high average energy intake may lead to male birth. So maternal condition such as nutritional condition can affect the sex ratio; Accordingly, these findings and future studies should be used and focus on solving demographic problems occurred by arbitrary sex selections in countries with the unbalanced proportion of males to females.

**Keywords:** maternal preconception diet, fetal sex ratio, fetal gender selection, baby sex determination.

### The effect of oral $\beta$ -glucan supplement on liver echogenicity and enzymes in Non-Alcoholic Fatty Liver Disease treating with hypocaloric diet and vitamin E

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**Objectives:** Nonalcoholic fatty liver disease (NAFLD) is the most common diseases of our century. There is no consensus about treatment methods of NAFLD. Beta-glucan is a soluble fiber that is useful in weight and insulin resistance management. The aim of this study was to evaluate the effect of beta-glucan supplement, on liver echogenicity and enzymes in NAFLD patients.

**Materials and Methods:** Current randomized, double-blind, parallel, placebo-controlled study was carried out on 41 patients with NAFLD. In addition to low-calorie diet and vitamin E supplement, the experimental group (n=20) took 3 grams of oats beta-glucan daily and the control group (n=21) took the same amount of maltodextrin as a placebo for 8 weeks. At the beginning and the end of the study, biochemical tests including ALT, AST, and abdominal ultrasound was performed in all patients.

**Results:** There was no significant difference in the level of liver enzymes. Sonographic results showed that the intervention group significantly had better echogenicity compared to the control group (p=0.006) (55% improvement in the



intervention group compared to 37% improvement in the control group).

**Conclusion:** The results show an effective beta-glucan supplementation on liver echogenicity in NAFLD Patients. Studies in longer periods are necessary to confirm the results.

**Keywords:** beta-glucan, soluble fiber, NAFLD.

#### **The effect of coffee consumption on depression- A narrative review**

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**Objectives:** Depression has a high disease burden almost anywhere in the world. As predicted, till 2020th, depression causes more deaths than AIDS. The aim of this study was to find the relationship between coffee consumption and depression.

**Materials and Methods:** A narrative review and synthesis were undertaken including English articles published before August 20 17 in PubMed, Google Scholar and Scopus databases based on the relevant medical subject headings (MeSH) of coffee, depression, caffeine, suicide, and neuro-inflammation. Finally, 22 articles were eligible to be included in our narrative review out of about 87 articles found at initial search.

**Results:** There were a number of cohort studies, randomized clinical trials and systematic reviews indicating a reverse correlation between coffee intake and depression occurrence, but also there were a few studies with exactly opposite results, showing that coffee usage is associated with higher depression risk in "adult polysubstance abusers" and other moderate people which are conflicting.

**Conclusion:** Based on the literature reviewed, these controversies may be due to artificial sweeteners used beside coffee. There were studies demonstrated that adding artificial sweeteners, except honey and sugar, can reverse the effect of coffee on decreasing the depression risk. Generally, coffee can decrease the depression risk but there is not such an effect for just "caffeine" intake; in addition, there is a J-shaped relationship noted for coffee intake versus depression and also "suicide risk" in a Finnish cohort. To describe the related mechanism, it is claimed that coffee's important constituents, like caffeine, chlorogenic acid, and ferulic acid are observed to have a role in molecular mechanisms related to depression and they modulate neuro-inflammatory pathways leading to depression. As a caution, pregnant women, anxiety disorder patients and persons

with low calcium intake should be careful in drinking coffee due to its uncertain negative side effects. Coffee consumption can decrease the risk of depression.

**Keywords:** depression, coffee, caffeine, suicide, neuroinflammation.

#### **Effect of vitamin D supplementation on thioredoxin binding protein 2 gene expression in patients with diabetes type 2**

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**Objectives:** Diabetes type 2 is an oxidative stress related disease.

**Materials and Methods:** This randomized controlled trial was done to evaluate the effect of vitamin D supplementation on thioredoxin binding protein 2 (TBP-2) gene expression in patients with type 2 diabetes. Subjects of this study consist of 28 patients with type 2 diabetes who received 100 micrograms (4000 IU) vitamin D and 30 diabetic patients who received placebo for two months. The effect of vitamin D on gene expression of TBP-2 in PBMC cells was measured by RT-PCR at the beginning and at the end of the study.

**Results:** The results of this study showed no significant differences in TBP-2 gene expression between 2 groups, but a significant decrease in serum TBP-2 concentration in vitamin D receiving group at the end of supplementation.

**Conclusion:** It seems that vitamin D supplementation has no effect on the TBP-2 gene expression in PBMC cells.

**Keywords:** Diabetes type 2, Gene expression, Thioredoxin binding protein 2 (TBP-2), Vitamin D.

#### **The effect of alginate supplementation with energy-restricted diet on weight loss in obese persons**

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**Objectives:** The recent studies about alginate-based proposed that having strong gelling fibers may reduce the feeling of hunger and reduce energy intakes. However, the long-term efficacy and safety of alginate supplementation on human weight managing are insufficiency. The primary aim of the study was to examine the effects of alginate supplementation and with energy restriction (-500 kcal/d) on body weight, fat and second, compare metabolic risk markers with a control group.

**Materials and Methods:** In a parallel, double-blind, placebo-controlled study, we randomly allocated 90 obese persons to either an energy-restricted diet plus a placebo capsule supplement or an energy-restricted diet plus an alginate-based capsule supplement (15 g fiber). The capsules were administered 3 times/d before main meals with water for a period of 12 weeks.

**Results:** In the intention-to-treat (ITT) analysis there was no significant difference in loss of body weight and fat between groups ( $P > 0.1$ ). However, in the complete analysis ( $n = 84$ ), we exhibited a greater weight loss with alginate ( $6.67 \pm 3.43$  kg) than with the placebo ( $5.12 \pm 3.22$  kg) ( $P = 0.02$ ), which was mainly attributed to a decrease in the percentage of body fat ( $P = 0.03$ ). In the ITT analysis, systolic and diastolic blood pressure was the larger decrease in the alginate group than in the placebo group ( $P > 0.05$ ). Plasma levels of glucose, insulin, HOMA-IR, C-reactive protein, and ghrelin, and lipid metabolism did not differ between two groups in the ITT analysis ( $P > 0.1$ ).

**Conclusion:** These results propose that alginate supplementation with energy restriction may decrease weight loss in obese person.

**Keywords:** Alginate supplementation, Energy-restricted diet, Weight loss, Metabolic risk markers.

#### A comparative study on the antioxidant potentiality of wild button mushrooms, *Agaricus* spp.

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**Objectives:** While the cultivated button mushroom, *Agaricus bisporus*, is the most

commonly grown mushroom in the world and Iran as well, research has shown that there are many wild types of *Agaricus* spp. growing wild in various habitats of Iran. The cultivated button mushroom is not considered to be as high in medicinal value as other medicinal mushrooms; however; wild mushrooms are well-known to possess significant nutraceuticals, particularly among societies of South East Asia, Europe, and Africa. Thus far, very little is known about medicinal properties of Iranian wild mushrooms, including antioxidant activity. Therefore, the current study sought to address differences in the antioxidant capacity among a number of cultivated and wild *Agaricus* spp., including 7 wild strains of the button mushroom (*A. bisporus*), a wild strain of *A. gennadii*, and a wild strain of *A. devoniensis*.

**Materials and Methods:** All the wild strains were collected by us from regions of Northeastern Iran, followed by molecular authentication using Internal Transcribed Spacer sequence analysis.

**Results:** Methanolic extracts from the tested mushrooms were subjected to chemical and biochemical measurements of antioxidant activities. Specifically, wild *A. bisporus*-As007 might be regarded as a superior natural antioxidant, as compared to other tested mushrooms, due to having high levels of flavonoids, prevention of lipid peroxidation, chelating abilities and an outstanding reducing power. However, in light of efficient DPPH scavenging *A. gennadii* ranked the first. Furthermore, wild isolate 4 exhibited the highest and lowest values for phenolic contents at 9.6 and 3.5 (mg GAEs/g dry weight), respectively.

**Conclusion:** These wild mushrooms may not yet be suitable to be consumed directly in the diet due to having possible side effects (e.g. allergies) and problems with their digestibility, flavor, and texture. However, they could be considered as natural sources for the production of antioxidant bioactive compounds.

**Keywords:** Antioxidant activity, wild mushrooms, *Agaricus devoniensis*, *Agaricus gennadii*, *Agaricus bisporus*.

#### The Development of Biosensors for lipoproteins detection

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**Objectives:** Phospholipids, fatty acids, triglycerides, and cholesterol are the main lipids in the blood plasma. Chylomicrons, very low-density lipoproteins (VLDL), low-density lipoproteins (LDL), and high-density lipoproteins (HDL) are four classes of Cholesterol carriers in blood. Among them, the low-density lipoproteins are the main carrier of cholesterol. There are several methods for measuring the lipoproteins such as ultracentrifugation, direct assay, magnetic dextran sulfate assay, dextran sulfate-MgCl<sub>2</sub> assay, spectrophotometric assay and high-performance liquid chromatography (HPLC) which are time-consuming and need highly trained personnel and expensive equipment. A biosensor is a system designed to diagnosis and quantifies the target molecules in different types of samples. In addition, the use of biosensors offers several benefits over conventional diagnostic tools as simplicity, specificity, speed, low-cost, portable instrumentation and capability for continuous monitoring in real samples.

**Materials and Methods:** Lipoprotein biosensors are a new promising group or bio receptors because of their outstanding selectivity and stability in responses that provides an evaluation of biomedical diagnosis in plasma lipoprotein levels. For example, electrochemical biosensors propose an attractive alternative method for determining lipoprotein because of their sensitivity, easy to use, portability, low detection limits and rapid response.

**Conclusion:** There are some methods for detecting the lipoproteins by using biosensors with working range from 0.1 to 1000  $\mu$ M and the detection limit of 0.015  $\mu$ M. The purpose of applying biosensors is their selectivity, fast response, good reproducibility and stability in comparison to other references methods.

**Keywords:** Lipoproteins; Detection; Biosensors; Blood; Serum.

#### The role of Vitamin C in Age-related Cataract; an overview of the current literature

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**Objectives:** Cataract as one of the most important visual disabilities has various types including congenital cataract, age-related and secondary to a disease or ocular trauma. Different factors including genetic, environmental and nutritional factors can influence the pathogenesis of the age-related cataract. Healthy lifestyle may postpone some inconvenient consequences of this disease. Vitamin C as an antioxidant has protective effects against oxidative stress. We aimed to figure out the role of vitamin C in the pathogenesis of age-related cataract.

**Materials and Methods:** Searching for related publications were done using keywords including "Cataract" and "Vitamins C" in PubMed, Google Scholar, Scopus and Web of Science databases.

**Results:** Interestingly in vitro and animal studies as well as different epidemiological studies in Sweden, United States, Japan, Australia and Spain suggested enhanced oxidative stress in consumption of a high dose of vitamin C. Some evidence from cohorts in Sweden proposed that high dose of vitamin C increases the risk of age-related cataract. On the other hand, according to some cohort studies in USA, Australia, and Asia, there is probably an inverse association between using vitamin C supplement and the higher risk of age-related cataract. Dehydroascorbate (Oxidized Vitamin C) contribute to the production of superoxide anions glycation of lens proteins, in which results in increased risk of cataract. In vitro and animal studies have also suggested that large dose of vitamin C increases the toxic effect of hydrogen peroxide in depleted-epithelial cells. Older age ( $\geq 65$ Y), hormone replacement therapy (HRT) and use of corticosteroid may increase the risk of age-related cataract induced by high dose vitamin C.

**Conclusion:** Understanding the role of different supplements may help us to implement preventive measurement by changing the lifestyle. There are conflicting results in the studies, which suggest more investigations to clarify the association between vitamin C and age-related cataract. However, more functional studies are also needed to elucidate functional

mechanisms associated with vitamin C, as an antioxidant agent, in cataract development.

**Keywords:** Age-related cataract, Vitamin C, Nutrition.

### **Erythrocyte polyunsaturated fatty acids can mediate the relationship between dietary pattern and depression**

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**Objectives:** The aim of the study was to examine the association between depression and dietary patterns via the intermediary role of erythrocytes polyunsaturated fatty acids (PUFA).

**Materials and Methods:** In this individually matched case-control observational study, we extracted dietary patterns using factor analysis and assessed erythrocyte PUFAs using a GC-Mass spectrometry analytical method and measured the level of n-3 and n-6 PUFA and some other fatty acids. We diagnosed depression using the criteria of the Diagnostic and Statistical Manual of Mental Disorders and extracted dietary patterns using a valid and reliable semi-quantitative food frequency questionnaire.

**Results:** We observed healthy dietary pattern could reduce the risk of depression by the increase of n-3 PUFA and decrease of n-6 PUFA levels. In addition, the unhealthy dietary pattern could increase the risk of depression via the

decreasing of n-3 PUFA and increase of n-6 PUFA levels. We suggested the idea of the mediatory role of the nutrients for the first time. Therefore, further studies needed to confirm our findings.

**Conclusion:** We suggested the idea of the mediatory role of the nutrients for the first time. Therefore, further studies needed to confirm our findings.

**Keywords:** Major depressive disorder, nutritional epidemiology, dietary pattern, mediation analysis, PUFA.

### **Investigating macronutrient and micronutrient status in depressed patients and comparison with healthy people**

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**Objectives:** In recent years, the prevalence of depression in the world has grown dramatically. According to WHO reports, about 350 million people suffer from depression. In addition to the side effects of antidepressants, many patients are resistant to treatment with the drugs. The role of nutrition in control and prevention of depression has been the subject of many types of research. Therefore, the aim of this study is to investigate on macronutrient and micronutrient status in depressed patients in comparison with healthy people.

**Materials and Methods:** In this case-control study, 110 depressed patients and 220 healthy controls matched based on age, sex, and area of residence. Patients were selected Non-probability by simple sampling. In the case group, the unipolar major depressive disorder DSM-IV criteria. Food intakes of all participants obtained by reliable semi quantitative food frequency questionnaires and analyzed with Nutritionist4 software. Anthropometric measurements including height, weight and waist circumference were performed for all subjects.

**Results:** The subjects were 260 women and 70 men. Two groups in terms of occupation, history of depression, childhood traumatic experiences and family history of depression had a statistically significant difference ( $P < 0.05$ ). Among macronutrients and micronutrients, there was a significant difference between the case and control groups in terms of vitamin C, vitamin K and dietary fiber intake, which was lower in depressed patients. The results of this study indicate that the intake of some micronutrients such as vitamins C, K, and dietary



fiber may be associated with an increased risk of depression.

**Conclusion:** By increasing the consumption of these micronutrients and foods rich in these compounds eg. fruits and vegetables, it may be possible to control or prevent the risk of depression.

**Keywords:** Depression, Micronutrient, Macronutrient

### Association of self-rated health with Anthropometric indexes of men and women living in Urmia

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**Objectives:** Self- Reported Health (SRH: Self Rated Health) is a single index that is a measure of your health by a self-reported question. Several studies have shown that SRH is usually lower in those with abnormal anthropometric indices. The purpose of this study was to determine the relationship between SRH and BMI and waist circumference in men and women living in the city of Urmia.

**Materials and Methods:** In this cross-sectional study of 723 men and women aged 20 to 64 selected by systematic multistage cluster sampling from both Azeri and Kurd ethnic group living in Urmia. Weight was measured without shoes, wearing minimal clothes using a sensitive scale to the nearest 100 gram, height, and waist circumference (W.C) [the narrowest between the lowest rib to iliac crest] were measured using a non-elastic tape with a sensitivity of 0.1 cm. Body Mass Index (BMI) was calculated by dividing weight (kg) by the square of height (m<sup>2</sup>). SRH was obtained with a question, "Are you satisfied with your health status?" including five Likert scales (very low, low, moderate, satisfied and very satisfied). Data were analyzed by SPSS (version 21) and linear regression method was used to investigate the association between BMI, W.C, and SRH. P<0.05 was considered as significant.

**Results:** In Azeri and Kurd ethnic group, the mean  $\pm$  SD of BMI, WC was 27.9 $\pm$ 5.7 vs. 26.9 $\pm$ 5.8 kg.m<sup>2</sup> and 93.5 $\pm$  13.8 vs. 91.7 $\pm$  13.0 cm, respectively. The mean BMI and W.C was significantly lower in the individual with the higher satisfaction of their health. In a linear regression model, BMI was negatively associated with SRH after adjusting for confounding variables (age, gender, ethnicity, Socioeconomic

status) [B= -0.72; 95%CI: - 1.32 to -0.11]. While no relationship was observed between waist to hip ratio and SRH.

**Conclusion:** Findings suggest that there is an inverse relationship between BMI and personal satisfaction of health in these participants that should be noticed in weight management programs.

**Keywords:** Self-rated health, Anthropometric indexes, Urmia.

### Nutrigenetics and Personalized Diet plan

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**Objectives:** Nutrigenetics as a combination of nutritional and molecular genetic studies has opened a new field of health science known as personalized diet plan. Nutrigenomics focuses on interaction between an individual's genomic make up and nutrition while nutrigenetics examines the effect of genetic variations on the interaction between diet and disease or on nutrient requirements. We aimed to synthesize current information on precision nutrition and genomic researches, based on a systematic literature search.

**Materials and Methods:** PubMed and Scopus databases have been searched for all related papers published from 2003 up to date. Keywords were selected as precision nutrition, nutrigenomics, nutrigenetics and diet. Original clinical research articles and systematic reviews dealing with personalized and precision nutrition were also reviewed.

**Results:** Hundreds of studies on personal genomic make up and nutrition were found. While several studies demonstrated the impact of diet on the risk of developing certain diseases such as cardiovascular diseases and cancers in specific genotypes, other studies illustrated that nutrigenomics and nutrigenetics provide a well-designed personalized diet plan for obesity and related disorders, weight management, nutritional supplements and even sport and fitness. However, some reports indicated barriers for clinical testing due to limited genetic services, privacy, confidentiality and genetic discrimination concerns.

**Conclusion:** Though the establishment of this type of personalized diet is still in its infancy, progress in the next few years seems to be rapid. However, despite the substantial amount of information, there are still gaps in practical



application of personalized diet plan to specific genotypes. Therefore, enhanced methodologies in new studies are required to achieve top-level evidence that will allow their application in the future of precision nutrition.

**Keywords:** Nutrigenetics, Nutrigenomics, Precision nutrition, diet.

### Nutritional Aspects to Prevent Heart Diseases in Traditional Persian Medicine

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**Objectives:** Cardiovascular diseases are major health complications. Management of heart diseases as a prevention step or as treatment with low-cost procedures like lifestyle modifications including nutrition are important current trends. The aim of this study is to introduce concepts and manuscripts to Prevent Heart Diseases in Traditional Persian Medicine.

**Materials and Methods:** We searched international database PubMed, EMBASE, Cochrane library, and databases in Iranian SID, Magiran and textbook of Traditional Persian (2000-20 15). Analysis of data extraction and quality evaluation of the Literature were performed with content analysis methods.

**Results:** Avicenna and Rhazes were the pioneers in this field. They preferred using foods in treating illnesses. "Foods and drinks" were 1 subject from 6 principles (Setteh Zarorieh) that Persian physicians believed can affect human health. We can find some main strategies. In this study, reviewing the medieval and traditional manuscripts resulted in the appearance of 38 cardiovascular and 34 geriatric medicaments, respectively. Respectively, 24 and 25 families related to geriatrics and cardiology were derived. Main families in the side of geriatrics were from Rosaceae followed by Asteraceae, Lamiaceae and Fabaceae. Modern medicine articles also claimed that eating apple and apple juice reduces the low-density lipoprotein oxidation in a healthy person<sup>3 1</sup> and prevents hypercholesterolemia, oxidative stresses, <sup>32</sup> and atherosclerosis,<sup>33</sup> and so reduces risk of heart diseases.

**Conclusion:** Cardiovascular diseases are main causes of mortality in geriatrics. Current study was performed to evidently report and describe cardiovascular medicines from the standpoints of Persian physicians in medieval era. Searching through the current knowledge revealed that almost more than half of the reported medicinal

herbs possessed cardiovascular effects which can be effective in geriatrics. Although the cardiovascular related investigations exerted positive and promising results, lack of human studies keeps the way toward introducing new natural cardio-geriatric medicines still closed.

**Keywords:** nutrition, heart diseases, traditional Persian medicine, Complementary of alternative medicine.

### Trace elements, serum levels of antioxidant pro-oxidant balance and superoxide dismutase in diabetic patients

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**Objectives:** Oxidative stress which is defined as increase in free radical or decrease in antioxidant involved in pathogenesis of type 2 diabetes. Many studies investigated serum Zinc (Zn) and copper (Cu) and CuZn-SOD status as risk factor of manifestation type 2 diabetes and its complications. To determine the effect of oxidative stress in patients with type 2 diabetes we investigated relationship between serum pro-oxidant anti-oxidant balances (PAB), Zn, Cu and CuZn-SOD status in 505 individuals with diabetes and 3088 healthy controls derived from the MASHAD study cohort.

**Materials and Methods:** Serum zinc and copper concentrations were measured by flame atomic absorption (Varian AA240FS); also, colorimetric methods were used to determine serum PAB and ZnCu-SOD values. A t-test was used to determine difference between two set of data; also, linear regression analysis was used to determine the parameters that significantly affected fasting blood glucose. Multiple logistic regression analysis was applied to identify independent parameters that were related to diabetes.

**Results:** Serum PAB and Zn values shown significant statistical differences between healthy subjects compared to diabetics patients. We observed a significant correlation between serum glucose and CuZn-SOD and PAB values. Moreover, linear regression shown PAB (B=0.045, p<0.00 1, CI=0.022-0.068) and CuZn-

SOD ( $B=4.176$ ,  $p=0.04$ ,  $CI=1.8-1.7$ ) statistical correlation with fasting blood glucose. Logistic regression demonstrated that PAB values ( $B=-0.002$ ,  $p=0.007$ ,  $CI=996-999$ ) as well as Zn ( $B=0.008$ ,  $p\text{-value}=0.011$ ,  $CI=1.002-1.014$ ) independently associated with diabetes.

**Conclusion:** Compared with the healthy subjects, diabetics group showed increased level of PAB values and decrease level of Zn concentrations. Although no statistical differences for enzyme activity was observed in this study but PAB as oxidative stress marker indicated higher production of pro-oxidant and anti-oxidant having association with diabetes pathogenesis and a strategy to modulate oxidative stress relevant in preventing the development of diabetes.

**Keywords:** Pro-oxidant; Antioxidant; Diabetes; SOD; Zinc; Copper.

### Promising effects of Herbal Decoctions in Hepatocellular Carcinoma: Comparison of Teucrium polium vs Orthosiphon stamineus on Liver Glucocorticoid Receptors in Animal Model

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**Objectives:** The word of cancer has been connected to despair, agony, and dreadful death. Like many other diseases, herbal therapy has been used to inhibit or suppress cancer. The present study investigated and compared the capability of Teucrium polium L. and Orthosiphon stamineus' decoction (Misai Kucing) to protect liver cells against hepatocellular carcinoma (HCC) in carcinogenesis-induced animal model.

**Materials and Methods:** 50 male rats,  $8\pm 1$  weeks old, with average weight  $245.2\pm 6.4$ g have been used. Hepatocarcinoma was induced in 40 of the rats by single intraperitoneal injection of 200mg/kg diethyl nitrosamine (DEN) and then followed by a cancer promotion period of 2 weeks on food, which was mixed with 2-acetylaminofluorene (0.02% AAF) as a promoter of hepatocarcinogenesis. After the cancer initiation period, the leftover rats were weighed again and divided randomly into three groups with no significant differences in their weight.

The treatment groups were force-fed 0.7 mL/100 g body weight/day of either T. polium or O. stamineus decoction. At the end of the study, serum blood cancer markers, and histology of liver cells and their glucocorticoid receptors has been done using Fluorescent in situ hybridization (FISH) method.

**Results:** After 28 weeks treatment with decoctions had significantly positive improvement effects on serum biochemical markers including ALT, AST, AFP, GGT, ALP, HCY, TNF- $\alpha$ ,  $\alpha_2$ MG, and CBG have been regulated auspiciously. Total antioxidant status also has been increased intensely. Liver lesion score as well as mortality rate in treated groups were lessened significantly. The decoction also has intensified the number of glucocorticoid activity and its receptors in liver cell. Despite higher level of TAS among O. stamineus group than T. polium treated group, T. polium demonstrated significantly better effects in all improvement markers.

**Conclusion:** In conclusion, Teucrium polium L. decoction positively improved cancer markers and by increasing glucocorticoid activity and its receptors in liver cell, could control HCC significantly. This decoction might be considered as a way to inhibit or suppress liver cancer development. O. stamineus could be classified as an herbal tea with minor to mild anticancer activity.

**Keywords:** Hepatocellular carcinoma, Teucrium polium, Orthosiphon stamineus, glucocorticoid, cell receptors.

### Serum Pro-oxidant-antioxidant balance is independently associated with the presence of Metabolic Syndrome

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**Objectives:** As there is strong evidence for oxidative stress and inflammation in metabolic syndrome (MetS), we have investigated the relationship between serum pro-oxidant antioxidant balance (PAB), serum uric acid and C-reactive protein in 8535 participants from the MASHAD study cohort, who could be categorized as having MetS, or not, using NCEP-ATPIII criteria.

**Materials and Methods:** Serum lipid, fasting blood glucose and uric acid concentrations were measured enzymatically using commercial kits on a BT- 3000 autoanalyzer (Biotechnical, Rome, Italy). CRP was measured by PEG-enhanced immunoturbidimetry method using an Alycon analyzer (ABBOTT, Chicago, IL, USA). Moreover, colorimetric methods were used to determine serum PAB values.

**Results:** Serum PAB values were significantly higher in the individuals with MetS than those without it ( $p < 0.001$ ). Multiple linear regression analysis determine the weight ( $B = -0.501, p = 0.001$ ), BMI ( $B = 1.97, p < 0.001$ ), physical activity level ( $B = 15.166, p < 0.001$ ), uric acid ( $B = -2.101, p < 0.05$ ) and C-reactive protein ( $B = 0.608, p < 0.001$ ) were associated with serum PAB in the MetS subgroup and multiple logistic regression indicated PAB ( $B = 0.003, p < 0.001, CI = 1.002- 1.004$ ) as well as C-reactive protein ( $B = 0.015, p < 0.001, CI = 1.009- 1.021$ ) and uric acid ( $B = 0.148, P < 0.001, B = 1.117- 1.203$ ) associated with the presence of MetS.

**Conclusion:** In conclusion, in a large population cohort derived from the MASHAD study, serum PAB was strongly associated with serum uric acid and CRP. Moreover, PAB as well as uric acid and CRP was associated with MetS independently.

**Keywords:** Pro-oxidant; Antioxidant; Metabolic syndrome; CRP; Uric acid.

### The Effect of Weight Loss on Changes in Insulin Resistance Index in Patients with Non-Alcoholic Fatty Liver Referring to Khuzestan University Jihad Clinic

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**Objectives:** Non-alcoholic fatty liver disease is one of the most common liver diseases mostly occurring in people with obesity and overweight. The aim of this study was to evaluate the effect of weight loss on changes in insulin resistance index in patients with non-alcoholic fatty liver referring to ACECR- Khuzestan Clinic .

**Materials and Methods:** In this pre and post-interventional study, a total of 35 overweight and obese women with non-alcoholic fatty liver participated. (BMI > 26). Anthropometric indices were measured before and three months after the nutrition education program based on the tailoring method. Statistical tests and descriptive statistics were used to analyze the data. Additionally, the evaluations of insulin resistance index were used based on the hemostasis model.

**Results:** Based on the results of this study, the mean weight loss in participants was  $5.96 \pm 2.95$  ( $P = 0.000$ ), indicating a decrease of approximately  $1.04 \pm 0.3\%$  in insulin resistance.

**Conclusion:** The results of this study showed that as a result of a reduction in the mean weight in the participants in a short period, they will have an effective recovery in insulin resistance.

**Keywords:** insulin resistance index, weight loss, non-alcoholic fatty liver

### The relationship between food groups and Multiple sclerosis disease: A case-control study in Mashhad

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**Objectives:** Multiple sclerosis (MS) is a chronic progressive inflammatory and neurodegenerative disease of the central nervous system (CNS) and a leading cause of disability in young adults. It has been suggested that nutrition might play a role in the etiology of MS. The present study was conducted in the City of Mashhad, Iran. The main purpose of this study was to investigate the relationship between food groups and MS.

**Materials and Methods:** This case-control study was conducted on 197 MS patients and 200 healthy controls. Food information was collected through interviews using a valid and reliable 160-item semi-quantitative food frequency questionnaire. All the statistical tests were done using the SPSS software, version 16.

**Results:** The findings showed that consumption of butter ( $P=0.02$ ), red meat and viscera ( $P=0.01$ ), nuts ( $P=0.03$ ), soft drink ( $P=0.02$ ), red meat ( $P=0.01$ ), French fries ( $P=0.02$ ), broth ( $P=0.02$ ), pizza ( $P=0.008$ ), condiments ( $P=0.01$ ) and pickles ( $P<0.001$ ) were more among MS patients than in healthy individuals, whereas the average consumption of fruit juices ( $P=0.04$ ), vegetables ( $P<0.001$ ) and salads ( $P=0.01$ ) was significantly less among the MS patients than in the healthy individuals.

**Conclusion:** This study suggests a protective role of consumption of fruit juices, vegetables and salads in MS and an increased risk of MS with butter, red meat and viscera, nuts, soft drink, red meat, French fries, broth, pizza, condiments and pickles consumption in Mashhad (Iran).

**Keywords:** Food groups, Multiple sclerosis, Risk factor

### Prevalence and associated socio-demographic factors of the metabolic syndrome in Type 2 diabetes mellitus

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**Objectives:** About 70-80% of type 2 diabetes mellitus are diagnosed with the metabolic syndrome (MetS). Several studies have showed the clinical value of MetS as a predicting factor of CVD risk in the diabetic patients, although the clinical significance remains debatable. The aim

of this study is to evaluate the prevalence and components of the MetS and its associated clinical and demographic factors in an Iranian adult population with DM2 at South East district of Tehran.

**Materials and Methods:** This is a cross-sectional study among sixty seven (67) diagnosed diabetics' patients receiving care from the Amir-Al Momenine hospital, South East district of Tehran. weight(kg), height(m) and waist circumferences(cm) were measured appropriately. clinical data were obtained from patients, personal files. MetS was defined according to the international diabetes' federation.

**Results:** The prevalence of MetS in type 2 diabetics patients was 52.2%, higher in women (58.3% $n=25$ ) compared to men (41.7% $n=10$ ). Mean (SD) and the range of age was 62.4 (13.3) years, 20-88 years; S BP 126 (19.2) mmHg, 90-180mmHg; DBP 76.7 (11) mmHg, 60-110mmHg; HDL-C 43 (10.9) mg/dL, 19-93 mg/dL; TG 138 (81.8) mg/dL, 45-449 mg/dL; BMI 29.37 (6.2) kg/m<sup>2</sup>, 19.3-50.6 kg/m<sup>2</sup>; and WC of the general population mean (SD) 101.1 (15.9) cm, range 45-133 cm. Metabolic syndrome was found in 12(34.3%) of illiterates and 22(62.9%) of unemployed diabetic patients.

**Conclusion:** The study shows that metabolic syndrome is prevalent in diagnosed type 2 diabetes patients and the most common risk factors are gender, low education level and high unemployment level.

**Keywords:** metabolic syndrome, type2 diabetics, socio-demographic factors.

### Association of a Vascular Endothelial Growth Factor genetic variant with VEGF serum level in subjects with Metabolic Syndrome

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**Objectives:** The metabolic syndrome (Mets) as a combination of metabolic disorders is associated with the increased risk of developing cardiovascular-disease, diabetes, and related diseases. Against this background, Vascular Endothelial Growth Factor (VEGF) plays an essential role in angiogenesis, vascular permeability, and hematopoiesis and its increased level is reported to be associated with increasing the risk of developing cardiovascular-disease, stroke and diabetes. Therefore the aim of the present study was to explore the association of serum VEGF level and its associated genetic-polymorphism, rs 10738760 (A>G) at 9p24.2, in 850 subjects with/without MetS.

**Materials and Methods:** MetS was defined according to the International-Diabetes-Federation criteria. Genotyping was carried out using Polymerase chain reaction-amplification refractory mutation system. Anthropometric/biochemical parameters, including FBG, Triglyceride, HDL, TC, etc., were determined followed by univariate and multivariate analyses.

**Results:** MetS patients had significantly higher levels of BMI, waist-circumference, cholesterol, triglyceride, Hs-CRP and SBP/DBP, while the HDL-C levels was lower in patients group, compared to control group (P<0.05). Moreover, our analysis showed that MetS patients with GA or AA genotypes had a significantly (P=0.03) higher serum level of VEGF.

**Conclusion:** we demonstrate an association between a VEGF regulatory genetic change with MetS, suggesting its role as a risk stratification factor for MetS.

**Keywords:** metabolic syndrome, VEGF, polymorphism, PCR, serum

### High serum VEGF concentrations relate to a genetic variant in the VEGF gene and a high dietary fat in patients with metabolic syndrome

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**Objectives:** Genome-wide association studies have identified common variants at the Vascular-Endothelial-Growth-Factor (VEGF) gene locus, that appear to be associated with plasma VEGF concentrations. These factors are among the major risk factors of cardiovascular diseases and metabolic syndrome. We have investigated the association between serum VEGF concentrations and a VEGF genetic polymorphism (rs692 1438 A<G) in 852 patients with or without MetS, defined according to International-Diabetes-Federation criteria, recruited from the Mashhad Stroke and Heart Atherosclerotic Disorders cohort and their possible relationships with cardio-metabolic risk-factors and diet.

**Materials and Methods:** Genotyping was carried out using polymerase-chain-reaction and restriction- fragment- length-polymorphisms.

Anthropometric/biochemical characteristics, FBG and lipid profile were evaluated by univariate and multivariate analyses. The association of the genetic variant and its interaction with dietary intake in association with the main determinants of cardiovascular risk factors were assessed.

**Results:** As would be expected, patients with MetS had markedly higher BMI, waist-circumference, total cholesterol, triglyceride, Hs-CRP and blood-pressure, and low concentrations of HDL-C, compared to non-MetS individuals ( $P < 0.05$ ). The association between rs692 1438 and MetS group and MetS risk factors were not statistically significant. However, interestingly we observed that MetS-patients carrying GG or GA genotypes had a significantly higher serum VEGF, compared to wild type genotype, which was also associated with dietary fat intake.

**Conclusion:** Our findings demonstrated an association between a VEGF genetic-variant with serum VEGF concentrations and this association with MetS was not statistically significant, supporting further investigation of the value of this marker as a risk-stratification marker.

**Keywords:** Vascular endothelial growth factor, polymorphism, MetS, serum VEGF

#### **Interaction between a genetic variant in Vascular Endothelial Growth Factor with dietary intakes in association with the main determinants of metabolic syndrome**

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**Objectives:** Metabolic syndrome (Mets) as a combination of metabolic disorders is suggested to be associated with the increased risk of developing cardiovascular-diseases and diabetes. Vascular Endothelial Growth Factor (VEGF) plays a key role in angiogenesis, vascular permeability, and hematopoiesis and its increased level is reported to be associated with increasing the risk of MetS and CVD. The aim of current study was to explore the interaction of a genetic variant of the VEGF-rs 10738760 (A>G) at 9p24.2 gene and dietary intake in 476 MetS patients recruited from the Mashhad Stroke and Heart Atherosclerotic Disorders cohort.

**Materials and Methods:** The association of the genetic variant of the VEGF-rs 10738760 and its interaction with dietary intake were evaluated in subjects with and without MetS.

**Results:** MetS subjects with AA genotype and having high consumption of sugar, starch, monounsaturated fatty acids and saturated fatty acid had an increased risk of MetS. In particular there was a significant association between AA genotype and sugar intake with respect to MetS (OR= 1.02,  $p=0.004$ ) and intake of starch (AA genotype OR= 1.01,  $P=0.04$ ). Moreover this group in high PUFA intake condition were at higher risk of MetS than those with homozygous of G allele, suggesting that this genetic variant might contribute to disease susceptibility via exogenous carbohydrate and fat supply.

**Conclusion:** Our findings revealed that subject with AA genotype, having high consumption of sugar, starch, monounsaturated fatty acids and saturated fatty acid had an increased risk of developing MetS. Functional analyses are warranted to assess the value of this novel genetic biomarker as a predisposition marker in predicting the risk of CVD events.

**Keywords:** metabolic syndrome, VEGF, polymorphism, PCR, serum.

#### **Vitamin D Deficiency and Risk of Cardiovascular Disease on Women in Tehran: A Case - Control Study**

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**Objectives:** according to WHO report in 2020, 67% of 25 million death will occur from cardiovascular diseases in developing countries. Smoking, lipid profile disorders, hypertension, low physical activity, obesity and low socio

economic status are CVD risk factors. There's some evidence that low vitamin D level could be a risk factor in CVD.

**Materials and Methods:** It was a case-control study on two group of women (mean age 55), 50 women with a recent CVD in 1 or 2 last year and 50 women with no sign of CVD. We designed a 9 item questionnaire for evaluating vitamin D level and the ways which people receive vitamin D. Also we checked all subjects' blood vitamin D levels in last two years in the hospital.

**Results:** This survey shows low vitamin D level (under 15 ng/ml) is common in most of the Iranian women although there was a significant independent association between vitamin D level and CVD. Subjects with 25-OH D < 15 ng/mL had a multivariable-adjusted hazard ratio of 1.62 (95% confidence interval 1.11 to 2.36, P=0.01) for incidence of cardiovascular events compared to those with 25-OH D  $\geq$  15 ng/mL. This effect was evident in participants with hypertension (hazard ratio 2.13, 95% confidence interval 1.30 to 3.48) but not in those without hypertension (hazard ratio 1.04, 95% confidence interval 0.55 to 1.96).

**Conclusion:** Vitamin D deficiency is associated with incidence of cardiovascular diseases. Further clinical and experimental studies may be warranted to determine whether correction of vitamin D deficiency could contribute to the prevention of cardiovascular disease.

**Keywords:** CVD, vitamin D, deficiency, women.

### The effect of *Ziziphus jujuba* extract on basal cardiovascular parameters in the normotensive rats

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**Objectives:** *Ziziphus jujuba* (Z.J) is a medicinal plant that has several properties such as Antioxidant, antibacterial, hypnotic and wound healing activity. It also has lowering blood pressure effect and people use it to treat hypertension. In present study the effect of hydroalcoholic extract of Z.J on cardiovascular parameters in the normotensive rats was investigated.

**Materials and Methods:** Animal groups randomly divided into: 1) Sham group, 2) saline group, received for four weeks; 3-5) Z.J groups (100, 200 and 400 mg/kg) that treated via gavage for four weeks. In experiment day (28th Day) femoral artery of animal's cannulated and

Systolic Blood Pressure (SBP), Mean Arterial Pressure (MAP) and Heart Rate recorded by power lab system. Maximal changes ( $\Delta$ ) of SBP, MAP and HR were calculated and compared with control group. Statistical analysis was performed by one way ANOVA. A value of P<0.05 was used to indicate statistical significance.

**Results:** No significant difference was found in HR, SBP and MAP between sham and saline groups. The SBP and MAP in higher doses of Z.J (200 and 400mg) significantly decreased compared to saline group. The HR only in dose 200mg of Z.J significantly decreased than saline group. There was no significant difference in cardiovascular response between all groups of Z.J

**Conclusion:** In summary, the results of present study show that long-term usage of hydroalcoholic extract of Z.J decreased basal cardiovascular parameters and best effect has been shown in dose 200mg/kg.

**Keywords:** *Ziziphus jujuba*, Mean Arterial Pressure, Heart Rate, Systolic Blood Pressure.

### Study the association between vitamin D and the risk of cardiovascular disease

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**Objectives:** According to the World Health Organization (WHO), in 2020, 76% of the 25 million deaths from cardiovascular disease are expected to occur in developing countries. There is increasing evidence that vitamin D deficiency may be a major contributor to the development of cardiovascular disease. Cardiac accidents due to coronary artery disease are the most common cause of mortality in the world. On the other hand, vitamin D deficiency is known as an emerging risk factor of this disease. This study was conducted to determine the relationship between vitamin D deficiency and cardiovascular diseases risk.

**Materials and Methods:** This study is a review of articles and surveys that have been reviewed in PubMed, Science Direct, and Google Scholar databases.

**Results:** Epidemiologic studies have revealed the role of vitamin D deficiency in the development of coronary artery disease. The incidence of cardiovascular complications in follow-up of 4-5 years old, people with vitamin D deficiency was 80-80% higher. It has also been shown that the mean serum levels of vitamin D have an inverse relationship with the appearance of hypertension, diabetes, hyperlipidemia,



osteoporosis, and stroke. The pattern of vitamin D deficiency seems to be at different risk for cardiovascular disease in men and women.

**Conclusion:** According to a study, there is a significant relationship between serum vitamin D levels and the incidence of cardiovascular disease. Contrary to the available evidence, the final proof of the cause-and-effect relationship and the definite cardiovascular disease between vitamin D deficiency requires repeating observational studies in different populations of the world and the design of clinical trials with a control group (RCT) in which the administration of vitamin D compared to placebo, is able to reduce the incidence of cardiovascular disease.

**Keywords:** Cardiovascular Diseases, Cardiovascular Risk Factors, Vitamin D.

### Antioxidative properties of Thymoquinone in Chronic Lipopolysaccharide Exposure in Male Rats

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**Objectives:** Thymoquinone (TQ) is one of the active ingredients of *Nigella sativa* L. (NS) which has several effects on the body. The beneficial effects of NS and TQ on cardiovascular system have been reported which includes hypolipidemic, antiatherogenic, hypotensive, anti-platelet activities. In addition, it has cardioprotective effects against chemical cardiotoxicity and hyperhomocysteinemia.

This study aimed to investigate the antioxidative properties of Thymoquinone in Chronic Lipopolysaccharide Exposure in Male Rats.

**Materials and Methods:** Fifty male Wistar rats were randomly divided into five groups as follows: (1) control; (2) LPS (1 mg/kg/day); (3-5) LPS+TQ with three doses of 2, 5 and 10 mg/kg (n= 10 in each group). After 3 weeks, blood samples were taken, then serum and cardiac levels of IL-1 $\beta$ , TNF- $\alpha$  and nitric oxide (NO) metabolites and cardiac levels of malondialdehyde (MDA), total thiol groups,

catalase (CAT) and superoxide dismutase (SOD) activities were determined.

**Results:** LPS administration increased cardiac oxidative stress (MDA) (P<0.001) and tissue level of inflammatory markers and nitric oxide metabolites (P<0.05), while reduced antioxidative enzymes (SOD and CAT) and total thiol group (P<0.001). Administration of TQ significantly attenuated these observations dose dependently (P<0.001).

**Conclusion:** TQ improved chronic inflammation through suppression of inflammatory biomarkers and improving oxidative stress status.

**Keywords:** Antioxidative; Thymoquinone; Lipopolysaccharide

### Assessment of depression status and its relation to the quality of life in diabetic patients, in Tabriz, Iran

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**Objectives:** Enhancing community health by prevention of chronic diseases is as major goals of health systems. Diabetes as one of the most common chronic diseases can be affected by mental disorders. In this study, we assessed the status of depression and its relation to the quality of life in diabetic patients in Tabriz, Iran.

**Materials and Methods:** This cross-sectional study was conducted on the 309 type 1 and 2 diabetic patients in Tabriz, northwest of Iran, in 2014. The eligible subjects were enrolled by simple random sampling from Diabetes Association of East Azerbaijan province. Quality of life was assessed by Iranian version of validated questionnaire. Persian version of beck Aeron questionnaire was used to assessment of depression status. Spearman's rho correlation coefficient was used to determine the potential correlation between main variables. Statistical significance was considered as p<0.05.

**Results:** Thirty six percent of patients had some degree of depression. Mean score of total quality of life was  $33.75 \pm 8.72$ . The mean (SD) scores of three domains of quality of life were less than normal range (complication of diabetes=9.9 1 (3.3 1), psycho-social effect of diabetes= 12.93 (4.4 1), diagnosis, therapy and follow-up= 10.9 1 (3.3 1)). The complication of diabetes domain's score in males were higher than females and there was a significant difference between both genders ( $p=0.00$  1). There was a significant correlation between depression and quality of life ( $p<0.00$  1).

**Conclusion:** Holding community-based mental health programs for enhancing quality of life can be an effective approaches. Future studies are needed to find other factors affecting the quality of life in diabetic patients.

**Keywords:** Depression, Diabetes, Quality of life.

### The combination of noninvasive radio-frequency and ultrasound cavitation ameliorates the condition of obesity

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**Objectives:** Different non-invasive body contouring techniques are being used for reduction of subcutaneous fat, including radiofrequency and ultrasound cavitation. The aim of current study was to assess the effects of combined RF and USC on different anthropometric indices.

**Materials and Methods:** 134 obese and overweight participants were enrolled and divided into four groups: abdomen and flanks (group 1), abdomen and hips (group2), abdomen and thighs (group3) and arms (group4). The participants received RF/USC twice a week for 5 weeks with a low-calorie diet.

**Results:** in results, except for hips circumferences, we observed a significant decrease in abdomen, waist, thighs and mid arm circumferences after treatment with combined RF and USC therapy. Although no statistically significant difference was detected between 4 groups for fat mass and body weight before and after treatment.

**Conclusion:** Our findings demonstrated that combined use of RF and USC in each session after 10 sessions with this method could reduce

abdomen, waist, thighs and arm circumferences and improve body contouring.

**Keywords:** radiofrequency, ultrasound cavitation, obesity/overweight, anthropometric parameters.

### The Relationship between hyperglycemia during the first 24 hours post- surgery with the type of calorie intake in the neonatal intensive care unit (NICU)

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**Objectives:** The aim of this study was to determine mean blood glucose during the first 24 hours post- surgery and its relation to the composition of calorie intake.

**Materials and Methods:** Information on this observational retrospective study was collected through hospitalized medical records. 45 newborn infants suffered from atresia in different parts of the gastrointestinal tract and were the candidate for open abdominal surgery from October to September 20 15 were studied. 4 times blood glucose within 24 hours after surgery were taken by glucometer. Mean blood glucose during this period was calculated. Independent Student T-Test, Chi-square tests, and logistic regression were used to assess the association between postoperative blood glucose with calorie and macronutrients intake.

**Results:** In a third of neonates, mean blood glucose during the first day after surgery was  $\geq 180$  mg/dl, and the rest of them had the mean blood glucose of 40 to 179 mg/dl. There was significant relationship between  $BG \geq 180$  mg/dl and calorie ( $P$ -value=0.00 1), macronutrients (carbohydrate ( $P$ -value<0.00 1) and fat ( $P$ -value=0.04)) intake. After adjusting for confounding variables, carbohydrate intake was found as the independent factor on increasing  $BG \geq 180$  mg/dl during the first 24 hours after surgery ( $P= 0.0$  1) and also fat intake was found



as an effective factor in decreasing  $BG \geq 180$  mg/dl during this time ( $P=0.04$ ).

**Conclusion:** The present study showed that a significant relationship can be found between mean blood glucose during the first 24 hours after surgery and intake of macronutrients (carbohydrate and fat).

**Keywords:** Hyperglycemia, post-surgery, macronutrients intake, NICU.

### The antioxidant and anticancer potential of ferutinin isolated from the roots of *Ferula ovina*

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**Objectives:** Ferutinin (Jaeschkeanadiol p-hydroxybenzoate) is a daucane sesquiterpene ester identified in the plants belonging to the genus *Ferula* (family Umbelliferae), widely distributed throughout the Mediterranean area and Central Asia. It was identified as the main component of *Ferula hermonis* roots and demonstrated as a strongest natural phytoestrogen which has agonistic activity on estrogen receptors, particularly  $\alpha$  receptor. This study was designed to assess the antioxidant properties of ferutinin. Furthermore, the anticancer activity of the ferutinin was investigated *in vitro* against human cancer cell line (MDA-MB-23 1).

**Materials and Methods:** The antioxidant activity of different concentration of ferutinin were evaluated by ferric reducing antioxidant power (FRAP) and BHT,  $\alpha$ -tocopherol, and vitamin C were used as positive control. Besides that, Anticancer potential was determined using the MTT assay against human cancer cell lines (MDA-MB-23 1).

**Results:** The obtained results revealed that the various concentration of ferutinin showed the appreciable antioxidant activity using ferric reducing antioxidant power assay with the  $IC_{50}$  value of  $78.5 \mu\text{g/ml}$ . In addition, the ferutinin potentially inhibited the proliferation of human cancer cell lines (MDA-MB-23 1). The cytotoxicity of ferutinin demonstrated moderate toxic effects by decreasing the viability of cells to less than 50% ( $P<0.05$ ) compared with untreated cells at 48 hours after treatment ( $IC_{50}$ :  $100 \mu\text{g/ml}$ ).

**Conclusion:** Consumption of antioxidant rich fruits and vegetables in our daily diets significantly reduces the risk of many cancer

diseases suggesting that antioxidants could be effective agents for the inhibition of cancer spread. Our findings indicated that ferutinin could be considered as a source of putative nutraceutical compound which its antioxidant potential may reduce the risk of cancer, diabetes, cardiovascular and Alzheimer diseases in human.

**Keywords:** Ferutinin, Antioxidant properties, and anticancer potential.

### Central Obesity Prevalence among Elderly People in Tabriz

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**Objectives:** The epidemiological nutritional transition is currently occurring in most of the developing countries, and the underweight malnutrition and obesity might coincide. Underweight and obesity (especially central obesity) are both global problems and would lead to serious adverse consequences. The present research is aimed to determine the prevalence of central obesity among the elderly people in Tabriz in 20 15.

**Materials and Methods:** The present study is a descriptive cross-sectional survey on 1023 people (494 males and 529 females) aged 60 years and older living freely in Tabriz. Data collection was performed measuring anthropometric (waist circumference-WC and hip circumference-HC) indices and calculating WHpR (waist-to-hip ratio). To evaluate the abdominal obesity, the cut-off points of Iranian people (90 and 95 cm in both genders) were used. The abdominal adiposity has been defined rather as the WHpR of above 0.90 for men and above 0.85 for women and these cut-off points were used in this regard.

**Results:** Out of the studied elderly, 79.28% had waist circumference (WC) of 90 cm or more, while more than two third of them (68.9 1%) had WC of 95 cm or above; besides, the average WC of subjects was  $101.0 \pm 14.0$  cm and in the females ( $102.3 \pm 14.3$  cm) significantly higher than that of the males ( $99.7 \pm 13.6$  cm) ( $\text{sig}=0.003$ ). In the present study, 88.2 1% of the males had WHpR of 0.9 or more, while the same ratio of 94.30% of the female was equal to or above 0.85.

**Conclusion:** Results of the present study indicated the high prevalence of central obesity among the elderly living in Tabriz. Regarding the high prevalence of abdominal obesity and the role of obesity as the main risk factor for the non-

communicable diseases, designing and implementing appropriate interventions to improve the obesity-related behaviors and preventing central obesity among the elderly seems necessary.

**Keywords:** Elderly, Central Obesity, WC, WHpR, Tabriz

#### **A study of vitamin D status in patients suffering from diabetic for ulcer cured in medical centers of Hamedan**

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**Objectives:** The foot ulcer is one of the most important effects of diabetes which appears as wounds or ulcers on the foot, and it leads to amputation in case of lack of treatment at the end. Besides all the documents about the role of vitamin D in diabetes pathophysiology, some others have been reported recently about its role in controlling the effects such as the diabetic foot. The aim of this study is to investigate the status of vitamin D in people suffering from diabetes and have the diabetic foot.

**Materials and Methods:** This is a descriptive and cross-sectional study in which 140 patients suffering from diabetic foot ulcer have participated in Hamedan. Serum 25 hydroxy vitamin D has been measured by immunofluorescence method. In this study, serum levels of lack of vitamin D are defined as 25 hydroxy vitamin D less than 29 ng/ml, and amounts of 21-29 ng/ml are considered as insufficient vitamin D.

**Results:** The average of vitamin D serum level in these patients was 19.9 ng/ml. 73.6 % of these patients had lack of vitamin D and 12.9 % of them had insufficient vitamin D serum level, and in fact, only 24 % of patients had the natural amount of vitamin D.

**Conclusion:** Findings of this study have shown that the prevalence of vitamin D deficiency in patients suffering from diabetic foot ulcer is high, therefore, it is needed to investigate the status of

vitamin D in these patients; and in case of deficiency, essential actions must be taken to compensate.

**Keywords:** Vitamin D, Diabetes, Ulcer, Diabetic foot

#### **Egg consumption and heart; A review of positive and negative effects**

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**Objectives:** Eggs, as a complete food, are high in several nutrients but they are also high in cholesterol that reaches to about 200 mg of cholesterol in one typical egg. The association between dietary cholesterol and LDL cholesterol is not clear yet and the effect of dietary cholesterol on the risk of CVD has been a matter of interest for decades. According to the statement of 2015 Dietary Guidelines for American scientific advisory committee, there is no significant association between dietary cholesterol and cholesterol concentrations in blood. The aim of our study is to find the positive and negative effects of egg consumption on the heart.

**Materials and Methods:** A Search was conducted in July 2017 by the key words "egg", "heart", and "CVD" in PubMed database, Science Direct database, and Google Scholar. After omitting duplicate and irrelevant results, 25 original research and review articles entered in our study.

**Results:** 10 of these 25 articles were original studies that had examined the effect of egg consumption on cardiovascular events in healthy individuals. Among these, one pointed to a relation between egg consumption and cardiac events and 8 of them suggested there is no relation between egg consumption and cardiac outcomes. One study indicated there is a relation between daily egg consumption or more than that and Heart Failure in men but this association was not seen between egg consumption and other cardiac events. Even one egg daily consumption may be related to reduced risk of total stroke as said one. Eggs are high in some nutrients like lutein and zeaxanthin and can also



increase HDL cholesterol that all of them are the protective compound for the heart.

**Conclusion:** Based on our findings from reviewing the studies, according to the difference in people in responding to dietary cholesterol and the presence of the other compounds in eggs rather than cholesterol that can affect heart health, it is difficult to achieve the definitive conclusion about the effects of eggs on heart health.

**Keywords:** egg, heart, CVD

### The efficacy of alcohol consumption on the XRCC 1 gene and protein

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**Objectives:** X-ray repair cross-complementing 1 (XRCC 1) protein is encoded by XRCC 1 gene and it has a significant role in the DNA damage repair. Our aim was efficiency checking of the effects of alcohol consumption on the gene and protein XRCC 1 in relevance to the health of human body vital organ.

**Materials and Methods:** We reviewed studies identified by searching in PubMed, Elsevier and Google scholar.

**Results:** Researchers indicated that there is a serious risk in persons with Arg399Gln allele and alcohol consumption. Also, they stated that alcoholism can decrease the activity of XRCC 1 protein via polymorphism occurrence. In a meta-analysis studies, researchers concluded that the gene polymorphism of XRCC 1 Arg399Gln are associated with coronary artery disease susceptibility and this polymorphism is involved in the development of hepatocellular carcinoma and it may be helpful prognosis markers in this disease. Furthermore, scholars have been reported that mentioned polymorphism has the association with increase of lung cancer risk and XRCC 1 Arg399Gln polymorphism can be a risk factor for glioma occurrence.

**Conclusion:** XRCC 1 Arg399Gln polymorphism is a reducer of XRCC 1 protein activity. As mentioned above, alcoholism is a very important matter to creation or development of mentioned problems linked to this polymorphism. So lack of alcohol consumption is a favorable way for promoting social health.

**Keywords:** Alcohol, XRCC 1, Vital organ

### Determination Arsenic in Natural Waters by Graphite Furnace Atomic Absorption

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**Objectives:** Different hazardous materials are constantly entering into the environment due to industrial and population growth. Heavy metals are one of the dangerous categories among these materials. Arsenic could be released into groundwater by weathering and leaching from rocks and mineral layers of the earth and sedimentation. The consumption of water and food containing arsenic has an impact on human health. The inorganic compounds of arsenic have been classified as Category 1A by the international agency for research on cancer. We sought to determine the arsenic contamination level of groundwater in the rural water resources of Daree Takht in Azna County, Lorestan city.

**Materials and Methods:** sampling stations were selected based on different distances in the ten main geographical directions. All chemicals were of analytical grade. Reducing agents were prepared freshly and filtered before use. Stock standards solution (As V) 1000 µg/ml was the Merck reference solution.

**Results:** The average arsenic level in stations A= 15.65 ± 6.54, B= 10.37 ± 3.2 1, C= 8.33 ± 2.0 1, D=5.33 ± 2.83, E=6.2 1 ± 2. 1, F= 7.55± 1.24 ,G= 10.74 ±2.0 1,H= 12.35± 3.42 and J was 1 1.3±5.4 µg/L- 1, respectively. The difference between the arsenic levels and the national

standard was statistically significant (P < 0.00 1).

**Conclusion:** These measurements are charted over the three-month study period and reveal changes in the amounts of chemicals found in the water during that time.our research reveals that the amount of As in water harvested in the contaminated area is negligible, but changing the water source for drinking was an attempt to improve water safety and prevent morbidity from gastrointestinal diseases. Unfortunately, for the residents of these areas, many of these wells tapped water that was naturally contaminated by As and long-term consumption of this contaminated water became the trigger of As poisoning. The results of this testing reveal the effects of the various changes and provide guidance for municipal water treatment plants throughout Azna city.

**Keywords:** Arsenic, Water, Atomic

### Is there a relationship between serum copper concentration and HTLV 1/2 infection?



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**Objectives:** Copper is an essential micronutrient. The immune system requires copper to perform several functions. Alterations of copper may result in increased or decreased susceptibility to infection and often occur in response to infections. Some studies have shown that interleukin 2 is reduced in copper deficiency and is likely the mechanism by which T cell proliferation is reduced. Human T-cell lymphotropic virus (HTLV) is a retrovirus which mainly infects CD4+ T cells and can cause adult T-cell leukemia lymphoma (ATLL) as well as a neurologic disease called HTLV associated myelopathy/tropical spastic paraparesis (HAM/TSP). These diseases affect only 3-5% of HTLV positive patients; while the majority are asymptomatic carriers. The difference in the immunity system's function among HTLV carriers is one of the reasons presented for this fact. We studied the relationship between serum zinc concentration and HTLV infection in this study.

**Materials and Methods:** In a retrospective study, the serum Copper concentration of 170 subjects who were positive for HTLV- 1 or 2 was compared with 170 unaffected controls who matched them by age, sex and socioeconomic status. HTLV- 1/2 infection was tested using Enzyme linked immune sorbent assay (ELISA) kits and confirmed using PCR. Serum zinc was measured by flame atomic absorption (Varian AA240FS). The data were analyzed using SPSS 18 software.

**Results:** The mean serum copper concentration was  $106.08 \pm 32.3$   $\mu\text{g/dl}$  in patients with HTLV 1/2 infection and  $100.78 \pm 32.23$   $\mu\text{g/dl}$  in the control group which was not significantly different ( $p = 0.8$ ).

**Conclusion:** We found that the serum copper concentration is not significantly different in patients who were positive or negative for HTLV 1/2 infection. Larger studies are needed to

confirm this result. It is also necessary to study the relationship between serum copper concentration and other viral infections.

**Keywords:** HTLV, Copper, Immunity

### Comparing Intake of Food Groups with Standard Values in Children and Adolescents

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**Objectives:** A proper diet in childhood and adolescence, in addition to providing nutritional requirements, is effective in physical and mental development in adulthood. Intake of various food groups and dietary diversity are the most important determinants of health in this age group. Assessment of nutritional status in this age group is of great importance because of the extent of physical and behavioral changes. Accordingly, this study is designed with the aim of comparing the intake of food groups with standard doses in children and adolescents.

**Materials and Methods:** The study population consisted of 10- 18 years old individuals covered by the Minoodar research center in Qazvin. Multi-stage cluster random sampling is used. Demographic data is collected using 24-hours dietary recall questionnaire. The standard of receiving food groups is assessed based on the recommended USDA Food Pyramid. Data are analyzed using SPSS software version 16.

**Results:** The results showed that 7 1.8% and 69.2% of adolescents respectively received vegetables and dairy products less than the recommended standard values. This is while intake of food group of oil and nuts was higher than the recommended amounts in 89.4% of the individuals. The number of consumed units of bread and cereal group in teenage boys was more than girls ( $p=0.01$ ). As well, intake of milk and dairy group in girls was less than boys ( $p=0.021$ ). There was no significant difference between genders regarding intake of other group unite.

**Conclusion:** This study showed that intake of vegetables, milk and dairy products in both genders was not sufficient compared to the recommended standard values, and this lack of food intake in adolescent girls was more than boys. Therefore, it is recommended to consider and modify the food diet in this age group.

**Keywords:** Food Groups, diet, nutritional status, Children, Adolescents



### Comparing the Amount of Vitamin D in Preterm Infants and their mothers

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**Objectives:** Deficiency of vitamin D is one of the world's major problems, which is highly prevalent during pregnancy and in premature infants. This study was done aiming to investigate the level of vitamin D in preterm infants according to gestational age and compared them with serum levels of their mother.

**Materials and Methods:** In this cross-sectional study, serum levels of vitamin D in umbilical cord blood of 294 premature infants and their mothers were measured in Mashhad Ghaem Hospital using available sampling method during 20 16-20 17. A researcher-made questionnaire containing neonatal demographic and clinical characteristics was used. The levels of vitamin D were evaluated based on gestational age and were compared with maternal serum levels. Independent t-test, Chi-square and SPSS software were used.

**Results:** 89. 1% of premature infants had vitamin D deficiency which 46.6% were severe, 30.6% were moderate and 1 1.9% were mild. The mean and SD of serum levels of vitamin D were 18.28± 13.94 ng/ml in mothers and 14. 10±9.70 ng/ml in infants. The values were: 18.05± 1 1.64 ng/ml in infants above 32 weeks, 10.97±6.3 1 ng/ml in infants below 32 weeks, 12.59±8.40 ng/ml in boys and 16.05± 1 1.45 ng/ml in girls (P<0.05). Moderate and severe vitamin D deficiency was more common at an earlier pregnancy age (P=0.000).

**Conclusion:** Vitamin D deficiency is more common and more severe in preterm infants and their mothers. Thus, to control the level of vitamin D during pregnancy, especially in women at risk of preterm labor and preterm infants and its treatment may help to reduce prematurity problems.

**Keywords:** Premature infants, vitamin D, gestational age

### The validity of resting energy expenditure predictive equations in adults: a cohort study Ravansar

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**Objectives:** Resting Energy Expenditure (REE) is important as a nutritional parameter in weight control related assessments. To estimate REE, the most precise method is direct calorimetry. However, the predictive equations for REE are also used to estimate it. Thus, this present study was conducted to determine the validity of REE predictive equations in adults in Ravansar.

**Materials and Methods:** This cross-sectional study was performed on 129 adults at the age of over 35 years in a cohort study, in Ravansar (RaNCD). The body composition was measured with the Inbody 770 (Inbody Co, Seoul, Korea). REE was measured using indirect calorimetry (IC) with Fitmate (Roma, Italy) and REE predictive equations. Finally, the data were analyzed using Pearson correlation and T-paired t-test in SPSS-20 software.

**Results:** The average age of participants was 43.26 ± 6.25 years, of which 50.38% were female. The lowest mean difference between the REE values measured with IC and REE were related to the Muller weight equation and Muller FFM (Fat-Free Mass) (P = 0.669) and (P = 0. 10 1), and other equations had statistically significant differences with IC (P<0.00 1). The highest correlation was found between the Mifflin ST. Jeor equation with the IC (r=0.682) and the lowest correlation was found in the REE in the IC method with the Ireton- Jones equation (r=0.50 1).

**Conclusion:** The results of the study showed that the Muller and Mifflin ST. Jeor equations are relatively acceptable for estimating REE, However, a more precise equation is needed to manage weight and to reduce chronic obesity-related diseases.

**Keywords:** Resting Energy Expenditure, Muller weight, Muller FFM, Mifflin ST. Jeor

### A Fast and In-situ Detection method of Selenium in Biological and food Samples

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**Objectives:** Selenium is a metal that coexists with other metals and has a dual role as essential and a toxic element. The normal range of selenium for the human is 50-220 µg/day and out of this range can cause diseases for the human. There are numerous methods namely neutron activation analysis, high-performance liquid chromatography-inductively coupled plasma mass spectrometry (HPLC-ICP-MS), gas chromatography (GC), hydride generator atomic absorption spectroscopy (HG-AAS) and atomic spectroscopy for detection of low concentrations of selenium in biological and food samples. Some disadvantage such as expensive, no species information and not portability of these methods, encourage researchers to develop a quick and convenient method for determining of selenium.

**Materials and Methods:** In recent years, the chemical sensors have received a lot of attentions due to their simple operations, cost effective, good sensitivity and easy fabrication. A new selenoid ion selective electrode that is highly selective and sensitive to Se<sup>2-</sup> has been developed using Ag<sub>2</sub>Se as an electroactive material.

**Results:** The electrode exhibited a good potentiometric response to Se<sup>2-</sup> ions over the concentration range from 6 × 10<sup>-7</sup> to 10<sup>-4</sup> M.

**Conclusion:** The good correlation and interference results from reported literature have been proved the chemical sensors to be used in determining concentrations of selenium in food and biological samples. For example, Ion selective electrode using Ag<sub>2</sub>Se has received a lot of attention in recent years because of its properties as like as good response time (less than 1.5 min) and long life time (more than 6 months).

**Keywords:** Selenium; Chemical Sensors; Food and biological samples.

#### Ferric Reducing Ability and Cytotoxic Activity of Galbanic acid

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**Objectives:** Nowadays, there is growing interest in the application of plants as a medicinal agent since synthetic drugs have shown several side

effects on the human body. Medicinal plants are known to have weak or strong therapeutic abilities and contribute to reducing the risk of diseases of various etiologies such as inflammatory and cancer. This is attributed to the large amounts of bioactive compounds like flavonoids, phenolics, alkaloids, terpenes, and saponin found in medicinal plants. Galbanic acid (GA) is a biologically active sesquiterpene coumarin from *Ferula* species (Apiaceae) and showed various biological properties including anticancer, cancer chemopreventive, anticoagulant, antiviral, and antileishmanial properties. The present study has been carried out in order to examine the antioxidant potential and cytotoxic activity of galbanic acid against human cancer cell line (MDA-MB-23 1).

**Materials and Methods:** The antioxidant activity of different concentration of GA was evaluated by ferric reducing antioxidant power (FRAP) and BHT, α-tocopherol, and vitamin C were used as positive control. Besides that, Anticancer potential was determined using the MTT assay against human cancer cell lines (MDA-MB-23 1).

**Results:** The obtained results revealed that the various concentration of GA showed the appreciable antioxidant activity using FRAP assay with the IC<sub>50</sub> value of 92.3 µg/ml. In addition, the galbanic acid potentially inhibited the proliferation of human cancer cell line (MDA-MB-23 1). The cytotoxicity of galbanic acid demonstrated moderate toxic effects by decreasing the viability of cells to less than 50% (P<0.05) compared with untreated cells at 48 hours after treatment (IC<sub>50</sub>: 125 µg/ml).

**Conclusion:** Plant secondary metabolites are rich sources of bioactive constituents used in pharmaceutical industry, food additives, flavors, and other industrial materials. The results of this study showed the potential of galbanic acid for use in the development anti-cancer drugs.

**Keywords:** Galbanic acid, FRAP, Cytotoxic Activity.

#### Occurrence of *ermB* Gene among clinical isolates of *Staphylococcus aureus* in Shahrekord, Iran

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**Objectives:** Development of drug resistance in *Staphylococcus aureus* (*S. aureus*) has led to use of older antibiotics such as macrolid-



lincosamide-streptogramin B (MLS<sub>B</sub>) antibiotics for infections treatment. MLS<sub>B</sub> resistance can be caused by several mechanisms but the predominant for is target modification mediated by *erm* genes. The objective of this study was to determine the prevalence of *erm* genes and determine the frequency of cMLS<sub>B</sub>, iMLS<sub>B</sub>, and MS phenotypes using D-test and polymerase chain reaction (PCR) methods.

**Materials and Methods:** D-test was performed on 110 clinical specimens of *S. aureus* were collected from Kashani and Hajar Hospitals, Shahrkord, from October 2014 and May 2015 then DNA extraction was performed by simple boiling Method and multiplex PCR for detection of *erm* genes was carried out on erythromycin resistant isolates using specific primers.

**Results:** The result of this study revealed that among 110 *S. aureus* isolates examined, 35 (31.8%) were MRSA and cMLS<sub>B</sub>, iMLS<sub>B</sub>, and MS resistance phenotypes had a frequency of 22 (20%), 9 (8.2%), and 2 (1.8%), respectively. The gene *ermB* was detected in 28(25.4%), isolates *ermA* in 27(24.5%) and *ermC* in 26(23.6%).

**Conclusion:** This study demonstrated cMLS<sub>B</sub> was the most common phenotype, also an interesting point to notice in our study was the high frequency of *ermB* gene in iMLS<sub>B</sub> resistant phenotypes. Since isolates with iMLS<sub>B</sub> resistant phenotype may mutate and change to constitutive resistance can lead to treatment failure. therefore, it is essential to determine the inducible resistance in *S. aureus* strains.

**Keywords:** *Staphylococcus aureus*, D- test, *ermB* gene, macrolid-lincosamid- streptogramidin.

### Evaluation of Nutritional status in adolescents 10-18 years of Qazvin

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**Objectives:** Several studies Showed inappropriate food intake in children and adolescents. Food habits Unhealthy childhood and adolescence will bring unpleasant outcome in adulthood, therefore evaluation of nutritional status in childhood and adolescence is important. The present study aimed to the evaluation of nutritional status in children and adolescents of Qazvin.

**Materials and Methods:** This is a cross-sectional study. Sampling using was a random cluster sampling. The number of subjects was 324

subjects. Nutritional information was collected by 24-hour questionnaire dietary recall and analyzed by SPSS version 16 and chi-square and t-test analysis.

**Results:** The mean age of participants was 15/07±2/42 that the number of 51% (159 subjects) were girls and 49% (151 subject) were boys. Adolescents in the study group received vegetables and milk and dairy products get down and oil and seeds group more than the recommended amounts. Consumption of bread and cereal group (p=0/01) was and milk and dairy products (p=0/021) in the boys more than girls.

**Conclusion:** The nutritional status of the subjects was not adequate and need to be reformed. This study suggests that the style of lives in adolescence should be changed. Due to the quality and diversity of the diet can have a significant impact on getting fit Food in these age groups.

**Keywords:** Nutrition, Adolescents

### High dose vitamin D supplementation can improve menstrual problem, dysmenorrhea and premenstrual syndrome in adolescents

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**Objectives:** Vitamin D has a crucial role in female reproduction, possibly through its effects on calcium homeostasis, cyclic sex steroid hormone fluctuations, or neurotransmitter function. We have assessed the effects of high dose vitamin D supplementation on dysmenorrhea and premenstrual syndrome (PMS) in adolescents.

**Materials and Methods:** In this study, 897 adolescent girls living in Mashhad and Sabzevar, Iran, received 9 high-dose vitamin D supplements (as 50000 IU/ week of cholecalciferol) and were followed up over 9 weeks. We evaluated the effect of vitamin D supplementation on individuals in 4 categories: those with only PMS; individuals with only dysmenorrhea; subjects with both PMS and dysmenorrhea and normal subjects.

**Results:** The prevalence of PMS after intervention fell from 14.9% to 4.8% (P<0.001).

Similar results were also detected for the prevalence of subjects with dysmenorrhea (35.9% reduced to 32.4%) or having subjects with both PMS and dysmenorrhea (32.7% reduced to 25.7%). High dose vitamin D supplementation was associated with a reduction in the incidence of several symptoms of PMS such as a backache and tendency to cry easily as well as decrement in pain severity of dysmenorrhea ( $P < 0.05$ ). Supplementation was also associated with a significant increase in the duration of the menstrual cycle among participants.

**Conclusion:** High dose vitamin D supplementation can reduce the prevalence of PMS and dysmenorrhea as well as has positive effects on improvement of physical and psychological symptoms of PMS.

**Keywords:** Vitamin D supplementation, menstrual cycle, Premenstrual syndrome, Dysmenorrhea

#### Prevalence of General Obesity among Elderly in Tabriz

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**Objectives:** Overweight and obesity are common in different age groups including elderly people and may have serious negative consequences on health. There are few community-based studies in this regard in elderly people in Iran; therefore, there is little information on the nutritional status of the free-living elderly. The present study is aimed to determine the prevalence of general obesity and overweight among the free-living elderly in Tabriz in 2015.

**Materials and Methods:** The present study is a descriptive cross-sectional survey on 1042 people (506 males and 536 females) aged 60 years and older living freely in Tabriz. Data collection was performed measuring anthropometric (weight and height) indices and calculating Body Mass Index (BMI). To evaluate the overweight and obesity, BMI of less than 18.50, 18.50-24.99, 25.29.99, and 30 and above were considered as underweight, normal weight, overweight, and obesity, respectively. Furthermore, BMI of 30-34.99, 35-39.99, and 40 or above was considered as grade-I, grade-II, and grade-III obesity, respectively. For analysis, the obtained data SPSS software was used.

**Results:** The average BMI of the subjects was  $28.4 \pm 5.4$ , and in females ( $29.9 \pm 6.0$ ) higher than

males ( $26.8 \pm 4.2$ ) ( $\text{sig} < 0.001$ ); furthermore, 7.16% of elderly had obesity or overweight (77.80% females, 65.22% males). Among the obese elderly ( $\text{BMI} \geq 30$ ), 70.59%, 19.33%, and 10.08% were afflicted by grade-I, grade-II, and grade-III obesity, respectively. The BMI mean of the subjects were 29.4, 27.86, and 26.31 at the age groups of 60-69.9, 70-79.9, and 80 years or above, respectively. 39.85% people at the age group of 60-69.9, 31.21% at the age group of 70-79.9, and 22.01% at the age group of 80 years or older were obese ( $\text{BMI} \geq 30$ ) and 38.36%, 37.86%, and 33.33% overweight, respectively.

**Conclusion:** The present study indicated the high prevalence of overweight and obesity. Prevalence of the general obesity found a decreasing trend with increasing age, and was higher among the female subjects compared to the males; therefore, the status of the prevalence of overweight and obesity emphasizes modifying the lifestyle and health-related behaviors.

**Keywords:** Elderly, Obesity, BMI, Tabriz

#### The Effect of educational intervention on increasing nutritional literacy among mothers covered by Mehrabad comprehensive urban health services center

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**Objectives:** The lack of nutritional knowledge and consequently inappropriate performance in this regard has a very important role in the incidence of malnutrition and various types of non-contagious diseases. The aim of this study was to determine the level of knowledge of mothers under the coverage of Mehrabad comprehensive urban health services center as one of the marginal areas of Mashhad regarding the general principles of nutrition.

**Materials and Methods:** In practice, 50 young and middle-aged mothers (18 to 59 years old) participated in a 10-point pre-training and post-training test and the obtained data were compared using statistical T-test. The results showed that there is a significant difference between the mean pre-test and the mean post-test scores ( $p < 0.01$ ).

**Results:** In other words, trained mothers had more knowledge about the healthy use of bread and cereals, meat, eggs, beans, nuts, milk and

dairy products, fruits, vegetables, oils, sugar, and salt.

**Conclusion:** Considering that in this marginal area mothers are mostly housewives and play the main role in daily food supplies, increasing their nutritional knowledge can be very effective in promoting family health.

**Keywords:** Nutritional literacy; Non-contagious diseases; Food groups; Mothers; Marginal areas

### **Effect of vitamin D supplementation on inflammation: A systematic review**

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**Objectives:** Inflammation is a vital part of the immune system that occurs in response to any physical injury or infection. Its main symptoms are increased blood supply, elevated cellular metabolism, vascular dilatation, the release of soluble mediators and inflammatory cytokines. Regarding the widespread destructive effects of inflammation, identifying effective therapies for reducing inflammation seems to be necessary. However, existing evidence suggests that no effective therapeutic treatment has been provided to reduce the elevated levels of inflammation in the clinical domain. Vitamin D is one of the nutritional factors that could be effective in reducing inflammation and treating inflammatory diseases. Recent studies have shown that vitamin D, in addition to its vital function in calcium homeostasis, plays a crucial role in modulating the immune system and inflammation by regulating the production of inflammatory cytokines and inhibiting the proliferation of pre-inflammatory cells. These functions are effective in the pathogenesis of inflammatory diseases such as atherosclerosis, asthma, inflammatory bowel disease, chronic kidney disease, and non-alcoholic liver disease. In this article, we will review the results of clinical studies on the effects of vitamin D on inflammation.

**Materials and Methods:** Medline searched systematically for randomized controlled trials (RCTs), comparing vitamin D supplementation with placebo, usual care or other pharmacological or non-pharmacological interventions. One reviewer will assess articles for eligibility according to prespecified selection criteria, after which 2 independent reviewers will perform data extraction and quality appraisal.

**Results:** Most studies have reported there was a positive effect of supplementation of vitamin D on inflammatory markers such as IL-1, IL-6, TNF- $\alpha$  or CRP and improvement of inflammatory diseases. Although it is hard to make conclusive conclusions, vitamin D seems to be beneficial in reducing inflammation.

**Conclusion:** According to the results of the present study, supplementation with vitamin D may seem to reduce inflammation and the treatment of inflammatory diseases such as cardiovascular disease, diabetes, IBD, rheumatoid arthritis, lupus, etc. through Different mechanisms are effective. However, providing definitive conclusions about the effects of vitamin D on inflammation is not feasible at present, requiring more controlled randomized clinical trials with appropriate design in the future.

**Keywords:** Inflammation, Vitamin D

### **Nutritional status in obese women with insulin resistance in Kermanshah in 1394**

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**Objectives:** Involved Mechanisms in insulin resistance are multifactorial and include genetic and environmental factors are related to obesity. The aim of this study was to determine the nutritional status of obese women with insulin resistance.

**Materials and Methods:** In this descriptive-analytical study, 70 women over 30 years with a body mass index of 30 or more in Kermanshah were selected by available sampling method. Insulin resistance was measured by HOMA index. The body composition was measured with the Body Analysis Analyzer Model Aviss333. Data were analyzed with Chi-square, T-test and Mann-Whitney test in SPSS 2 1 software.

**Results:** The mean age of participants was 47.76  $\pm$  8.35 years. The average daily intake of protein was (60) 70.5 g, fat (62.5)76.5g, carbohydrate (20 1) 234 g, vitamin A (772), 685  $\mu$ g and vitamin E (8) 7 mg. The daily intake of fiber, calcium, and folate in 75%, 17.65%, 67.65% of the participants was less than the recommended RDA. The mean of vitamin A was more relative resistance than complete resistance. Other food intake variables (protein, fat, fiber, energy, vitamin A, vitamin E, folate, calcium, carbohydrates) did not show any significant

difference, but the mean of all carbohydrates was higher in the relative resistance group.

**Conclusion:** In obese women with insulin resistance, high calories intake, lack of vitamins and minerals, and high fat status was found. Therefore, it is needed to pay more attention to raise the community's nutritional knowledge, especially the identification of people at risk and intervention for the correct use of food groups.

**Keywords:** insulin resistance; food frequency; calories.

#### **Analysis of sleep quality in the third trimester of pregnancy and its relation to birth characteristics in women referring to women clinic of Zahedan Social Security Hospital - 20 15**

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**Objectives:** Pregnancy has special conditions that can affect sleep pattern. About 2/3 of pregnant women have abnormal sleep pattern which can cause disorders during pregnancy and after delivery for the mother and fetus. This study aimed to evaluate the quality and disorders of sleep in the last trimester of pregnancy and women referred to gynecology clinic of Tamin Ejtemaee Hospital of Zahedan city.

**Materials and Methods:** In this cross-sectional study, 400 pregnant women (28-40 of pregnancy) referred to the Tamin Ejtemaee Hospital in the spring and summer of 1395, were selected randomly and studied. Data were collected from the demographic questionnaire and Pittsburgh Sleep Quality Index (PSQI) and by the continuous sampling method and were analyzed by using descriptive and inferential statistical tests.

**Results:** In this study, the daily sleep average of  $8.7 \pm 1.7$  hours per week was shown that the highest amount of sleep was among student pregnant women (10 hours) and the lowest amount of sleep was among employee pregnant women ( $8.3 \pm 0.9$  hours per day). The percentage of sleep disorders in self-employed and working mothers was more than mothers which had other jobs but it was not significant. Also, there was no significant difference between the variables of education level, income, weight before

pregnancy, the mother body mass index, delivery type and sleep disorders. Besides, a significant relationship between sleep disorders of the pregnant mother and birth weight of infant was observed and the percentage of low birth weight in mothers which have sleep disorders in the last 3 months, was higher ( $p = 0.00$ ).

**Conclusion:** Due to the high prevalence of sleep disorders in pregnant women, the need for sleep hygiene in fertility and safe strategies to improve sleep quality in pregnant women is emphasized.

**Keywords:** Sleep disorder; Pregnancy; Birth weight.

#### **The effect of fasting in Ramadan on disease: a review paper**

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**Objectives:** During the holy month of Ramadan, more than 40 million Muslims fast. Considering the high prevalence of diabetes and other chronic diseases, as well as existing contradictions about effects of fasting on the performance of different organs and disease we set out to conduct a review of the effect of fasting on different diseases.

**Materials and Methods:** Information needed in this review study was elicited from 21 studies published on fasting in Ramadan and its effect on the performance of different organs and diseases during 1986-2016.

**Results:** There was no significant difference in the incidence of coronary events in the month of Ramadan compared to other months ( $P > 0.05$ ), but there was a significant difference in the incidence of venous sinus thrombosis compared to other months ( $P > 0.05$ ).

**Conclusion:** Various studies offered a variety of results of the effect of fasting on chronic diseases. It is concluded that fasting can do under doctor's supervision, as well as considering risk factors.

**Keywords:** fasting; Ramadan; disease.

#### **The Facts on Fasting for Your Health**

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**Objectives:** Ritual fasting has been part of religious traditions for thousands of years, from Muslims who fast during daylight hours in the month of Ramadan to Mormons who take a



regular break from food the first Sunday of each month. But a recent growing body of research shows that abstaining from food intermittently may have physical as well as spiritual benefits the latest, a study from Utah researchers that found that occasional fasts (defined as extended periods of time in which people generally abstain from all food and drink except for water) may reduce the risk of heart disease and diabetes.

**Materials and Methods:** This study is a systematic review article on the site and journals and related books have been made. 40 articles by searching electronic databases, SID, Magiran, Pubmed and Iranmedex from 2000 to 2017 found that 18 articles were reviewed.

**Results:** When you eat, your digestive system breaks down carbohydrates into the sugar glucose, the body's major source of energy. Glucose is absorbed from the digestive tract into the blood, which then travels to your body's cells to provide them with fuel. If you haven't eaten recently, the supply of glucose in your blood drops and your body turns to stored glucose, called glycogen, for energy. Once the glycogen is used up, your body begins to burn fat and muscle stores to make its own glucose to fuel your cells. After a few days without eating (which experts don't recommend), your body kicks into ketosis mode, meaning you burn fat as the primary source of fuel, in order to spare muscle. You will lose weight in the form of body fat. However, ketosis also makes your blood will also become more acidic, and can cause bad breath, fatigue, and other unpleasant symptoms; long-term, it can lead to kidney and liver damage.

**Conclusion:** the fast may reduce the risk of disease.

**Keywords:** Health; Diet fast.

### **The effect of Ramadan fasting on lipid profile and Body composition in nonalcoholic fatty liver disease (NAFLD) patients**

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**Objectives:** The aim of this study was to compare biochemical tests, body composition and anthropometric parameters in Nonalcoholic Fatty Liver Disease (NAFLD) patients before and after Ramadan fasting.

**Materials and Methods:** Fifty NAFLD patients including 33 males and 17 females aged 18-65 years, were recruited. Subjects attended after diagnosis based ultrasound imaging, at least 10 h fasting, before and after Ramadan who has been fasting for at least 10 days. A fasting blood sample was obtained, blood pressure was

measured and body mass index (BMI) and fat mass (FM) and fat-free mass (FFM) were calculated. Lipid profile, fasting blood sugar (FBS), insulin, ALT and AST enzymes were analyzed on all blood samples.

**Results:** There was a significant increase in HDL-c in females and higher total plasma cholesterol, triglyceride (TG) and FBS in both gender while lower systolic blood pressure (SBP), diastolic blood pressure (DBP) and ALT decreasing after Ramadan ( $P < 0.05$ , t test), changes in BMI, LDL-c, FM and FFM after Ramadan was not significant ( $P > 0.05$ , t test).

**Conclusion:** This study shows significant effects on NAFLD patient parameters during Ramadan fasting such as decreasing in insulin, ALT enzyme, SBP and DBP and increasing in HDL-C after an average of 27 d fasting, Result from this study suggested that Ramadan fasting may be useful to improve NAFLD, so further studies are needed in this area.

**Keywords:** Nonalcoholic fatty liver disease, Ramadan, fasting, ALT, insulin

### **Relationship between fasting and birth weight in pregnant women**

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**Objectives:** Fasting during pregnancy is a complex and controversial issue with regard to the above advantages found in texts of the day, every individual Muslim to fulfill this obligation; including pregnant women have a high tendency. The problem faced by many women and gynecologists concerned pregnant women about the possible consequences of fasting on fetal health. This study aimed to evaluate the relationship between maternal fasting during Ramadan on birth weight was administered.

**Materials and Methods:** The study was performed on pregnant women attending maternity hospital in Kashan in 2009 that exposure to Ramadan fasting during pregnancy was conducted in two groups according to fasting status and none fasting was compared. Multiple pregnancies and gestational age less than 37 weeks were exclusion criteria. In both groups, age, parity, gestational age, BMI, mother's job, receiving prenatal care and intended pregnancy were similar. Data were analyzed using descriptive and inferential statistical tests that were performed by SPSS.

**Results:** The two groups in terms of mean age, gestational age, parity and weight gain during pregnancy was no significant difference. Mean birth weight was 3338 g ( $\pm 498$  g) in fasting and a

non-fasting group was 3343 g ( $\pm 339$  g). The results showed that the mean fasting and non-fasting mothers and birth weight were not significantly different ( $p = .931$ )

**Conclusion:** The results of this study indicate that there is no significant relationship between the baby's weight at birth and maternal fasting during pregnancy. It seems to be fasting for pregnant women who receive prenatal care as long as they have no effect on birth weight. But other health effects that we have not seen in this study can occur.

**Keywords:** fasting, pregnancy, birth weight, low birth weight infants

### **Modulation of vaspin and omentin- 1 levels in patients with nonalcoholic fatty liver disease by fasting during Ramadan**

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**Objectives:** Nonalcoholic fatty liver disease (NAFLD) is the most common cause of chronic liver injury. Vaspin is suggested to have several effects on insulin resistance, the inflammatory process and, nonalcoholic fatty liver disease. Omentin- 1 is an independent predictor of hepatocyte ballooning. Based on the evidence, weight loss and energy restriction, could improve the adipokines level and reduces histologically steatosis. The aim of this study was to determine the effects of Ramadan fasting on some adipokines in NAFLD patients.

**Materials and Methods:** This study was conducted on 83 NAFLD patients, 42 cases who fasted and 41 controls who decided not to have Ramadan fasting. For each patient dietary intakes including energy and macronutrients were assessed by 24-h recall questionnaire and International physical activity questionnaire-short form (IPAQ-S) was recorded. Anthropometric indices, including weight, body mass index (BMI), waist circumference (WC), hip circumference (HC), Waist-to-hip ratio (WHR)

and body fat percentage was measured before and after Ramadan. Serum adipokines including vaspin and Omentin- 1 were measured using commercial ELISA kit.

**Results:** Omentin- 1 and vaspin were obviously decreased and the mean changes from baseline values showed statistically significant differences between groups. In stepwise multivariate linear regression model, changes in weight, WHR, and dietary intakes were significant predictors of changes in serum adipokines.

**Conclusion:** This study showed a potential for fasting in improving several anthropometric indices in NAFLD patients. Additionally, we have provided the first evidence in NAFLD of fasting as an effective strategy to decrease adipokines including vaspin and omentin- 1. Longer studies with follow-up periods are required.

**Keywords:** Nonalcoholic Fatty Liver Disease; Fasting; Adipokines; Vaspin; Omentin.

### **The effects of Ramadan fasting on body composition, blood pressure, glucose metabolism and markers of inflammation in NAFLD patients: An observational trial**

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**Objectives:** Nonalcoholic fatty liver disease (NAFLD) is a chronic liver disease and is a serious global health problem. Regarding the increasing prevalence of NAFLD, finding various strategies for prevention and management of the disease is great importance. The aim of this study was to determine the effects of caloric restriction during Ramadan fasting on anthropometric indices, fasting glucose, plasma insulin, insulin resistance and inflammatory cytokine (CRP and IL-6) in Patients with NAFLD.

**Materials and Methods:** We conducted this study on 83 NAFLD patients, 42 cases who decided to fast and 41 controls who decided not to have Ramadan fasting, between Jun 18 through July 17, 2015. Anthropometric parameters were measured and a sample of venous blood was obtained for biochemical assays before and after Ramadan.

**Results:** There was a significant decrease in all anthropometric parameters as well as fasting glucose, plasma insulin, and insulin resistance. Relative to the non-fasting group, fasting significantly reduced circulating inflammatory, but changes in blood pressure after Ramadan were not significant.

**Conclusion:** This study shows significant effects on NAFLD patient parameters during Ramadan fasting such as anthropometric indices, fasting glucose, plasma insulin, and inflammatory cytokine. The result from this study suggested that Ramadan fasting may be useful to improve NAFLD, so further studies are needed in this area.

**Keywords:** Nonalcoholic Fatty Liver Disease; Ramadan Fasting; Blood Pressure; Blood Sugar; Body Composition.

### Effect of Ramadan Fasting on renal parameters

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**Objectives:** Fasting during Ramadan is an Islamic rule and, therefore, Muslims fast 29-30-days consecutive period per year. This Islamic rule is excepted for patients and whom fasting may be harmful to them. This pattern of fasting during Ramadan is different from the usual fasting as people are allowed to eat and drink between sunset and dawn but not after dawn. According to Islam, sick people are exempted from Fasting, but still, a significant number of patients with various chronic diseases including chronic kidney diseases (CKD) insist on fasting in Ramadan due to their personal beliefs.

**Materials and Methods:** In this review, we studied 41 reliable documentations and sources extracted from sites of SID, PUBMED, and magazines inside and outside the country about Ramadan fasting, renal physiology and the results of the reviewed articles were compared.

**Results:** The slight increase in serum uric acid, urea, and creatinine, which are not significant in most of the studies. The slight decrease in urine output and no changes in plasma or urine osmolality, serum Calcium and Phosphorous, PH and serum bicarbonate were found.

**Conclusion:** In general no detrimental effects on healthy individuals and renal Transplanted patients have been directly attributed to fasting during Ramadan. However, caution is advised for CKD patients as they could be affected more by

Changes creatinine especially if they are taking diuretics, Renin-angiotensin system (RAAS) blockers or having cardiovascular diseases. The physicians should monitor his patients carefully during Ramadan in order to avoid any deleterious effects.

**Keywords:** Fasting, Ramadan, Renal parameters.

### Ramadan fasting improves liver function and total cholesterol in patients with nonalcoholic fatty liver disease

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**Objectives:** Nonalcoholic fatty liver disease (NAFLD) is a serious global health problem, thus the prevention and management of the disease are necessary. This study aimed to determine the effects of Ramadan Fasting (RF) on liver function, Visceral Adiposity Index (VAI) and Atherogenic Index of Plasma (AIP) in these patients.

**Materials and Methods:** Eighty-three NAFLD patients (57 males and 26 females) were enrolled in the study, 42 patients who practiced RF, between Jun 18 through July 17, 2015, and, 41 patients in non-fasting groups. Anthropometric parameters and Ultrasound grading were measured before and after Ramadan. The biochemical parameters including lipid profiles (total cholesterol, LDL cholesterol, HDL cholesterol, and triglycerides), liver enzymes (Aspartate aminotransferase, SGOT and Alanine aminotransferase, SGPT) were evaluated before and after Ramadan. AIP and VAI were calculated based on the formula.

**Results:** The mean decreases in anthropometric indices were significantly different between groups. Similarly, the mean decrease in the total cholesterol values in the fasting group was remarkably greater than in the control group ( $p=0.02$ ). The values of AIP and VAI decreased at the end of the study in both group and the mean of changes showed no differences between groups ( $p=0.79$  and  $p=0.65$  for AIP and VAI, respectively). The changes in the concentrations

of liver enzymes, as well as the severity of hepatic steatosis, showed remarkable differences between groups ( $p=0.03$ ,  $p=0.05$ , and  $p=0.02$  for SGOT and SGPT, and Liver steatosis, respectively).

**Conclusion:** RF improved liver steatosis in NAFLD patients and might be useful in the management of NAFLD.

**Keywords:** Fasting; Nonalcoholic fatty liver disease (NAFLD); Liver Enzyme; Visceral Adiposity Index (VAI); Atherogenic Index of Plasma (AIP).

### Effects of Functional Foods, Milk-Derived bio-peptides, on Cardiovascular Diseases

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**Objectives:** Cardiovascular disease (CVD) is one of the main causes of mortality in the world. There are many causes of diseases of your heart valves such as coronary heart disease, heart attack, stroke and, hypertension. Hypertension is a CVD that refers to high blood pressures ( $>120/80$  mmHg). Diet is one of the effective factors in developing of CVD. Functional foods are foods that, by virtue of physiologically active food components, provide health benefits beyond basic nutrition. Many functional foods have been potentially benefited to prevent and treat cardiovascular disease. Milk contains number of components which have antihypertensive effects, such as the minerals and bio-peptides (Valine-Proline-Proline (VPP), Isoleucine-Proline-Proline (IPP), C<sub>12</sub> peptide and whey peptides. Functional components in adequate amounts on a consistent basis could be effective in decreasing the risk of cardiovascular disease by several potential mechanisms including decreasing blood lipid levels, low-density lipoprotein oxidation, plaque formation, improving arterial compliance, scavenging free radicals and inhibiting platelet aggregation.

**Materials and Methods:** We searched in PubMed, Science Direct, Medline and Scopus databases published up to July 20 17 for the possible mechanisms that link functional food and CVD. From the detected studies we selected all published In-vitro and In-vivo.

**Results:** The evidence of several clinical trials have suggested that functional foods exhibit antihypertensive effects in individuals with hypertension. Potentially this means functional foods containing milk peptides as their active ingredient could be used to prevent or treat hypertension. The majority of studies found blood pressure reductions between 5 and 10 mmHg in systolic and diastolic blood pressure following milk bio-peptide intervention. The main mechanism for reducing hypertension is inhibition of angiotensin converting enzyme (ACE). Milk bio-peptides, acting via the same pathway as ACE inhibiting medications without any side effects on commonly used drugs.

**Conclusion:** Functional foods introduce a new approach for controlling high blood pressure and could be advocated as a component of CVD prevention and treatment globally. These foods have potentially provided some benefits alone, in combination, or in addition to cholesterol-lowering medications and other therapies.

**Keywords:** Functional food; Cardiovascular disease; Milk bio-peptide; In-vitro and In-vivo; chronic disease.

### Nutrigenomic Mechanisms Associated with Chemoprevention by Saffron; a clinical perspective

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**Objectives:** Attempts to translate epidemiological findings related to protective effects of plant foods against cancer into clinical practice have not yielded the anticipated benefits. The chemoprotective benefits of saffron have been broadly attributed to the presence of a number of phytochemicals and antioxidants such as carotenoids. Antioxidant supplements are popular amongst consumers, including those at risk of or with diagnosed cancer. The emerging science of nutrigenomics considers cancer-related molecular and cellular pathways by which carotenoids may target directly and/or indirectly. A variety of hypothesis for anti-neoplastic effect attributes for saffron (*Crocus Sativus L.*) is induction of apoptosis; hindering effect on synthesis of cellular nucleotides; having provitamin A activity; the interaction with topoisomerase II and activation of detoxification systems

**Materials and Methods:** In our most recent study, histopathology evaluation of saffron in experimental colon cancer model induced by azoxymethane/DSS in rats were studied. Molecular targets, cellular events, intracellular organelles dysfunction were also studied by the flowcytometry technique in colon cancer cell line SW 1116.

**Results:** Cytotoxic dose of - (*in vivo* study) and growth inhibitory effects (*in vitro* study) of saffron were seen. Mitochondrial membrane depolarization, the induction of ROS production, arrestment of the cell cycle at G2/M phase and induction of apoptosis were observed, too.

**Conclusion:** These results begin to question the perceived benefits of administration of saffron as a chemoprevention agent in potential short- and long-term clinical trials. The science of nutritional genomics represents an opportunity to use this plant food as a safe and effective solution for using in cancer chemoprevention.

**Keywords:** Nutritional Genomics, saffron, *In vitro* Study, *In vivo* model, chemoprevention

### **The effect of extract of chlorogenic acid supplementation on glucose metabolism, glucose tolerance, insulin-sensitive and insulin-resistant**

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**Objectives:** Chlorogenic acid (CGA) is one of the polyphenols compounds, which can be found in the human diet. It is an ester formed from cinnamic acids and quinic acid and is also known as 5-O caffeoylquinic acid. CGA consumption has been associated with lower risk of diabetes in rats. We investigated the hypothesis that extract of chlorogenic acid improves glucose metabolism in adults with type 2 diabetes mellitus.

**Materials and Methods:** We performed a systematic literature search through objective keyword including chlorogenic acid, insulin resistance, insulin sensitivity, glucose metabolism, glucose tolerance, diabetes up to July 2017 in PubMed, Medline, Science direct and Scopus. The search was limited to English-language studies. Studies were excluded if they were type 1 diabetes, animal studies. Nine RCTs studies were identified.

**Results:** According to the evidence and the results of studies. Regular consumption of chlorogenic acid supplementation significantly associated with reduced risk of type II diabetes. CGA can help to respond pancreatic beta cells to glucose by stimulating the secretion of glucagon like peptide. It also causes increase insulin sensitivity and decreases insulin resistance in adipocytes cells. CGA can stimulate glucose transport into L6 skeletal muscle cells. Finding showed that oral consumption of CGA inhibits the activity of  $\alpha$ -amylase and  $\alpha$ -glucosidase which decreases glucose absorption in the intestine and reduced the postprandial blood glucose concentration That increases glucose tolerance.

**Conclusion:** The results indicate that chlorogenic acid supplementation can help to regulate glucose metabolism. The mechanism of action and side effects of chlorogenic acid supplementation is not clearly understood therefore more investigation is needed.

**Keywords:** Chlorogenic acid; Insulin resistance; Insulin sensitivity; Glucose metabolism; Glucose tolerance; Diabetes.

### **The effect of extract of green coffee bean on fat accumulation and lipid profile**

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**Objectives:** Green coffee is one of the functional foods with antioxidant activity useful in the prevention of diseases like type 2 diabetes, Alzheimer's disease, epilepsy. Green coffee beans contain polyphenols which chlorogenic acid (CGA) is the most dominant. It is claimed that green coffee consumption can reduce weight and regulate lipid profile. The objective of this study was to investigate the authenticity of this claim.

**Materials and Methods:** English-language studies about green coffee, chlorogenic acid, lipid profile, fat accumulation, obesity up to July 20 17 were identified through PubMed, Medline, Science direct and Scopus from retrieving articles. Eleven RCTs studies were identified.

**Results:** Accumulating evidence has demonstrated regular consumption of green coffee beans reduces body weight and visceral fat mass, plasma, and insulin levels. The Laboratory results show that serum levels of TG, TC, LDL-C, and liver total cholesterol significantly decreased. Plasma levels of blood cholesterol and plasma triglyceride concentrations were reduced significantly by 45% and 58%, respectively. Has been suggested that the effect of green coffee in the regulation of lipid profile has been attributed to the effective material of green coffee (Chlorogenic acid). The mechanism of action chlorogenic acid is an intense activity of carnitine palmitoyl transfers and increased oxidation of fatty acids. The mechanism of CGA in reducing blood lipids was associated with the inhibition of absorption of lipids in the intestine, transformation, and synthesis in the liver.

**Conclusion:** According to some of the mechanisms of action of green coffee, it will be beneficial to treat some diseases associated with lipid metabolic disorders.

**Keywords:** Green coffee; Chlorogenic acid; Lipid profile; Fat accumulation; Obesity.

### **Escherichia Coli Pathogen or Probiotic**

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**Objectives:** Probiotics are viable microorganisms that are increasingly used for the treatment of a variety of diseases. They are

either used as feed or dietary supplements or as pharmaceutical products for therapeutic purposes. Probiotic microorganisms currently in use are either bacteria, most commonly lactic acid bacteria (LAB) or yeasts. Besides LAB and yeasts, non-pathogenic *Escherichia coli* strains have also been used for the treatment of gastrointestinal diseases as well as for colonization and infection prophylaxis.

**Materials and Methods:** One of the best-studied examples of probiotic *e. coli* strains are represented by strain Nissle 19 17 (ECN) of serotype o6: k5:h 1. ECN was originally isolated by Alfred Nissle in 19 17 in course of a search for *e. coli* wild-type strains with antagonistic activity against enteric pathogens. The literature related to the topic from the database with keywords of *Escherichia coli* Nissle 19 17, probiotic, non-pathogenic and review base on the content of titles and abstracts was reviewed.

**Results:** This strain lacks typical virulence genes and is serum sensitive in contrast to probiotic lactobacilli.

**Conclusion:** ECN has been reported that continuous communication between commensal microorganisms and host epithelial does occur which may be the basis for the development of stable microbial relationships in the gut. ECN treatment also is improving the general state of health and its administration is safe and well tolerated.

**Keywords:** *Escherichia coli* Nissle 19 17; Probiotic; Non-Pathogenic

### **Acid folic deficiency and risk of cervical cancer**

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**Objectives:** Cervical cancer is the most common cancer in the female, human papillomavirus is the major risk factor for this cancer, which causes inflammation in the cervix. Folic acid deficiency is also associated with activation/ enhancing inflammation process. There is a growing body of data evaluating the relationship between cervical cancer and inflammation with respect to folic acid deficiency. Here we explored the possible

association of folic acid deficiency and inflammation in cervical cancer.

**Materials and Methods:** A literature searches in different databases, including PubMed, and Scopus was done for evaluating the correlation of acid folic deviancy and increase expression of P 16 protein, inflammation process with respect to the progression of cervical cancer.

**Results:** Folic acid deficiency is associated with an increase in the expression of protein P 16, which can cause inflammation. High expression of P 16 could raise inflammation, leading to the progression of cervical cancer. Moreover, it has been shown that 5 mg/d folate supplementation for 6 months in women with CIN 1 resulted in its regression a. Also, it leads to reduced serum insulin, HOMA-B, plasma MDA and increased plasma GSH levels, although it does not increase the regression of early epithelial abnormalities of the cervix

**Conclusion:** Our findings indicated that both serum folate deficiency and high expression of p 16 protein could increase the risk of cervical cancer and cervix inflammation. Folic acid supplementation could reverse the abnormal expression of p 16 protein, and effectively promote apoptosis.

**Keywords:** Acid folic deficiency; cervical cancer; human papillomavirus.

### Association of serum high-Sensitivity C-Reactive Protein (hs-CRP) concentrations and depression score in adolescent girls

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**Objectives:** There is a growing body of data showing the association of depression with increased risk of coronary artery disease (CAD) in the adult. The aim of current study was to explore this association of high-sensitivity C-reactive protein (hs-CRP) as a risk biomarker of CAD with depression in a large population of adolescent girls.

**Materials and Methods:** Serum hs-CRP was measured in 563 (depressed: 244, non-depressed: 319) adolescent girls aged between 12 to 18 years.

**Results:** Our results showed that serum hs-CRP level (Median) was 0.61 (mg/L) in not-depressed girls, 0.97 (mg/L) in girls with mild depression, 1.04 (mg/L) in moderate depression, and 0.84 (mg/L) in girls with severe depression ( $P < 0.001$ ). Multinomial logistic regression controlling for age revealed that higher depression score associated with higher serum hs-CRP level (OR= 1.81,  $P < 0.001$ ).

**Conclusion:** We demonstrated a significant association between hs-CRP and depression in adolescent girls, supporting future studies in prospective setting to explore its value.

**Keywords:** hs-CRP; depression; adolescent girls; coronary artery disease.

### PCSK9 and Metabolic Syndrome: From Gene to Circulating Protein

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**Objectives:** PCSK9 is a crucial molecule in lipid metabolism. The discovery of PCSK9 represents a key regulatory pathway to control the number of low-density lipoprotein receptors, which are proteins on the surface of hepatic cells. The clinical and genetic evidence demonstrated that PCSK9 may have a role in the context of metabolic syndrome (MetS), which is regarded a collection of risk factors for atherosclerotic cardiovascular disease and type II diabetes (T2DM). Therefore, in the present review, the current knowledge on the role of PCSK9 in the context of MetS will be discussed.

**Materials and Methods:** A systematic review of articles published between January 2003 and July 2017 was conducted using PubMed, Scopus, and the web of knowledge. Articles were searched using the following **keywords:** "PCSK9", "Metabolic Syndrome" and "genetics". Original

research and review articles were screened initially.

**Results:** Several studies focused on the biochemical function of PCSK9 through measurement of plasma levels. Results from these studies demonstrated that higher PCSK9 plasma level correlates with MetS. Furthermore, molecular assessment of PCSK9 revealed that gain-of-function mutations of PCSK9 are associated with MetS events such as increased risk of cardiovascular disorders due to high LDL-C. Conversely, loss-of-function mutations cause low-plasma LDL-C levels and a reduction in cardiovascular risk.

**Conclusion:** The role of PCSK9 in MetS by means of regulation of the LDLR and the LDL-C plasma levels have been reported in several studies. The correlation of PCSK9 with TGs levels, glucose metabolism, and insulin resistance provides its potential role in MetS. To better describe the interrelationship between PCSK9, TGs, glucose, and insulin in MetS additional functional studies are needed. With the implementation and the extended use of high throughput technologies in the field of genomics, transcriptomics, and metabolomics, the clinical relevance of these relationships will be established in the near future.

**Keywords:** PCSK9; Metabolic syndrome; genetics

### **Relationship between Eating Restraint and Overweight and Obesity among Secondary School Children in MASHHAD, IRAN**

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**Objectives:** Globally, the high prevalence of overweight and obesity has been explained as a pandemic in several countries. Eating Restraint (ER) plays a causal role in the increasing the obesity. The main objective of this research is to determine the relationship between ER and overweight/obesity among secondary school children in Mashhad, Iran.

**Materials and Methods:** This cross-sectional study was conducted in Mashhad, the center of Khorasan Razavi province to determine the prevalence of overweight /obesity and identifying associated factors such as eating patterns including ER among adolescents. The 7

administrations of Education and Training of Mashhad was divided based on the socioeconomic status; North (as low) and South (as high) socio-economic districts. 10 Schools were selected through a stratified multistage random sampling, finally, 1 19 1 students (58 1 male and 6 10 females) were selected measurement. ER was determined using a Three-Factor-Eating Questionnaire Revised 18-Item (TFEQ-R 18). A Persian version of the TFEQ-R 18 was applied.

**Results:** The overall prevalence of overweight/obesity in the sample was 17.2% and 1 1.9%, respectively. Among males, four items of Cognitive Restraints (CR) was significantly related to BMI. While, among females, 5 items of CR was significantly related to BMI. the item "On a scale of restraint, what number will you give yourself?" the results showed higher scores of eating restraint among males than females. About Uncontrolled Eating (UE), the item "Being with someone who is eating makes me hungry to eat also" was significantly related to BMI among males (P=0.00 1) and females (P=0.00 1). Considering Emotional Eating (EE), item "When I feel lonely, I console myself by eating" was significantly related to BMI among males (P=0.03).

**Conclusion:** Childhood obesity is a serious health problem in Mashhad. In modern societies characterized by easily accessible foods, restrained eating may become an adaptive behavior to limit weight gain

**Keywords:** Obesity, Overweight, School Children.

### **The relationship between vitamin D and hearing loss**

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**Objectives:** hearing loss is the second most common disease, after mental retardation, in the Iranian population with the prevalence of 1 in 166 in this country. Hearing loss is a multifactorial disease and many environmental and genetic factors are involved. Vitamin D plays a key role in auditory quality. However, the details of mechanisms have not been clarified yet.



The aim of our current study was to give an overview about the effectiveness of vitamin D metabolism pathway and deafness.

**Materials and Methods:** The following keywords were used: "hearing loss" and "vitamin D" and their synonyms words in Pubmed, Embase and Scopus databases.

**Results:** Many studies have revealed the link between vitamin D deficiency and deafness. In Japan, very low level of 1,25-dihydroxy vitamin D3 has been reported in deaf patients. The other study exhibited improvement in hearing after taking vitamin D supplements. A similar study showed that HDR syndrome (hypoparathyroidism, deafness, renal dysplasia) was associated with vitamin D deficiency which is in line with preclinical studies on the animal models. These animal studies also confirm this relationship. In zebrafish and mice with VDR knockout gene, developmental defects of the inner ear and hearing disorders have been observed.

**Conclusion:** These findings provide a proof of concept of association between vitamin D and hearing loss in nonsyndromic patients and the clinical impact of vitamin D in supplementation improved this condition. Although further studies are needed to validate these observations.

**Keywords:** hearing loss; vitamin D; Nutrition.

#### **Isolated fish protein: extraction methods and food fortification**

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**Objectives:** Seafood a high-protein food that is low in calories, total fat, and saturated fat. High in vitamins and minerals, Seafood has been shown to have numerous health benefits. Protein in seafood is easier to digest because seafood has less connective tissue than red meats and poultry. There are many ways to add the health benefits of seafood to our diet, that one of them, preparation of the fish protein isolate from the low-cost fish and add it to food. Therefore, the aim of this study is the introduction of fish protein isolated production methods and finally assessing the quality and characteristics of enriched feed materials.

**Materials and Methods:** The acid and alkali-aided processes have several advantages over the conventional surimi process when isolating functional and quality protein from fish muscle

(1) Whole fish with skin and bones can be utilized in the acid and alkali-aided processes.

(2) It's a low-cost method

(3) This process is faster

**Results:** By applying enzyme technology for protein recovery in fish processing, it may be possible to produce a broad spectrum of food ingredients or industrial products. This method is more expensive compared to the other methods, but more healthy.

**Conclusion:** Production of fish protein ingredients is growing throughout the world. Increased Demands for traditional raw materials for production of fish protein ingredients are leading to great pressure on fish stocks. This has led to Overfishing, of many of the more traditional species and has required government intervention to prevent the collapse of important species. Therefore, the remainder of the fish processing industry can be used to produce fish protein products, which leads to the preservation of most species of fish.

**Keywords:** fish; fish protein isolate; nutritional value.

#### **MicroRNA- 107 expression profile changed in obese women with T2DM under diet therapy: a randomized clinical controlled trial**

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**Objectives:** This study compared expression of miR- 107 in obese patients with T2DM with those of non-obese healthy women. It identified the effect of diet therapy to the circulating level of miR- 107 in relation to lipid and glucose metabolism biomarkers in obese women with T2DM

**Materials and Methods:** This randomized clinical controlled trial studied 30 obese patients with T2DM in two randomized groups (control n = 15 and diet therapy n = 15) and 10 healthy control subjects. Demographic, dietary, anthropometric, and biochemical indices were obtained before and after the 10-week intervention. Control group continued their common diets along the study. The circulating level of miR- 107 was assessed in all subjects using quantitative RT-PCR and its fold change was compared between groups.

**Results:** The circulating level of miR- 107 was dysregulated in T2DM compared with normal healthy group (2-fold down-regulation). Diet

therapy altered circulating level of miR- 107 (exact  $p = 0.001$ ;  $\sim 1.75$ -fold up-regulation) to normal levels. The increase in miR- 107 independently correlated with restricted calorie ( $r = -0.740$ ;  $p = 0.029$ ) and increased fasting insulin ( $r = -0.653$ ;  $p = 0.021$ )

**Conclusion:** Following calorie-carbohydrate controlled diet therapy; dysregulated level of circulating miR- 107 was changed toward normal circulating levels in obese women with T2DM.

**Keywords:** Diet therapy; miR- 107; T2DM; Obesity

### Association between hypovitaminosis D, the metabolic syndrome in elderly

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**Objectives:** Hypovitaminosis D is a common worldwide problem which has been implicated in various chronic disorders like cardiovascular disease and diabetes. In this study, we evaluated the association between hypovitaminosis D with metabolic syndrome (MetS) as well as its components characteristics.

**Materials and Methods:** This was a part of a cohort study in those older than 60 years-old in Amirkola, Babol city, North of Iran. Demographic data were gathered by a standard questionnaire. Fasting blood samples were gathered and evaluated. Subjects were divided into two groups: 663 persons with MetS and 554 controls according to the Iran criteria for MetS. Vitamin D was evaluated by ELISA.

**Results:** Women were more affected by MetS (52.3% vs. 4.14%). No differences were seen between MetS and controls regards to the serum level of vitamin D [OR 95% CI= 1.1 (0.9- 1.38)]. MetS patients were more prone to hypocalcemia [OR = 1.4 (1.03- 1.91)] which was not seen in females. A significant difference was seen between controls and MetS regards to the calcium level in males. Serum level of vitamin D and calcium was almost equal between normal population and MetS (adjusted for blood pressure, diabetes, low HDL, and central obesity). A significant relationship was seen between triglyceride and vitamin D and calcium in males.

**Conclusion:** No significant association between hypovitaminosis D and MetS in these Iranian population be explained by the high prevalence of hypovitaminosis D in this population.

**Keywords:** Metabolic syndrome; vitamin D; serum calcium

### Association of CDKN2A/2B genetic polymorphism with risk of developing esophageal squamous cell carcinoma

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**Objectives:** Several genetic variants in the 9p21 region have been found to be associated with the risk of multiple cancers, including esophageal squamous cell carcinoma (ESCC) Here we explored the association of CDKN2A/B, rs 1333049 in 273 subjects with, or without ESCC.

**Materials and Methods:** One hundred and twenty-one ESCC patients and two hundred and eight healthy subjects were recruited. genotyping was carried out by probe based PCR. The significant prognostic variables in the univariate analysis were included in multivariate analyses, using a Cox model.

**Results:** According to the recessive genetic inheritance model, we found that the TT genotype of the CDKN2A/B polymorphism was associated with larger tumor size. Moreover, the CDKN2B rs 1333049 polymorphism was associated with poor prognosis in ESCC patients. In particular patients with CC genotype had a significantly shorter OS with a mean range of  $34.5 \pm 8.9$  months, compared to CG+GG genotypes with OS of  $47.7 \pm 5.9$  months (Log Rank  $p$  value=

0.038). Moreover, the progression free survival of these cases with TT genotype was  $26.9 \pm 7.1$  months versus CC+CT genotypes with PFS of  $36.8 \pm 5.5$  months.

**Conclusion:** We found the association of a novel genetic variant in CDKN2B gene with clinical outcome of ESCC, supporting further studies in a larger population to evaluate the value of emerging markers as a risk stratification marker in ESCC.

**Keywords:** Esophageal squamous cell carcinoma; risk marker; CDKN2A/B; polymorphism.

### Association of an ABCB 1 genetic polymorphism with the risk of esophageal squamous cell carcinoma

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**Objectives:** Esophageal squamous cell carcinoma (ESCC) is one of the causes of death from cancer. Several genetic variants in the 7q21.12 region have been recognized to be associated with the risk of several cancers. Here we explored the relationship between a genetic variant in the 7q21.12 region of ATP-binding cassette subfamily B member 1 (ABCB 1) gene, rs 1128503, for the first time in 297 subjects including healthy subjects and patients with ESCC.

**Materials and Methods:** Data in computer-based patient dossiers (CPRs) of Mashhad University of Medical Sciences were applied to identify ESCC patients. Ninety-three ESCC patients and two hundred and twenty-four healthy subjects were used. DNA was extracted, followed by genotyping. Overall survival (OS) was analyzed via Kaplan–Meier method, and log-rank tests.

**Results:** Our data showed that patients with ESCC had a higher frequency of a TT+CT

genotype for rs 1128503 than subjects in the control group, and this polymorphism was also related to tumor size. Furthermore, TT+CT genotype was related with shorter OS (e.g., TT genotype:  $40.072 \pm 6.885$  months, vs. CC:  $43.088 \pm 5.714$  months).

**Conclusion:** we demonstrated a relationship between a genetic marker in ABCB 1 gene and clinical information of ESCC patients. Further studies are warranted in a larger population and multi center setting in ESCC patients. Furthermore interaction of this genetic marker with environmental factors including dietary intake and pattern which is one of the major risks of esophageal cancer.

**Keywords:** ESCC, ABCB 1, genetic marker, OS

### Carnitine Deficiency in Dialysis Patients

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**Objectives:** Carnitine deficiency is commonly seen in dialysis patients. This study aimed to assess plasma carnitine levels in dialysis patients and any correlation between clinical and biochemical characteristics and carnitine deficiency.

**Materials and Methods:** Plasma carnitine concentrations were measured by tandem mass spectrometry in 46 children on hemodialysis or peritoneal dialysis. The total carnitine, free carnitine (FC), and L-acyl carnitine (AC) levels of  $40 \mu\text{mol/L}$  and less, less than  $7 \mu\text{mol/L}$ , and less than  $15 \mu\text{mol/L}$  were defined low, respectively. An FC less than  $20 \mu\text{mol/L}$  and an AC/FC ratio greater than 0.4 were considered as absolute and relative carnitine deficiencies respectively. AC/FC ratio  $\geq 1$  defined as severe relative carnitine deficiency. The correlation between carnitine levels and AC/FC ratio and age, duration of dialysis, characteristics of dialysis, and blood urea nitrogen and serum albumin concentrations were assessed.

**Results:** Absolute carnitine deficiency, low total carnitine, and low AC concentrations were found in 66.7%, 82.6%, and 5.1% of the patients, respectively. All of the patients had a relative carnitine deficiency. Carnitine measurements were not significantly different between the hemodialysis and peritoneal dialysis groups. More severe relative carnitine deficiency was found in those with lower blood urea nitrogen levels. No linear correlation was found between carnitine levels and age, duration of dialysis, characteristics of dialysis, serum albumin level, or blood urea nitrogen level.

**Conclusion:** Absolute and relative carnitine deficiencies are common among children on dialysis. Patients with lower blood urea nitrogen levels have more severe forms of relative carnitine deficiency. More investigations are needed to define whether supplementation with carnitine is needed in dialysis patients and which groups of patients benefit using it.

**Keywords:** Carnitine deficiency, hemodialysis, peritoneal dialysis

#### **Serum folate, vitamin B 12 and homocysteine levels in hemodialysis patients**

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**Objectives:** Deficiencies of water soluble vitamins such as folate and vitamin B 12 has been reported as etiologic factors of hyper homocysteinemia. This study was conducted to find whether there is a correlation between serum levels of these vitamins and plasma total homocysteine levels.

**Materials and Methods:** 19 hemodialysis subjects were enrolled. The study group comprised 52.6% girls and 47.4% boys aged 80-324 (204.778.4) months who were on dialysis from 1.5- 153 (42. 143.3) months ago. All patients were supplemented by folate and 15 cases were received oral vitamin B 12. Folate serum levels < 1.5 ng/ml were defined as low (deficiency). As for vitamin B 12, levels < 120 pg/ml, 120- 160 pg/ml were defined as deficient and borderline, respectively. Plasma homocysteine levels of 5- 15 mole/L and > 15 mol/L were defined as normal and hyper homocysteinemia, respectively. The correlation between the serum levels of vitamins and plasma homocysteine levels was checked by the Pearson correlation test and P-values <0.05 and r>0.7 indicated a good (significant) correlation.

**Results:** 13 patients (68.4%) had hyper homocysteinemia, whereas plasma homocysteine levels were normal in 6 (3 1.6%). No patient had folate or vitamin B 12 deficiency. There was no correlation between homocysteine levels and serum vitamin B 12 (P=0.62 1, r= 1) and serum folate levels (P=0.57 1, r= 1).

**Conclusion:** Normal and even high serum levels of folate and vitamin B 12 cannot prevent the occurrence of hyper homocysteinemia in hemodialysis patients.

**Keywords:** Hemodialysis; Folate; Vitamin B 12; Homocysteine; Hyper-homocysteinemia.

#### **Determination of Vitamin D by Electrochemical Biosensors**

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**Objectives:** There are two types of vitamin D, vitamin D<sub>2</sub> and D<sub>3</sub>. Although, these two types of vitamin have similar characteristics. They differ by the presence of a methyl group and a double bond. Several methods for measuring vitamin D in the biological samples have been reported. These methods include: chromatographic methods (GC-MS; HPLC; LC-MS), competitive protein binding assays, radioimmunoassay (RIAs) and automated methods. Biosensors as an economic, fast, sensitive, reliable, simple and miniaturizable method which can compete with other reference methods for detection of circulating vitamin D have been developed recently.

**Materials and Methods:** The searches in this study was based on the **keywords:** electrochemical sensor, biosensor, vitamin D, 25(OH)D, detection followed by Scopus, Google scholar, Google, PubMed and Web of Science.

**Results:** Based on the reported findings, the biosensors specially based on the electrochemical methods can open the new horizontal for the fast and accurate analysis of circulating vitamin D.

**Conclusion:** The miniaturizing of the sensors, developing a portable and easy to automate point-of-care testing device via using the



nanotechnology and new substrates are still in considering.

**Keywords:** Vitamin D; Electrochemical biosensors; biological samples.

### Association of SOX 15 with poor prognosis of patients with esophageal squamous cell carcinoma

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**Objectives:** Esophageal squamous cell carcinoma (ESCC) is the leading cause of cancer-related death worldwide. Sex-determining region Y-box (SOX) 15 is recently been identified as a novel tumor suppressor in pancreatic cancer with a potential role in modulating Wnt/b-catenin signaling. The aim of present study was to investigate the association of SOX 15 expression with pathological information and clinical outcome of 141 ESCC patients.

**Materials and Methods:** Data in computer-based patient records (CPRs) of Mashhad University of Medical Sciences were used to retrieve all ESCC patients, during July 2004 to September 2014, from Khorasan Province, the second big Province of Iran. Based on the available tissue, one hundred and thirty-eight patients were recruited. DNA and RNA were extracted. The expression pattern of Sox 15 was evaluated by real time RT-PCR. Univariate/multivariate analyses were used to assess the correlation of SOX 15 with overall survival and progression free survival.

**Results:** In order to explore whether patient characteristics might influence the clinical outcome, we analyzed data on PFS and OS according to patients' clinic-pathological features. Tumor size, node and metastasis status, and stage were associated with shorter OS and PFS. patients with low mRNA expression of SOX 15 had statistically significantly shorter survival, compared to the patients with high expression of SOX 15 (eg, mean = 43.5 months, 95% confidence interval [CI] = 4.4 to 52.6; vs mean=58.1 months, 95% CI = 56.2 to 80.1; P = 0.04, two-sided log-rank test).

**Conclusion:** Our findings demonstrated the novel prognostic value of SOX 15 for ESCC, although functional analyses are warranted to explore its role in ESCC.

**Keywords:** Esophageal squamous cell carcinoma; Sox 15, EBV

### Effect of aerobic training and weight-loss diets on serum Myostatin in nonmenopausal women

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**Objectives:** Obesity has been introduced as the most health-threatening factor by the World Health Organization, and it is one of the important factors in prevalence of chronic diseases. Most of the extra calories received in our body are saved in the form of adipose tissue and this tissue affects body metabolism via biological molecules that it secretes. Myostatin with its role in metabolism can influence adipose and muscle tissue and may prevent obesity.

The aim of this study was comparing the effect of aerobic training and weight-loss diet on serum Myostatin in Non-menopausal Women.

**Materials and Methods:** 39 women with the average age of  $39.43 \pm 3.6$  years, were randomly divided into four experimental groups:

Aerobic training (A group, n=9), step by step weight-loss diet (S group, n=10), aerobic training and step by step diet (A+S group, n=10) and low calorie weight-loss diet (L group, n=10).

Within eight weeks, aerobic training group participated in aerobic trainings, three-days in a week (45-minute with 60 to 80 HR max), step by step diet group with gradually reduction of 20 to 40 percent of received calories, aerobic training and step by step diet and low-calorie diet group also had a program of reducing 40 percent of their received-calories. 48 hours before and after training program, Body mass index, Vo<sub>2</sub> max, body composition and serum levels of Myostatin were measured, and the data was analyzed by one way ANOVA using spss software and p<0.05.

**Results:** In A, A+S and S groups in comparison with L group, Myostatin, body weight and percentage of body fat, decreased significantly

and probably without breakdown of the lean body mass.

**Conclusion:** According to the results of this study, combination of aerobic training and diet may be more useful than other weight loss protocols for fat loss and maintenance of lean body mass.

**Keywords:** Myostatin, low-calorie diet; aerobic training, step by step weight-loss diet.

### Association between C-reactive protein and pro-oxidant-antioxidant level by Combination of Radio-frequency and Ultrasound Cavitation methods Therapy for Circumferential Reduction

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**Objectives:** A combination of radio-frequency (RF) and ultrasound cavitation (UC) has been reported to reduce indices of obesity. In this study, we aimed to investigate the effect of a combination of these techniques on anthropometric indices, pro-oxidant-antioxidant balance (PAB), and serum high-sensitivity C-reactive protein (hs-CRP).

**Materials and Methods:** This randomized clinical trial was performed on 50 healthy women between January 20 14 and June 20 14 in Ghaem Hospital, Mashhad, Iran. Participants were randomized to one of two groups, both of which received a low-calorie diet containing 500-kcal energy deficit per day. The trial group included twenty-five subjects who were assigned to the combined treatment of RF and ultrasound cavitation program of abdomen and flank areas. There were twenty-five control subjects who received the low calorie diet alone. Biochemical markers, including serum hs-CRP and PAB values, and anthropometric indices were measured in the intervention group and healthy controls.

**Results:** For both the intervention and control groups, waist circumference was reduced significantly by  $3.76 \pm 1.69$  and  $2.40 \pm 1.04$ , respectively ( $P < 0.05$ ). In addition, abdominal circumference was reduced by  $9.5 \pm 2.66$  and  $3.12 \pm 1.88$ , in these groups, respectively ( $P < 0.001$ ). Decrement of PAB level in the intervention group, and its increment in the control group, were not significant ( $P > 0.05$ ). In addition, reductions of hs-CRP and PAB between the two studied groups during five weeks of study were not significant ( $p > 0.05$ ).

**Conclusion:** although there were significant reductions in anthropometric indices following treatment with RF and UC, the effects on serum PAB or hs-CRP were not significantly different, compared to the control group. Further studies are needed to confirm the beneficial effect for the use of these techniques.

**Keywords:** Obesity indices, PAB; hs-CRP; radiofrequency, ultrasound cavitation.

### Nutritional assessment among dialysis patients in a Hospital, northeast of Iran

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**Objectives:** Nutritional function in end stage renal disease (ESRD) and hemodialysis patients is a critical index of health care systems. Nutritional status can be estimated by subjective global assessment (SGA). We assessed the nutritional status among hemodialysis patients by SGA in a governmental hospital, northeast of Iran.

**Materials and Methods:** forty-eight randomly selected hemodialysis patients participated in this cross sectional descriptive analytical study. SGA (dry weight, height, body mass index, triceps skinfold thickness, mid-arm circumference, mid-arm muscle circumference, and arm muscle area), biochemical and anthropometric indices were assessed. Data were analyzed with SPSS software models.

**Results:** Of the included patients, three people (6.3%) were normal nourished, Twenty-four people (50%) were mild malnourished, Twenty-one people (43.7%) were moderately malnourished and none of them was severely malnourished. SGA score was significantly correlated to Patient's age ( $r=+0.335$ ), duration

of dialysis ( $r=+0.332$ ) and education level ( $r=-0.425$ ) BUN ( $\chi^2=9.197$ ) and phosphorus ( $\chi^2=5.61$ ). Patient's SGA did not differ by gender. Serum CRP and creatinine were not quite significantly associated with SGA score.

**Conclusion:** In this study, no patients had severe malnutrition, and most of them were mildly/moderately malnourished. On the other hand, most of the patients were well nourished. Significant correlation between SGA grades and biochemical and anthropometric variables indicated that SGA can be used to assess the nutritional status in hemodialysis patients and anthropometric measurements. Additionally biochemical measurements are significant.

**Keywords:** Hemodialysis, Malnutrition, Subjective global assessment

#### **Vitamin D and weight loss: Fact or Fiction?**

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**Objectives:** Obesity health problems are the second leading cause of preventable deaths and can drastically reduce the obese individual's quality of life. In line with obesity, vitamin D deficiency is pandemic, and has been implicated in a wide variety of disease states. Obesity often coexists with low calcium intake and vitamin D insufficiency. The present study, tries to explore this phenomenon.

**Materials and Methods:** This study was library-based and done using the published articles in scientific databases like PubMed, Google Scholar and SID from 2007 to 2017 as period of time on vitamin D and weight loss.

**Results:** There is emerging evidence of a role for these nutrients in the regulation of body weight. Vitamin D deficiency and obesity are pandemic diseases and they are associated with many diseases. Different studies indicate that vitamin D status may be marginally improved with weight loss in comparison with weight maintenance under similar conditions of supplemental vitamin D intake. Studies showed that supplemental calcium significantly increased fat loss during caloric restriction by 1.8 and 2.2kg. Human evidence linking calcium with body-weight regulation first appeared as retrospective analyses of studies on bone mineral and hypertension. The overall impression is that vitamin D with or without calcium appears not to have a definite effect on weight, but that it may affect fat mass and distribution.

**Conclusion:** Current evidence from RCTs did not consistently support the contention that calcium and vitamin D accelerated weight or fat loss in obesity. There were studies that favored the hypothesis but lacked the statistical power. There is a need for RCTs to examine the influence of vitamin D on body fat. The data on vitamin D supplementation during weight loss were too few to make firm conclusions.

**Keywords:** Vitamin D; obesity; weight loss; fat mass

#### **Protective Effect of *Lactuca serriola* on Doxorubicin-induced toxicity in cardiomyocytes (H9c2 cells)**

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**Objectives:** The use of doxorubicin (DOX) (NCI Drug Dictionary) is limited by its dose-dependency because of its cardiotoxicity. Reactive oxygen species (ROS) play an important role in the pathological process. The aim of this study was to evaluate the protective effect of *Lactuca serriola* against DOX-induced apoptosis and death in H9C2 cells.

**Materials and Methods:** The cells were incubated with different concentrations of extract for 4 h which continued in the presence or absence of 5 $\mu$ M doxorubicin for 24 h. Cell viability, apoptotic induction and the level of apoptotic proteins were determined by using MTT, PI and immunoblotting assays, respectively. The level of lipid peroxidation was measured by fluorimetric method.

**Results:** DOX significantly decreased cell viability which was accompanied by an increase in ROS production and lipid peroxidation. Pretreatment with *Lactuca serriola* increased the viability of cardiomyocytes and could decrease lipid peroxidation. Also, *Lactuca serriola* inhibited the reduction of anti-apoptotic Bcl-2 protein and elevation of apoptotic Bax and caspase-3 proteins.

**Conclusion:** In conclusion, *Lactuca serriola* exerts protective effect against oxidative stress-induced cardiomyocytes damage. Therefore, it has the potential to be used as cardioprotective agent by the patients with cardiovascular diseases.

**Keywords:** *Lactuca serriola*; H9c2; Doxorubicin; Apoptosis.



### **Crocin Synergistically enhances the anti-proliferative activity of 5-FU through Wnt/PI3K pathway in a mouse model of colitis-associated colorectal cancer**

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**Objectives:** Colorectal-cancer (CRC) is the third leading cause of cancer-related-death, indicating the need for identification of novel-agents to improve the efficacy of current-therapy. There are growing bodies of evidences illustrating the antitumor-activity of crocin, although its activity and molecular-mechanisms in CRC is still remained to be elucidated. Here we explored the therapeutic-application of crocin or its combination with 5-Flurouracil in mouse-model of colitis-associated colon-cancer.

**Materials and Methods:** The anti-proliferative-activity of crocin was assessed in 2- and 3-dimensional cell-culture-models in vitro, and in vivo. The migratory-behaviors were determined, while the expression-levels were studied by qRT-PCR and Western-blotting. We examined the anti-inflammatory effect of crocin by pathological-evaluation and disease-activity-index as well as antioxidant-activity by malondialdehyde (MDA), total-thiols (T-SH), superoxide-dismutase (SOD) and catalase (CAT) activity measurements.

**Results:** crocin suppressed cell-growth and invasive-behavior of CRC cells through modulation of Wnt-pathway and E-cadherin. Moreover, administration of crocin or in combination with 5-FU dramatically reduced the tumor-number and tumor-size in both distal and middle parts of colon followed by reduction in

DAS. Also, crocin suppressed the colonic inflammation induced by DSS and notably recovered the increased levels of MDA, decreased activity of CAT/thiol levels. Crocin was able to ameliorate multiplicity of severe inflammation with mucosal ulcers and high grade dysplastic crypts as detected by total score of inflammation, Crypt-loss, pathological-changes and histology-scores.

**Conclusion:** We demonstrated the antitumor-activity of crocin in CRC and its potential role in improvement of multiplicity of inflammation with mucosal ulcers and high grade dysplastic crypts, supporting further-investigations on the therapeutic-potential of this approach in colorectal-cancer.

**Keywords:** colorectal cancer; crocin; anti-tumor effect; 5-FU, colitis-associated colorectal cancer.

### **Association between red blood cell distribution width and metabolic syndrome in adolescent girls**

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**Objectives:** Metabolic syndrome (MetS) is composed from several risk factors and these risk factors play a role in progression of cardiovascular diseases. Red blood cell distribution width is a candidate biomarker for determining to CVD.

**Materials and Methods:** This study investigated girl students ranged from 12 to 18 years old who were residents in Mashhad and Sabzevar in Khorasan Razavi province, Iran. Demographic data have been collected by researcher-made questionnaire. Anthropometric values such as weight, waist circumference, hip circumference and blood pressure were measured and all participants underwent routine blood assays. IDF definition criteria were used for the diagnosis of metabolic syndrome.



**Results:** All demographic parameters were measured in two groups have significant differences statistically and these differences in weight, wrist circumference and hip circumference were higher. RDW values in waist circumference and fasting blood glucose as Metabolic Syndrome components were significantly different as well; RDW values had shown significant difference in subjects with Metabolic Syndrome and healthy ones. RDW measures were associated with Metabolic Syndrome status and its component including waist circumference and fasting blood glucose, but this association was reversely in case of fasting blood glucose.

**Conclusion:** Our study supported that elevated RDW was related to the Metabolic Syndrome and perhaps detection and monitoring of RDW as a diagnostic and clinical biomarker for cardiovascular disorder has been useful.

**Keywords:** red blood cell distribution width, metabolic syndrome, cardiovascular disease, biomarker.

#### Prevalence of Dyslipidemia in adolescent girls in north east of Iran

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**Objectives:** Cardiovascular diseases (CVD) are the major cause of morbidity and mortality in our society with dyslipidemia contributing significantly to atherosclerosis. Thus measurement of plasma lipids would help in identifying people at risk for CVD. The goal of this study was to ascertain the prevalence of Dyslipidemia among the female adolescent population.

**Materials and Methods:** The studies was conducted on 988 subjects with 12- 18 age groups and were selected from a population of school-children girls in south east of Iran. Health status was evaluated by physical checkups, complete fasting lipid profiles. Dyslipidemia risk

was determined by criteria that were accepted by the National Heart, Lung, and Blood Institute (NHLBI).

**Results:** The prevalence of dyslipidemia was observed to be higher in Sabzevar residents. The participants, who had a total Cholesterol (TC) concentration  $\geq 200$ mg/dl, were 9.6%. The prevalence of hypertriglyceridemia among subjects was 1.3% with higher in 12 age groups (19.3%). High density lipoprotein cholesterol (HDL-C) was abnormally low at 5.7%. The increase in prevalence of hypercholesterolemia and hypertriglyceridemia was more prominent in the 12 age group than in other age groups.

**Conclusion:** The percentage of adolescents with controlled lipid concentrations suggests that there is a need for awareness programs for the prevention and control of Dyslipidemia especially in Younger.

**Keywords:** Dyslipidemia; hypercholesterolemia; hypertriglyceridemia; adolescent.

#### Prevalence of anemia and some of its associated risk factors in MASHAD cohort study

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**Objectives:** We have determined the prevalence of anemia in a population sample derived from the MASHAD cohort study, and the association between anemia and other demographic and biochemical characteristics.

**Materials and Methods:** A total of 9847 subjects from the MASHAD population study were

investigated. Baseline characteristics including were recorded in a questionnaire. Biochemical characteristics were measured by routine methods. Data were analyzed using SPSS software.

**Results:** Amongst the total population, 1 1.5% were anemic. Anemia was significantly more prevalent among women ( $p < 0.001$ ). Anemic participants tended to be younger ( $p < 0.001$ ), and had a higher BMI ( $p < 0.001$ ). Smoking was negatively associated with anemia ( $p < 0.001$ ). The prevalence of diabetes mellitus ( $p < 0.001$ ), hypertension ( $p < 0.001$ ) and metabolic syndrome ( $p < 0.001$ ) were significantly lower in anemic subjects. FBG, triglyceride, total cholesterol, LDL and uric acid were significantly lower in anemic subjects, compared with healthy subjects ( $p < 0.001$ ), while HDL was significantly higher in anemic participants ( $p = 0.03$ ). After multivariate analysis BMI, diabetes mellitus, metabolic syndrome, cholesterol, LDL, TG and uric acid remained significant between anemic and non-anemic subjects.

**Conclusion:** The prevalence of anemia in the MASHAD population study is lower than the amount recently reported for the Iranian population as a whole by the WHO. Given the demographic pattern of anemia in our population, it is likely that the main cause of anemia is iron deficiency; however, further investigations will be necessary to confirm this. We also indicated that that anemia is negatively associated with DM and MetS.

**Keywords:** anemia, prevalence, MASHAD cohort study, biochemical measurement.

### **Hookah smoking is strongly associated with diabetes mellitus, metabolic syndrome and obesity: A population-based study**

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**Objectives:** Smoking is an important cause of mortality and morbidity globally. The adverse effects of cigarette smoking have been widely studied before, whilst the effects of hookah smoking has drawn less attention, although it is a common habit in the Middle East. Here we have investigated the effects of cigarette and hookah smoking on biochemical characteristics in a representative population sample derived from the MASHAD (Mashhad stroke and heart atherosclerotic disorder) cohort study, from Northeastern Iran.

**Materials and Methods:** A total of 9840 subjects from the MASHAD population study were allocated to one of five groups according to their smoking status; nonsmokers (6742), ex-smokers (976), cigarette smokers (864), hookah smokers (1067), concomitant cigarette and hookah smokers (41). Baseline characteristics including age, sex, smoking status and history of cardiovascular disease, diabetes mellitus, metabolic syndrome, dyslipidemia and hypertension were recorded in a questionnaire. Weight and height were measured and BMI was calculated for each subject. Blood samples were collected after 14 hours of fasting. Fasting blood glucose (FBG), triglycerides, total cholesterol, HDL, LDL, uric acid, serum urea, Cr, hs-CRP and complete blood count (CBC), were measured by routine methods. Data were analyzed using SPSS software and  $p$  value  $< 0.05$  was considered significant.

**Results:** Between group analyses, adjusted for age and sex, indicated that FBG, cholesterol, HDL, uric acid, GFR, hs-CRP and most of the CBC parameters were significantly associated with smoking status. After adjustment for age and sex; the presence of CVD, obesity, metabolic syndrome, diabetes and dyslipidemia were signed ( $p < 0.001$ ) related to smoking status. After multivariate analysis, FBG ( $p < 0.001$ ), WBC ( $p < 0.001$ ), MCV ( $p < 0.05$ ), the presence of CVD ( $p < 0.001$ ), metabolic syndrome ( $p < 0.05$ ) and diabetes mellitus ( $p < 0.05$ ) remained significant

between ex-smokers and non-smokers. Whilst HDL ( $p < 0.001$ ), white blood cell count (WBC) ( $p < 0.001$ ), mean corpuscular volume (MCV) ( $p < 0.05$ ), platelet count (PLT) ( $p < 0.001$ ) and red cell distribution width (RDW) ( $p < 0.001$ ), and the presence of CVD ( $p < 0.001$ ), obesity ( $p < 0.001$ ), metabolic syndrome ( $p < 0.05$ ) and diabetes ( $p < 0.001$ ) remained significant between cigarette smokers and non-smokers. Between hookah smokers and non-smokers; uric acid ( $p < 0.001$ ), PLT ( $p < 0.05$ ) and RDW ( $p < 0.05$ ), and the presence of obesity ( $p < 0.001$ ), metabolic syndrome ( $p < 0.001$ ), diabetes ( $p < 0.001$ ) and dyslipidemia ( $p < 0.001$ ) remained significant after logistic regression.

**Conclusion:** There was a positive association between hookah smoking and metabolic syndrome, diabetes, obesity and dyslipidemia which was not established in cigarette smoking.

**Keywords:** smoking, cigarette, hookah, water pipe, metabolic syndrome; diabetes, dyslipidemia; biochemical measurement.

#### **Prevalence of cigarette and hookah smoking in the MASHAD study cohort and its association with demographic and anthropometric factors**

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**Objectives:** Tobacco smoking is amongst the most important contributors to death and disability globally. Cigarette and hookah are two common ways of consuming tobacco. Although the adverse effects of cigarette smoking has been widely studied and reported, the effects of hookah smoking are less clear. Here we aimed to determine the prevalence of hookah and cigarette smoking in the MASHAD study population and investigate the association of smoking with anthropometric measurements.

**Materials and Methods:** A total of 9840 participants enrolled in MASHAD cohort study entered the study. Baseline characteristics including age, gender, smoking status, marital status, education level and job status were recorded in a questionnaire. Weight, height, waist circumference, hip circumference, systolic and diastolic blood pressure were measured and BMI was calculated for each subject. Data were analyzed using SPSS software and  $p$  value  $< 0.05$  was considered significant. Data were adjusted for age before analysis.

**Results:** Of the total study population almost 25% of men and 16% of women were smokers. Approximately 4.1% and 5.1% of smokers were cigarette or hookah smokers, respectively. Trends to hookah or cigarette differed significantly by gender ( $p < 0.001$ ). Smokers tended to be younger, unemployed and had lower educational attainment compared to non-smokers. Weight ( $p < 0.001$  in males and  $p = 0.003$  in females), BMI ( $p < 0.001$  in males and  $p = 0.005$  in females), WC ( $p < 0.001$ ), HC ( $p < 0.001$ ), WC/HC ( $p < 0.001$ ) were significantly associated with smoking habit in both genders, while systolic and diastolic blood pressure were only associated with smoking status in men ( $p < 0.001$ ).

**Conclusion:** In our study population, the hookah was as prevalent as cigarette. 25% of men and 16% of women were smokers. Among male smokers, 92.6% were cigarette smokers while among female smokers, 85.7% were hookah smokers. We indicated the adverse effects of hookah smoking on weight, BMI, WC, HC, WC/HC in women.

**Keywords:** smoking, cigarette, hookah, MASHAD study, body mass index, waist circumference, prevalence.

#### **A review on role of Rho kinase in metabolic syndrome pathogenesis**

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**Objectives:** Metabolic syndrome (MetS) is a health issue caused by excessive calorie intake and low physical activity, which is recognized due to its caused insulin resistance, central obesity, dyslipidemia, and hypertension. The Rho family of GTPases, which is belonged to RAS superfamily, serves as master regulators of many aspects of cell behaviour and it is involved in several cellular mechanisms including contraction, motility, proliferation, and apoptosis. Since the enzyme is believed to be involved in different aspects of metabolic syndrome, this review is designed to focus on rho kinase role and its multiple mechanisms involved in the pathogenesis of metabolic syndrome.

**Materials and Methods:** We conducted a search of some databases such as PubMed for articles and reviews published between 2000 and 2017, with different keywords including "metabolic syndrome", "rho kinase", and the names of different aspects of metabolic syndrome itself, such as: "dyslipidemia", "hypertension", "central obesity", "insulin resistance" and the connectors AND or OR. We also used the terms "mechanism" and "physiopathology".

**Results:** Studies revealed that Rho kinase exerts to cardiovascular diseases, such as hypertension and dyslipidemia, through decreasing NO production. Since, NO has beneficial effects on lipid metabolism through activation of hepatic sterol regulatory element-binding protein (SREBP)-2, its inhibition can contribute to higher levels of LDL cholesterol and also results in increased myosin light chain activation with vasoconstriction. It has also been shown that Rho kinase participates in the insulin signalling by binding to Insulin receptor substrate 1 (IRS-1) and enhancing its phosphorylation, leading to the development of insulin resistance.

**Conclusion:** In conclusion, the present study demonstrates that the upregulated ROCK activity involved in the pathogenesis of all aspects of metabolic syndrome. Taken together, our results implicate the therapeutic potential of the Rho-

kinase pathway as an important new target in medicine.

**Keywords:** Metabolic syndrome, Rho kinase, Dyslipidemia, Insulin resistance, hypertension.

### Association of plasma free fatty acid levels and cardiovascular disease

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**Objectives:** Cardiovascular disease is the leading global cause of mortality and including coronary heart disease (CHD), ischemic heart disease and stroke. The risk factors for cardiovascular diseases are smoking, overweight, high blood pressure, diabetes and high cholesterol. Fatty acids are biologically active molecules and are divided according to the number of carbon-carbon double bonds in the tail as saturated fatty acids (SFAs) and unsaturated fatty acids. There are many investigations on the effects of cardiovascular diseases and the relation with the fatty acids. Some evidence demonstrated that polyunsaturated fatty acids have beneficial effects on the risk of cardiovascular disease, however, in most studies the effects of saturated fatty acids and somehow trans fatty acids remains misunderstood.

**Materials and Methods:** A literature search in different databases, including PubMed, scholar and Scopus was done in evaluating the relationship between different free fatty acids and the risk of cardiovascular diseases. During the first search, 700 articles were identified. We screened 500 abstracts and 200 full texts for potentially relevant data. Fifty unique eligible studies regarding the study question were finally chosen for the review.

**Results:** Results of this review approved the results of the previous studies regarding the effect of omega-3 PUFA on decreased risk of cardiovascular diseases. In addition, our results showed that long chain saturated fatty acids and trans fatty acids are responsible for higher risk of cardiovascular events.

**Conclusion:** In summary, our comprehensive literature review provided credible evidences in



favor of CVD preventing effects of omega 3 fatty acids. In addition, omega 6, long chain saturated fatty acids and trans fatty acids, except milk and dairy products fats, were introduced as important risk factors for cardiovascular problems. Such benefits and risks should be investigated in further prospective cohorts in the future and dietary guidelines should recommend replacing Trans fats and saturated fats in diets. Furthermore, measuring plasma FFA in people could help identifying subjects at risk of cardiovascular disease and prevent developing potential events.

**Keywords:** Omega 3, Omega 6, saturated fatty acids, Trans fatty acids, Cardiovascular disease

### **Correlation of FTO gene variant (rs9939609) with adipocytokines in obese type 2 diabetes patients**

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**Objectives:** Recent data have shown that 4 15 million adults will have diabetes and by 2040 this will increase to 642 million. Type 2 diabetes mellitus is linked with obesity and insulin resistance. In addition, adipocytokines (leptin, adiponectin, visfatin and resistin) as bioactive mediators in fat tissue could affect the inflammation response in obese people. In some people, association of single nucleotide polymorphism of fat mass and obesity associated gene (FTO) with obesity was determined. In this study, correlation of rs9939609 as a common variant of FTO gene with four adipocytokine levels were analyzed in obese type 2 diabetic women.

**Materials and Methods:** In this case-control study, a total of 167 obese women (80 non-diabetic and 87 type 2 diabetic) were randomly selected. The patient's age, body mass index (BMI), blood pressure (systolic and diastolic), fasting blood sugar (FBS), insulin, insulin resistance, cholesterol (LDL-C and HDL-C), glycated hemoglobin (HbA<sub>1c</sub>), triglycerides and adipocytokine levels were measured. The FTO rs9939609 genotyping was considered by amplifying the gene using specific primers in PCR technique and the fragments were sequenced.

**Results:** According to our results, FBS, insulin, HDL and HbA<sub>1c</sub> had significant differences in two groups. The present study didn't find any significant differences in leptin, adiponectin and resistin levels between diabetic and non-diabetic groups and also between three genotypes of rs9939609. Adjusted analysis with rs9939609 showed that the mean of TC, HbA<sub>1c</sub> and TG were significantly different among the three genotypes (TT, AT and AA). In the diabetic group, significant moderate positive correlation was found between visfatin level and FBS ( $r=0.447$ ,  $p=0.004$ ) and TG ( $r=0.390$ ,  $p=0.014$ ).

**Conclusion:** In this study, significant correlation was not found between rs9939609 and adipocytokine levels in obese women. Relation of FTO gene with increased risk of obesity and type 2 diabetes mellitus was observed in various different ethnic people, but several controversial results were reported. One reason for this difference could be the diverse dietary intake since this case could affect the susceptibility of gene to increase obesity as a lifestyle disorder.

**Keywords:** Adipocytokines, FTO Gene, Obesity, Type 2 Diabetes, Polymorphism.

### **Mediterranean dietary pattern and cardiovascular disease mortality**

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**Objectives:** Over the last decades, cardiovascular diseases (CVD) have been known as the first leading cause of mortality in Iran alongside with other parts of the world. Due to the phenomenon of nutrition transition, Western dietary pattern has been widely adopted in Iranian population. There is no prospective study reporting the association between dietary patterns and cardiovascular mortality from Middle-Eastern countries. We aimed to evaluate the association between major dietary patterns and cardiovascular mortality in Iranian adults.

**Materials and Methods:** This population-based prospective cohort study was done among 4834 randomly selected participants aged  $\geq 35$  years in central Iran (2001-2010) in Isfahan Cohort Study (ICS). Dietary intakes were assessed using a food frequency questionnaire and major dietary patterns were identified by means of exploratory factor analysis. Subjects or their next of kin were interviewed biannually looking for possible occurrence of events. Cardiovascular mortality was defined as mortality from fatal myocardial infarction and other ischemic heart disease, fatal stroke and sudden cardiac death.

**Results:** During the median follow-up of 9.0 years and 50282 person-years, we found a total of 118 cardiovascular mortalities. Four major dietary patterns were identified: "Western", "Mediterranean", "Animal fat" and "Fast food". Consumption of a Mediterranean dietary pattern was protectively associated with CVD mortality; and those in the highest quartile were 46% (HR: 0.54; 95% CI: 0.32-0.91; P for trend = 0.03) less likely to have CVD mortality than those in the lowest quartile. Further adjustment for potential confounders, including hypertension, diabetes, dyslipidemia as well as BMI, strengthened this association (HR: 0.42; 95% CI: 0.19-0.96; P for trend = 0.02). However, using sensitivity analysis by excluding CVD mortality in the first two years of follow-up, there were only significant relationship between Mediterranean dietary pattern's scores and CVD mortality after full adjustment [0.39 (95% CI: 0.17-0.89; P = 0.03)]. Adherence to other dietary patterns had no significant association with cardiovascular mortality.

**Conclusion:** We concluded that even in the setting of a developing country, consumption of a Mediterranean dietary pattern was associated with reduced risk of cardiovascular mortality.

**Keywords:** Dietary patterns, cardiovascular disease, mortality, Mediterranean diet.

#### **Effect of coenzyme Q 10 supplementation on serum of high sensitivity C-reactive protein level in patients with cardiovascular diseases: a systematic review and meta-analysis of randomized controlled trials**

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**Objectives:** Possible effect of this supplement on the level of high sensitivity C-reactive protein (hs-CRP) serum in cardiovascular diseases (CVDs) remains unclear. This meta-analysis was conducted to investigate the effect of coenzyme Q 10 supplementation on the serum hs-CRP level in patients with CVDs.

**Materials and Methods:** Comprehensive search was conducted on EMBASE, MEDLINE and PubMed Central databases for pertinent papers in English up to November 2016. All randomized controlled trials (RCTs) that surveyed the effects of supplementation with coenzyme Q 10 on the

serum of hs-CRP level in cardiovascular patients were included. We used random-effects models (the DerSimonian-Laird method) to estimate pooled effect of selected studies and used  $I^2$  test to assess between-study heterogeneity. A subgroup analysis was carried out according to the baseline serum hs-CRP, quality assessment score, supplementation dosage and duration of intervention.

**Results:** Of 205 studies, five trials were eligible for inclusion in this study with 159 participants in intervention and 143 participants in placebo group. Results of pooled analysis reported the supplementation with coenzyme Q 10 had no significant effect on serum of hs-CRP level compared with placebo group (MD: 0.120; 95% CI: -0.944, 1.185; p=0.825). Subgroup analyses showed that the baseline serum hs-CRP (more than 3 mg/L), dose of supplementation (greater than 150 mg/day) and duration of intervention (more than 12 weeks) can be sources of heterogeneity.

**Conclusion:** The results of this study demonstrated that the beneficial effect of supplementation with coenzyme Q 10 for patients with CVDs is observed in those who received more than 150 mg/day for more than 12 weeks and with baseline serum hs-CRP greater than 3 mg/L.

**Keywords:** Ubiquinone, C-Reactive Protein, cardiovascular diseases

#### **Effects of grape seeds polyphenolic compounds on diabetes mellitus**

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**Objectives:** Grape seed extract (GSE) has excessive polyphenolic compounds specially flavonoids and procyanidins which have variable pharmacological effects. Diabetes mellitus (DM) is a chronic metabolic disorder characterized by hyperglycemia, oxidative stress and pancreatic inflammation.

**Materials and Methods:** A literature search was conducted and the available data on grape seeds polyphenolic compounds on diabetes mellitus were collected via relevant keywords including "Grape", "*Vitis vinifera*" in combination with "diabetes type 2", "diabetes mellitus", "hyperglycemia", "oxidative stress" and

“pancreatic inflammation” with no time restrictions in the following databases: PubMed, Scopus, Google Scholar and Web of Science.

**Results:** Flavonoids in GSE reduce lipid peroxidation and increase superoxide dismutase and catalase enzyme activity, so prevent oxidative stress in DM. Procyanidin can prevent pancreatic islet cells inflammation by decreasing IL-1 $\beta$  secretion. GSE procyanidin has an additive effect on insulin-sensitive cell lines leading to the increase of glucose uptake and reduction in glucose level in plasma.

**Conclusion:** phenolic and polyphenolic compounds in grape seed extract may treat and prevent diabetes mellitus via antioxidant, anti-inflammatory and anti-hyperglycemic effects.

**Keywords:** Grape seed extract, diabetes mellitus, polyphenolic compounds, flavonoid, procyanidin, *Vitis vinifera*.

#### **Effects of PUFA n-3 and zinc supplementation on serum leptin levels and appetite sensations in obese people: A randomized clinical trial**

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**Objectives:** Obesity is a common health problem in the world. Appetite is one of the main obesity controlling factors that can be influenced by hormones such as leptin. Leptin, an adipocyte-derived hormone, reduces food intake and accelerates energy expenditure. Leptin levels can be affected by dietary factors. This study was aimed to determine the effects of polyunsaturated fatty acid n-3 and zinc supplementations on serum leptin level and appetite sensations in obese people.

**Materials and Methods:** This study was performed on 90 obese subjects with body mass index 30 (kg/m<sup>2</sup>) and above in 20 12 in Tabriz. The subjects were randomly allocated to the intervention (consumed two capsules containing

1 g/ day n-3 fatty acids [ 180 mg EPA, 120 mg DHA and 30 mg/d zinc pill] for 4 weeks) and the control groups. Serum leptin levels were assessed by ELISA method and visual analogue scale questionnaire was completed for evaluating appetite sensations. In normal data, paired t-test was used for comparison within group changes before and after the intervention and analysis of covariance (ANCOVA) test was used for the comparison of post treatment values of variables after adjusting for baseline values in both groups. In addition, Mann-Whitney test was used for non-normal data. Statistical significant was defined as  $p < 0.05$ .

**Results:** The results showed that the serum leptin levels increased significantly in zinc group compared to the baseline; however, after adjusting for baseline leptin levels, age and gender values were not significant between the groups. In n-3 PUFA fatty acids, serum leptin levels increased non-significantly ( $p > 0.05$ ). In zinc group, fullness reduced and hunger feel increased significantly ( $p < 0.001$ ) and in n-3 PUFA fatty acids group, the fullness item significantly increased at the end of study ( $p = 0.034$ ).

**Conclusion:** Increasing the hunger feel and leptin concentration by the zinc supplementation, results in the expenditure of energy for the increasing of the fat free mass. N-3 fatty acids supplementation can regulate satiety and increase energy expenditure probably through its influence on the expression and therefore increasing the leptin secretion. Considering the beneficial effects of zinc and n-3 fatty acids supplements, it can be recommended in obese groups.

**Keywords:** Appetite, Leptin, n-3 PUFA, Obesity, Zinc.

#### **Evaluating the effect of continuous blood glucose monitoring for controlling blood glucose in type 1 diabetes.**

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**Objectives:** Diabetes is a disease that its prevalence and incidence is increasing and is known as the most expensive endocrine disorder in the world. As this illness is inmedicable but controllable, the individual role is very important in preventing and controlling of the disease. The purpose of this study was to identify the effect of Continuous blood Glucose Monitoring (CGM) on

the blood glucose control and diabetes type 1 diabetes self-care.

**Materials and Methods:** The study was done on 20 patients chosen from a ready internet database available in <http://www.jaeb-diabetes.net/>. These patients used CGM to test blood glucose and the result of a three month test was measured. To analyze the data, the software SPSS, independent Mann-Whitney t-test was used.

**Results:** The results of the evaluation showed that the blood glucose in patients of the test group reduced significantly in compare with the patients from the control group in the second and third month. Also, HbA 1C or Hemoglobin test A 1C of the patients reduced.

**Conclusion:** It can be concluded that the role of CGM was positive on increasing the control of blood glucose in type 1 diabetes and reducing the HbA 1c level. It also has an impact in the prevention and control of numerous diseases. An educational program on the use of monitoring blood glucose, such as CGM is required.

**Keywords:** Self-care, type 1 diabetes, Continuous Glucose Monitoring.

#### Evaluation of knowledge, attitude and practice regarding nutritional factors affecting cardiovascular diseases

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**Objectives:** The change in Western-style living patterns and the spread of urbanization had unfortunate consequences for the health of the people, the use of facilities and the mechanization of life. The lack of a regular exercise program has led to weight gain and obesity and its consequences, including cardiovascular diseases.

**Materials and Methods:** In this cross-sectional study, 120 households were selected by cluster sampling step. The data collection instrument was a questionnaire survey of knowledge, attitudes and practice of urban and rural households on Nutrition (NUTRIKAP2) which has been completed in the year 1396 in a home interview. The data was collected and analyzed using descriptive statistical methods.

**Results:** 40% of people which were consuming too much oil, knew that they had cardiovascular disease and only 4.2% considered the role of dietary fiber in preventing lipid peroxidation.

27.5% considered the role of fast food in cardiovascular disease. 50.8% considered the role of high intake of sweets in high blood pressure and 2.17% in cardiovascular disease. 40% considered the role of salty food in developing cardiovascular diseases. 70.8% considered obesity to be the cause of cardiovascular disease. In the attitude section, 95.9% preferred to consume fish twice a week. 88.4% opposed the consumption of solid oil. 30% preferred high-fat dairy products. 60.5% opposed the use of fast food every week. 77.5% were against frying food. 52.5% of people consumed mayonnaise or ready sauces for salad, 14.2% of people eat chicken with skin and 15% eat high-fat meat, 13% use high-fat dairy products, 14.2% have a daily consumption of butter, cream or peanuts, 30% of people do not consume fruits and vegetables daily.

**Conclusion:** It can be seen that community awareness of cardiovascular disease prevention factors is low, while in the attitude of most people they believe the right eating habits. Increasing community nutrition awareness through educational campaigns can effectively reduce cardiovascular disease and promote community health.

**Keywords:** Knowledge, Attitude, Function, Cardiovascular.

#### The Effect of Fasting on Metabolic Syndrome changes in type 2 Diabetic People

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**Objectives:** Effects of fasting on diabetic patients has been considered more in recent years. This study was done to investigate the changes in body weight, blood pressure and biochemical parameters in fasting people.

**Materials and Methods:** In July and August (Ramadan) 2012, 75 diabetic patients from Kenareh village, Iran, were selected by census method and finally the results of 60 patients were enrolled. 15 days before Ramadan, triglyceride, fasting blood glucose, systolic and diastolic blood pressure in the sitting position, weight, height,



body mass index and age of samples were calculated and recorded. At this stage, all samples in terms of the occurrence of any possible complications related to the fasting i.e. hypoglycemia, hyperglycemia and diabetic ketoacidosis were also examined. Correlation of each parameter was also evaluated with age using Pearson correlation test and with gender using two-sample T-test.

**Results:** During Ramadan, weight, systolic blood pressure, triglycerides, blood sugar and body mass index of samples were significantly decreased but diastolic blood pressure did not have a significant decrease. After Ramadan, 4.9% of subjects suffered from hypoglycemia, 23.8% from hyperglycemia and 1.9% from diabetic ketoacidosis.

**Conclusion:** Changes in serum biochemical parameters in patients with type II diabetes as a result of fasting, reduces diabetes risk factors i.e. serum glucose concentration, triglyceride, and BMI.

**Keywords:** Fasting, Metabolic Syndrome, Type II Diabetes, Ramadan.

### Health beliefs about relationship between Cardiovascular Diseases and nutritional habits of rural elderly people

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**Objectives:** Cardiovascular disease (CVD) is a major health problem and a leading cause of mortality, morbidity and economic burden. The primary risk factors (hypertension, obesity, physical inactivity, poor diet, alcohol and smoking) are increasing as a result of urbanization, worldwide. Significant lifestyle changes in the second half of the 20th century have greatly contributed to the emerging epidemic of chronic diseases such as cardiovascular diseases (CVD). Currently; 15.3 million people are estimated to die from cardiovascular diseases every year; that represents one-third of all global deaths. In the next two decades, the increasing burden of cardiovascular diseases will be borne mostly by developing countries. The aim of this study was to assess health beliefs of elderly people about cardiovascular disease and perform appropriate interventions.

**Materials and Methods:** The study was a cross-sectional study in which we chose randomly 150 rural elderly people who were covered by health services. The information was gathered by

standard questionnaire and direct interview, and then the data was analyzed by SPSS.

**Results:** Mean age of respondents was 70.1, and most were female (65.3%). 24% had normal BMI, 68% were overweight and obese. 26% of the participants reported healthy nutrition. 60% ate greasy foods.

46.6% had 3 or more servings of fruits and vegetables. 34.6% had more than 3 servings of dairy products and 36.6% had less than 2. Few of the participants (16.6%) exercised regularly and majority of them (70.6%) were not active or passive smokers. 20% believed nutritional habits had direct effect on cardiovascular disease.

**Conclusion:** According to our findings, elderly people's knowledge level on cardiovascular risk factors was not good. Older adults demonstrate several beliefs that may be barriers to cardiovascular disease screening, including low belief in susceptibility to cardiovascular disease. These beliefs should be targeted with participant's education to improve screening rates. The study thus emphasizes the need to perform other prospective studies to show the effect of other factors and habits like physical activity. Therefore, providing effective educational programs about healthy life style can improve their daily life practices, as well as their knowledge.

**Keywords:** Cardiovascular Diseases, health beliefs, nutritional habits.

### Obesity Intervention Programs among Adolescents using Social Cognitive Theory: A Systematic Literature Review

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**Objectives:** Social cognitive theory (SCT) is a well-known theory for designing nutrition education and physical activity programs for adolescents. This systematic review aimed to evaluate the efficacy of intervention studies based on SCT in reducing or preventing obesity in adolescents.

**Materials and Methods:** An electronic literature search in PubMed-Medline, Web of Science and Scopus was performed to identify intervention studies based on SCT aiming at preventing or reducing obesity in adolescents. All the articles published up to July 20 16 were included. Only studies reporting Body mass index (BMI) or its variant as one of the outcome measures were included.

**Results:** From 240 initially identified studies, 12 met the eligibility criteria. Seven had moderate or strong study quality. Two of the eight randomized controlled trials (RCT) and two of the four quasi-experimental studies showed significant reduction in BMI among intervened participants compared to control. Impacts on diet and physical activity were mixed, but were mostly not significant.

**Conclusion:** The current systematic review found only weak evidence for the efficacy of SCT-based interventions in treating and preventing obesity in adolescents. Further systematic studies using effective behavior change strategies or techniques, larger population sizes, better measurement tools, and more robust designs are warranted for a conclusive judgment.

**Keywords:** Obesity; Adolescents, Body Mass Index; Social Cognitive Theory.

### **Serum anti-HSP27 antibody titers in patients with metabolic syndrome, with or without diabetes mellitus**

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**Objectives:** Metabolic syndrome (MetS) is characterized by clustering of clinical, physiological, biochemical, and metabolic factors that are associated with an increased risk of cardiovascular disease (CVD) and type 2 diabetes mellitus. Immune response to heat shock protein 27 (Hsp27) has been suggested to be implicated in atherogenesis. We aimed to investigate the association between serum anti-Hsp27 antibody concentrations and type 2 diabetes in patients with MetS.

**Materials and Methods:** This was a cross-sectional observational study on groups of MetS and healthy subjects. The population sample was derived from MASHAD STUDY, a national cross-sectional study conducted by the Ministry of Health and Medical Education in 2004. Pregnant and breastfeeding women and patients who had cardiovascular disease, myocardial infarction, stroke, or systemic disease were excluded from the 9600 subjects of the MASHAD STUDY population. A total of 933 subjects including 477 women and 456 men were classified as having MetS, diabetes mellitus, or neither. Data including age, gender, and smoking habit collected using a questionnaire. MetS was diagnosed based on the International Diabetes Federation (IDF) definition. The serum anti-HSP27 antibody titers were measured by ELISA.

**Results:** There was no difference in serum anti-HSP27 concentrations between subjects with and without MetS, or diabetes mellitus, nor was there a significant difference in anti-HSP27 levels between men and women. There was no significant difference in anti-HSP27 antibody between diabetic MetS patients, normal population, non-diabetic MetS, and diabetic non-MetS patients (p value >0.05).

**Conclusion:** Serum anti Hsp27 antibody concentrations did not differ between individuals with or without MetS or diabetes mellitus.

**Keywords:** Metabolic syndrome. Heat-shock proteins, Diabetes mellitus.

### **A Heart-Healthy Diet for Cardiovascular Health**

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**Objectives:** Your heart needs and deserves special treatment and that means eating a heart-healthy diet. In fact, nutrition plays such a huge role in cardiovascular health that people who are at risk for heart disease should try diet changes first, before medications. What you eat affects your heart. When your body digests what you eat, it takes what it needs and tries to get rid of what it does not need. If you eat too much of what your body does not need, it stays in your body, travels through the blood and starts clogging up blood vessels.

**Materials and Methods:** This study is a systematic review article on the sites, journals and related books. 40 articles by searching electronic databases, SID, Magiran, Pubmed and Iranmedex from 2000 to 2017 were found and 20 articles were reviewed.

**Results:** A heart-healthy diet like the Mediterranean diet improves your cardiovascular health in many ways. It helps you keep your trim; therefore, reducing strain on your heart and arteries which keeps cholesterol down and prevents it from blocking those arteries. The Mediterranean diet focuses on "quality" fats, like olive oil, fatty fish and nuts. Foods high in saturated fat, like red meat, on the other hand, are rarely consumed. Focus on lean animal proteins, and heavy plant-based proteins like beans and legumes.

**Conclusion:** A heart-healthy diet can to keeping cholesterol down and preventing it from blocking those arteries.

**Keywords:** Heart, Cardiovascular, Diet.

### **The Analysis of Brazilian Green-Coffee (Tatli Brand of Shiraz) on Weight Reduction**

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**Objectives:** Green coffee has antioxidant .Its seeds stimulate metabolism by chlorogenic acid. Meanwhile, it prevents glucose in the blood circulation and stimulates liver for weight reduction. Mixing these two functions causes the body to use fat as the source of energy instead of storing it and as a result the blood sugar decreases.

**Materials and Methods:** Healing period was about 40-50 days for people under 25. In this period, the mean amount of weight reduction was about 10- 16kg. We estimated that about

95% of women and 5% of men used Brazilian Tatli green – coffee. The age range in women was 25-45. 15% of them were between 10 to 25. People above 50 years old needed doctor's permission to use the green – coffee.

**Results:** Green coffee (Tatli Brand of Shiraz) Prevents sugar absorption in the food's starch and especially reduces the calorie particularly after eating. BMI and fat reduces by preventing glucose absorption.

**Conclusion:**These studies show that using green – coffee (Tatli Brand of Shiraz) in the form of capsule or boiled product (using capsule is more common) reduces weight significantly.

**Keywords:** Green coffee, BMI, Tatli Brand of Shiraz, Chlorogenic acid, Antioxidant.

### **Green Tea Extract Supplementation Effect on Weight Changes, Iron Indices and Sputum Smear Conversion in Pulmonary TB Patients: A Randomized Controlled Trial**

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**Objectives:** Improvement of weight and acceleration in sputum smear conversion helps faster improvement and decreased probability of TB transferring. We aimed to investigate the effect of green tea extract supplementation on weight gain, sputum smear conversion and iron status in smear positive pulmonary TB patients in North of Iran.

**Materials and Methods:** A double blind clinical trial was conducted. TB patients were divided

into intervention group (n=43) which received 500mg green tea extract (GTE) and control group (n=40) which received placebo for two months using balanced randomization. Random allocation and allocation concealment was observed. The height and weight were measured at the beginning of the study and in the second and sixth month intervals. Sputum evaluations were performed on three slides using the ZiehlNeelsen method. After obtaining 10 ml of venous blood, Hemoglobin (Hb), Transferrin, Ferritin, Total iron binding capacity (TIBC) and Iron were measured at the beginning and end of the study. Independent and paired t test, McNemar's, Wilcoxon, Kaplan-Meier, Cox regression model and Log-Rank test were utilized. P value < 0.05 was considered significant.

**Results:** The interventional changes and the interactive effect of intervention on the weight were not significant (P>0.05). The case to control proportion in terms of shortening the duration of conversion showed a significant difference (P=0.032). Based on the Cox regression model, the hazard ratio of the relative risk of delay in sputum smear conversion was 3.7 (P=0.002) in the higher microbial load group compared to the placebo group and 0.54 (CI 0.3 1-0.94) in the intervention group compared to the placebo group. To measure the mean of iron status after intervention, ANCOVA test showed mean difference level (Pvalue) in both groups for Hb, iron, TIBC, transferrin and ferritin as of: 0.004, 0.56, 0.65, 0.38 and 0.16, respectively which means that increase of hemoglobin in the green tea group was significant compared to the placebo group.

**Conclusion:** GTE decreases the risk of delay in sputum smear conversion and can improve the hematopoiesis and hemoglobin level, but has no effect on weight gain. So GTE can be used as an adjuvant therapy in pulmonary TB patients for faster rehabilitation.

**Keywords:** Dietary Supplements, Sputum, Green Tea, Tuberculosis, Pulmonary, iron, Body Weight.

### Coronary artery disease and health related factors in the north of Iran

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**Objectives:** The prevalence of coronary artery disease (CAD) has increased recently in developing countries like Iran. About 50% of all deaths per year in Iran are caused by CAD and mostly due to behavioral factors. The objective of this cross-sectional study was to determine health-related factors among coronary artery disease patients in Fatemeh-Zahra Hospital, Sari, Iran.

**Materials and Methods:** Data on smoking status, and supplement intake of CAD patients were collected via a questionnaire. Dietary pattern was assessed by semi-quantitative food frequency questionnaire. The physical activity level was assessed by using the International Physical Activity Questionnaire. Data were analyzed by using Statistical Package for Social Sciences (SPSS) 18. This trial was registered under IRCT20 12 12232602N 1 1.

**Results:** A total of 350 subjects (52% male and 48% female) fulfilled the selection criteria for participants in this study. The mean age of the subjects was 59.68± 10.26 years and 5 1.6% of subjects had low physical activity (total Met-min/wk <600). Most of the subjects were non-smokers (72.8%) and did not take supplements (89.2%). Three patterns were identified according to their variance; including traditional, western and healthy, respectively. Physical activity (B = -0.36) was negatively associated with traditional pattern (p<0.05). Smoking (B = 0.32) was positively associated with western pattern (p< 0.05). No relationship was found between healthy pattern and other health factors in this study.

**Conclusion:** These findings indicated that healthy pattern was practiced by fewer subjects in compare with other patterns. Also, this study provided insight of the health-related factors that are related to dietary patterns of coronary artery disease. This study can also be used to strengthen public health strategies that aim to improve diet intake for primary and secondary prevention of CAD.

**Keywords:** coronary artery disease, health related factors, North of Iran.

### The effects of Celastrol and Triptolide supplementation on metabolic parameters, Energy metabolism and serum level of insulin and leptin in animal models

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**Objectives:** Tripterygium wilfordii has a range of natural plant compounds with significant biological activities. The root of this plant is used to treat fever, swelling, chills, sore, joint pain and inflammation. Celastrol and Triptolide two matters are extracted from the roots of the plant. In this review study, metabolic parameters, insulin and leptin sensitivity were assessed.

**Materials and Methods:** The following keywords were searched: Celastrol, Triptolide, Tunder god vine, Obesity, Leptin, and Insulin. Review article levels were obtained. The study included information from electronic sources Scopus, Medline, Google Scholar, Science direct and PubMed up to July 20 17 have been collected.

**Results:** Accumulating evidence has demonstrated the celastrol and triptolide has exhibited many biological properties including anti-oxidant, anti-inflammation and anti-obesity. It also increases leptin sensitivity, enables the recipient hypothalamus, increases energy consumption, prevents obesity, increases glucose homeostasis, reduces index HOMA-IR and HOMA- $\beta$ , reduces triglycerides, reduces LDL, reduces cholesterol and raises HDL. The other findings of these studies are reduction of serum malondialdehyde (MDA) and reactive oxygen species (ROSS).

**Conclusion:** Celastrol and Triptolide by reducing oxidative stress and improving fat metabolism leads to the reduction of cardiovascular damage. These two substances that have been considered recently could possibly be used as a way to prevent obesity and its complications.

**Keywords:** Celastrol; Triptolide; Tunder god vine; Obesity; Leptin; Insulin; Review article.

### The association between circulating adipokine levels and BMI in multiple myeloma: a systematic review

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**Objectives:** Multiple myeloma (MM) is a cancer resulting from the accumulation of genetic mutations in plasma cells and represents approximately 10% of all hematologic cancers. Adipocytes secrete Adiponectin and

inflammatory factors and reciprocal signaling between adipocytes and cancer cells is reported to contribute to tumor initiation, growth and metastasis in several types of cancer. This review assessed the association between circulating Adipokine levels and BMI in MM.

**Materials and Methods:** Current data were obtained from electronic databases (PubMed and Google Scholar sites; until May 20 17). References listed in the included studies were searched to identify any potential study that was not captured in our electronic search. Articles were selected based on relevance to the subject.

**Results:** Our search yielded 34 articles. We identified 12 studies that evaluated the effect of circulating Adipokine levels and the risk of MM. In one of the studies Leptin was increased ( $P < 0.05$ ) in patients compared with the control group and Adiponectin was reduced ( $P < 0.05$ ) among male patients. Lower serum Adiponectin was associated with higher risk of MM by bivariate analysis and after adjusting for age, gender, BMI and serum levels of Leptin ( $P < 0.0001$ ). Adiponectin may have a protective role in MM and only one study showed no correlation between Leptin and the risk of MM. BMI is routinely used as a measure for adiposity. Low BMI ( $< 20$  kg/m<sup>2</sup>) was significantly associated with poor survival and 27.1 % of patients with low BMI died within 12 months of diagnosis.

**Conclusion:** The plasma concentrations of Leptin and Adiponectin were abnormal in newly diagnosed MM. The association between obesity and MM risk may be partially attributed to reduced circulating levels of Adiponectin in obese individuals. Targeting lipid metabolism of cancer cells and adipocytes in combination with standard anti-Myeloma therapies will likely reveal novel therapeutic avenues to attack hematological malignancies.

**Keywords:** Multiple Myeloma, Adiponectin, Leptin, BMI.

### Cardioprotective effect of *Rheum turkestanicum* root against doxorubicin-induced toxicity in H9c2 cardiomyocytes

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**Objectives:** Doxorubicin (DOX) is a chemotherapy drug but its clinical use is limited because of its cardiotoxicity. Reactive oxygen species (ROS) play an important role in this

pathological process. The aim of this study is to evaluate the protective effect of *Rheum turkestanikum* against DOX-induced apoptosis and death in H9c2 cells.

**Materials and Methods:** The cells were incubated with different concentrations of extract for 2 hours which continued in the presence or absence of 5 $\mu$ M doxorubicin for 24 hours. Cell viability and apoptotic induction were determined by using MTT and PI assays, respectively. The level of ROS and lipid peroxidation was measured by fluorimetric method.

**Results:** DOX significantly decreased cell viability which was accompanied by an increase in ROS production and lipid peroxidation. Pretreatment with *R. turkestanikum* increased the viability of cardiomyocytes and decreased lipid peroxidation and ROS generation. Also, *R. turkestanikum* attenuated apoptotic induction.

**Conclusion:** *R. turkestanikum* exerts protective effect against oxidative stress-induced cardiomyocytes damage. Our findings showed that *R. turkestanikum* could exert the cardioprotective effects against DOX-induced toxicity partly by anti-apoptotic activity; Therefore, it has the potential to be used for the management of cardiac injury.

**Keywords:** Apoptosis, Cardiomyocytes H9c2, Cardioprotective, Doxorubicin, *R. turkestanikum*

### Vitamin D, the gut microbiome and inflammatory bowel diseases

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**Objectives:** Vitamin D has an important role in bone metabolism, but has recently been recognized to have a role as an immune-regulator. This has led to investigations on the

effect of vitamin D supplementation in various autoimmune diseases. Inflammatory bowel disease (IBD) comprises Crohn's disease and ulcerative colitis which are thought to have an autoimmune origin.

**Materials and Methods:** A selection of articles that were related to Vitamin D, the gut microbiome and inflammatory bowel diseases was studied. All of these articles were in the electronic databases such as Web of Sciences and PubMed with emphasis from 2000 onwards articles. There were no restriction about the language or the study design.

**Results:** There is some evidence that vitamin D can regulate gastrointestinal inflammation. Epidemiological studies show that individuals with higher serum level of vitamin D have a lower incidence of IBD (especially Crohn's disease). There is also a link between vitamin D and the gut microbiome that can regulate gastrointestinal inflammation.

**Conclusion:** Several cell types of the immune system express VDR and hence the use of vitamin D in immune-regulation has some potential. Recent studies confirm an association between vitamin D status and the development of IBD, particularly CD. Furthermore, vitamin D is an important factor in determining the composition of the gut microbiome and inflammatory processes in inflammatory bowel disease.

**Keywords:** vitamin D; gut microbiome; inflammatory bowel diseases.

### Prevalence of risk factors of Cardiovascular disease among Truck Drivers of Zahedan

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**Objectives:** Abdominal obesity, hypertension, hyperglycemia and dyslipidemia are prevalent among truck drivers. These factors are the main components of Metabolic syndrome, which increase the risk of cardiovascular diseases (CVD). A few studies have investigated the prevalence of CVD risk factors among drivers. The aim of this study was to determine the prevalence of CVD risk factors and their relationship with occupational factors among taxi and long distance drivers in Zahedan.

**Materials and Methods:** In this cross-sectional study, the main risk factors of CVD including smoking, aging, dyslipidemia, hypertension, hyperglycemia, physical activity and obesity were evaluated in 300 truck drivers.

**Results:** The results showed that 33.7% and 52.8% of drivers had central and general obesity, respectively. 24.2% had aged >50 years. The prevalence of hypertension was 16.3%, hyperglycemia was 33.7%, hyperglycemia, 32.7%;

hypercholesterolemia, 24.3%; high LDL, 32%; and low HDL, 57.7%. Furthermore, 77% of drivers did not practice any physical activity in leisure time and 12.7% were smoking.

**Conclusion:** These findings suggest that the change of lifestyle and control of cardiovascular risk factors are necessary in truck drivers.

**Keywords:** prevalence, risk factors of cardiovascular disease, truck drivers.

### **Altered energy metabolism, leptin / glucose, following ventromedial hypothalamic dopamine receptors activation**

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**Objectives:** Accumulated pharmacological evidence suggests that modulation of dopamine receptor activity in the hypothalamus produces significant changes on food consumption and eating behaviors. However, the mechanism by which dopaminergic hypothalamic pathways control energy balance remains as an open question. Recent findings suggest that the highly coordinated interaction between the dopaminergic system and leptin/ or ghrelin signaling in hypothalamus is important in control of energy homeostasis. However, it is not known whether dopamine projections in hypothalamus regions would physiologically affect ghrelin, leptin, insulin /or glucose concentrations as homeostatic regulators of energy.

**Materials and Methods:** The objective of this study was to investigate the role of ventromedial hypothalamic dopamine D2 receptors on regulation of plasma leptin and glucose level by Quinpirol and Sulpride in 20 h fasted rats.

**Results:** Our study shows, for the first time, that activation of the VMH D2 receptors by Quinpirol, a selective D2-agonist, increases plasma levels of leptin, and the stimulatory effect is reduced by Sulpride, a D2-selective antagonist. Another main point of our result demonstrates that VMH dopaminergic transmission by a D2 receptor

agonist or antagonist modulate glucose metabolism. VMH DA D2 activation by Quinpirol tended to reduce fasting plasma glucose concentration, whereas DAD2 blocking by Sulpride antagonist induced increased glucose levels. Furthermore, a significant negative correlation was observed between glucose and leptin plasma levels in drug-treated rats.

**Conclusion:** Together, our data suggest that altered D2-mediated neurotransmission might be contributed to an alteration in the metabolic phenotype of individual.

**Keywords:** Dopamine, D2 receptor, leptin, Glucose, Ventromedial nucleus.

### **Association between pro-oxidant antioxidant balance and glycolipid profile, six months after gastric bypass surgery. Running title: Pro-oxidant antioxidant balance and glycolipid profile after gastric bypass surgery**

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**Objectives:** Morbid obesity is a chronic disease that contributes to increased oxidative stress. Gastric bypass surgery is the gold standard method in treating comorbidities. The objective of this study was to evaluate the association between pro-oxidant antioxidant balance as one measure of oxidative stress, and glycolipid profile; six months after gastric bypass surgery.

**Materials and Methods:** Thirty five morbid obese patients with body mass index (BMI)  $\geq 35$  kg/m<sup>2</sup> and comorbidities or  $\leq 40$  kg/m<sup>2</sup> were randomly recruited. The serum pro-oxidant antioxidant balance (PAB) assay was used to estimate oxidative stress. Weight, BMI and some serum glycolipid parameters were collected at recruitment and six months after surgery.

Statistical analysis was performed using SPSS 16 software.

**Results:** There was significant reduction in serum PAB values compared with the baseline (P-value < 0.001). Weight, BMI and some glycolipid parameters were significantly reduced after surgery (P-value < 0.001), whilst serum high-density lipoprotein cholesterol was unaffected. Multivariable hierarchical regression analyses after adjustment for confounding variables, among glycolipid variables, demonstrated fasting blood glucose ( $\beta = 0.45$ ,  $p = 0.03$ ) as independent factor in predicting PAB values six months after surgery.

**Conclusion:** Six months after gastric bypass surgery PAB values reduced in favor of antioxidants. Accordingly, fasting blood glucose after gastric bypass surgery can be an independent factor in predicting PAB values.

**Keywords:** Obesity, Morbid; Oxidative Stress, Gastric Bypass; Pro-oxidant Antioxidant Balance.

#### Effects of omega 3 and vitamin E supplementation on gene expressions of SIRT 1 and hTERT, serum antioxidant enzymes and hsCRP level in CAD patients: A randomized clinical trial study

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**Objectives:** Studies have shown that Sirtuins have critical roles in the regulation of inflammation and oxidative stress and hTERT has protective effect via increasing the length of telomers in cardiovascular disease. The aim of this study was to assess the effects of omega 3 and vitamin E supplementation on the gene expressions of SIRT 1, hTERT and the serum levels of antioxidant enzymes in CAD patients.

**Materials and Methods:** Participants of this Randomized Clinical Trial study consisted of 60 non-smoker male CAD patients who categorized into three groups receiving 4g/day of omega 3 and vitamin E placebo (OP), omega 3 (4g/day) and vitamin E 400IU/day (OE) or omega 3 and vitamin E placebos (PP) for two months.

**Results:** Gene expression of SIRT 1 increased significantly in the OE group ( $P = 0.039$ ), but gene expression of hTERT was not significantly different between study groups. The catalase level increased significantly in OP and OE groups ( $P = 0.015$  and  $P = 0.002$ , respectively), but the Serum levels of SOD and GPX did not statistically change in any of the study groups or between the groups. Supplementation with omega 3 and also co-administration of these fatty acids with vitamin E significantly decreased the level of hsCRP in OP and OE groups ( $P = 0.008$  and  $P = 0.050$ , respectively).

**Conclusion:** Supplementation with omega 3 and vitamin E seems to have beneficial effects on CAD patients possibly via increasing gene expression of SIRT 1 and serum levels of some antioxidant enzymes. It also improves inflammation though decreasing serum level of hsCRP in these patients.

**Keywords:** CAD, vitamin E, omega 3, antioxidant enzymes, SIRT 1, hTERT

#### The Efficacy and Safety of Iranian Herbal Medicines in Treatment of Premenstrual Syndrome: A Systematic Review

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**Objectives:** Premenstrual syndrome (PMS) is one of the most common problems of women during their reproductive age. Use of complementary medicine and herbal products has gained a lot of popularity among women in the treatment of their conditions. The aim of this systematic review was to assess the efficacy and safety of Iranian herbal medicines in treatment of premenstrual syndrome.

**Materials and Methods:** Pub Med, Scopus, and Cochrane were searched along with, SID, Iran Medex, Magiran, Irandoc and Google Scholar until July 2016. Eighteen randomized controlled trials met the inclusion criteria.



**Results:** Overall, studies have shown that Vitex Agnus castus, Hypericum perforatum, Matricaria chamomile, saffron, Curcumin, Melissa officinalis, Zataria Multi-Flora, Wheat Germ Extract, Echinophora platyloba, Foeniculum vulgare, Valerian root extract, Citrus sinensis, Zingibar officinale and Flax seed may alleviate the symptoms of PMS.

**Conclusion:** This research demonstrated efficacy and safety of Iranian herbal medicines in alleviating PMS, which are embraced with both Iranian people and its health providers; therefore, herbal medicine can be seen as an alternative treatment for women experiencing PMS.

**Keywords:** Herbal medicines, Premenstrual syndrome, Iranian, Systematic review.

### The effects of *Nigella Sativa* extract on cardiovascular oxidative stress criteria of hypothyroid juvenile rats

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**Objectives:** Oxidative stress has been considered as a link between hypothyroidism and cardiovascular diseases. *Nigella sativa* (NS) has been suggested to have antioxidant effects. The objective of this study was to investigate the effects of *Nigella Sativa* extract on cardiovascular oxidative stress criteria in hypothyroid juvenile rats.

**Materials and Methods:** The pregnant rats were kept in separate cages. After delivery, the mothers and their offspring were randomly divided into five groups and treated: (1) control group which received normal drinking water; (2) the group receiving Propylthiouracil (PTU) in their drinking water during lactation; (3-5) the group receiving PTU plus 100, 200 or 400 mg/kg NS extract. After lactation period, the offspring continued to receive the same experimental treatment for the first 8-weeks of their life. Seven male offspring of each group were randomly selected, blood samples were collected and the heart and aorta tissues were removed.

**Results:** The serum thyroxin concentration in PTU treated animals was significantly lower

compared to the control group. PTU increased the heart and aorta tissues MDA while reduced thiol concentrations, catalase (CAT) and superoxide dismutase (SOD) activity compared to the control group. Treatment by all three doses of the NS extract significantly improved the PTU-induced reduction in serum thyroxin. Additionally, co-treatment of the animals by the extract resulted in a decreased level of MDA in the heart and aorta tissues and serum compared to PTU group and improved the levels of total thiol concentration, CAT and SOD activity compared to PTU group.

**Conclusion:** The results of this study demonstrated that the hydro-alcoholic extract of NS has an improving effect on heart, aorta and serum oxidative stress criteria in hypothyroid juvenile rats.

**Keywords:** *Nigella sativa*, Propylthiouracil, Hypothyroidism, Cardiovascular, Oxidative stress.

### Association of Fruit and vegetable consumption and their antioxidant vitamins on the risk of cardia gastric cancer: a systematic review

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**Objectives:** Epidemiological findings on the association between fruit and vegetable consumption and gastric cancer risk remain inconsistent. Our goal was to establish whether antioxidant supplements reduce the incidence of cardia gastric cancer (CGC). It is an important issue because although the global incidence of (CGC) has been decreased dramatically in recent decades, it remains the fourth most commonly diagnosed cancer worldwide in men and women.

**Materials and Methods:** Current data were obtained from electronic databases (PubMed and Google Scholar sites; until May 20 17). In this study, 30 relevant articles were reviewed systematically. References listed of included studies were searched to identify any potential study that was not captured in our electronic search. Articles were selected based on relevance to the subject.

**Results:** We found that higher dietary intake of vitamin C, vitamin E and  $\beta$ -carotene was inversely associated with gastric cancer risk (for vitamin C, pooled OR=0.58, 95% CI 0.5 1-0.65; for vitamin E, pooled OR=0.65, 95% CI 0.57-0.74; for

$\beta$ -carotene, pooled OR=0.59, 95% CI 0.49-0.70). Subgroup analyses suggested the effects of these antioxidant vitamins were different in gastric cancer subtypes. No such association was observed for blood levels of these antioxidant vitamins. No single antioxidant can replace the combination of natural phytochemicals in fruits and vegetables and achieve their health benefits. The evidence suggests that antioxidants are best acquired through whole food consumption, not from expensive dietary supplements.

**Conclusion:** Dietary intake of fruit inhibits the development of gastric cancer, especially CGC. High fruit intake may play a role in decreasing risk of non(CGC). Fruit and vegetables and their antioxidant contents have protective effects against (CGC) but single antioxidant vitamin and dietary antioxidant supplements may not have substantial benefits to(CGC), thus the results should be interpreted cautiously.

**Keywords:** Cardia gastric cancer, antioxidant, fruit, vegetables, vitamin, supplement.

#### **Strong association between serum Vitamin D and Vaspin Levels, AIP, VAI and liver enzymes in NAFLD patients**

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**Objectives:** Some studies indicated poor vitamin D level in NAFLD which is independently correlated with severity of steatosis. Low 25(OH) D3 levels are associated with an impaired lipid profile. Impaired levels and function of vaspin and omentin- 1, which are adipokines, have been demonstrated in NAFLD patients. This study determined the relationship between vitamin D and serum liver enzymes, ultrasound findings, some adipokines, atherogenic index of plasma (AIP) and visceral adiposity index (VAI) in patients with NAFLD in a cross-sectional study.

**Materials and Methods:** This study was a cross-sectional study in eighty-three NAFLD patients (57 males and 26 females). Plasma levels of omentin- 1, vaspin were measured. Anthropometric indices metabolic status was assessed. Visceral adiposity index and atherogenic index of plasma were calculated

according to suggested formula. Anthropometric indices, lipid profiles, liver enzymes as well as abdominal ultrasonography and the status of vitamin D were assessed.

**Results:** The results showed that aspartate aminotransferase (AST) ( $44.22 \pm 8.5$  vs.  $40.19 \pm 8.75$ , p-value= 0.039) AIP ( $0.767 \pm 0.142$  vs.  $0.6417 \pm 0.139$ ,  $p < 0.001$ ) and VAI ( $9.28 \pm 3.25$  vs.  $7.048 \pm 2.415$ ,  $p = 0.001$ ) were significantly higher in patients with vitamin D deficiency compared to those with vitamin D sufficiency. The positive correlations between Vaspin levels and vitamin D were found to be remarkably significant in both males and females ( $r = 0.437$ ;  $P = 0.004$ ;  $P < 0.001$ ,  $r = - 0.709$ , respectively).

**Conclusion:** In both males and females serum vitamin D concentrations were negatively associated with AIP. Partial correlations controlling for age and sex showed that vitamin D is significantly and inversely associated with AIP, VAI, AST, and ALT.

**Keywords:** Vitamin D, NAFLD, Adipokines, Lipid profiles.

#### **The effect of supplementation of di-acyl glycerol on weight loss by secretion of serotonin**

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**Objectives:** Diacylglycerol is a glyceride consisting of two fatty acid chains covalently bonded to a glycerol molecule through ester linkages. DAGs can acts as surfactants and are commonly used as emulsifiers in processed foods. DAG-enriched oil (particularly 1,3-DAG) has been investigated extensively as a fat substitute due to its ability to suppress the accumulation of body fat. To realize the molecular mechanism of DAG and its association with serotonin and EE, we investigated effects of DAG on secretion of serotonin and expressions of genes associated with EE, using the human intestinal cell line.

**Materials and Methods:** The intestinal cell line, the Caco-2 cells, was incubated with medium containing 1-monoacylglycerol and 2-monoacylglycerol, distinctive digestive products

of DAG and TAG, respectively. We measured level of serotonin from the Caco-2 cells using a newly developed high-performance liquid chromatography. Further, we studied effects of 1-monoacylglycerol, 2-monoacylglycerol and serotonin on expressions of mRNA related with EE, by the Real-Time quantitative RT-PCR model.

**Results:** We found 75 mM 1-monoacylglycerol significantly increased secretion of serotonin from the Caco-2 cells compared with the same concentration of 2-monoacylglycerol by nearly 34.7% ( $P < 0.004$ ). Expressions of mRNA of ACO, FAT, and UCP-2 were significantly higher in 75 mM 1-monoacylglycerol-treated Caco-2 cells than 75 mM 2-monoacylglycerol-treated cells by nearly 14%, 22%, and 37%, respectively. Expressions of mRNA of ACO, MCAD, FAT, and UCP-2 were significantly increased in 387 nM serotonin-treated Caco-2 cells as compared with the Caco-2 cells incubated without serotonin by nearly 27%, 28%, and 37%, respectively.

**Conclusion:** Our study showed that a hydrolytic product of DAG increases secretion of serotonin from the intestinal cells and Up-regulated expressions of genes associated with  $\beta$ -oxidation (ACO), thermogenesis (UCP-2) and fatty acids metabolism. Furthermore, this study demonstrated that serotonin also. Up-regulated expression of these genes, suggests a new molecular mechanism for DAG-mediated anti-obesity effect. Serotonin might play a notable role in DAG-mediated inhibition of obesity.

**Keywords:** Diacylglycerol, Weight loss, Serotonin, Human intestinal cell line.

### Evaluation of the possible relationship between dietary patterns and multiple sclerosis

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**Objectives:** Multiple sclerosis (MS) is the most prevalent neurological disorder. Different studies have confirmed the role of nutritional factors in the etiology of MS. However, dietary patterns associated with the risk of MS remain unknown.

This study aimed to investigate the possible relationship between dietary patterns and risk of MS.

**Materials and Methods:** This case-control study was conducted in Mashhad city, Iran in 2015. In total, 197 MS patients and 200 control subjects (matched in terms of age, gender, education level, and body mass index) were enrolled in this study. Data were collected through interviews and completing questionnaires. Moreover, data on the usual dietary intake of each participant during the past year were evaluated using a valid, reliable semi-quantitative food frequency questionnaire (FFQ) (160 items). Logistic regression analysis was applied to discover the associations between dietary patterns and risk of MS.

**Results:** Four major dietary patterns were identified in this study, including unhealthy, western, healthy, and traditional. The highest tertile of healthy dietary pattern was associated with the reduced risk of MS by 74% ( $OR = 0.26$ ;  $P < 0.001$ ), whereas the unhealthy dietary pattern was associated with a three-fold increased risk of MS ( $OR = 3.04$ ;  $P < 0.001$ ). However, no correlation was observed between the western and traditional dietary patterns and risk of MS.

**Conclusion:** According to the results of this study, a healthy diet may reduce the risk of MS, whereas an unhealthy dietary pattern may increase the risk of MS.

**Keywords:** Multiple sclerosis, Dietary pattern, Mashhad, Risk factor.

### Mild Hyperhomocysteinemia in dialysis patients: A single center study

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**Objectives:** Hyper homocysteinemia is common in end stage renal diseases. We aimed to determine the prevalence of hyper homocysteinemia in dialysis cases and define independent risk factors of the development of hyper homocysteinemia.

**Materials and Methods:** The total plasma homocysteine values were measured in 46 dialysis patients including 20[43.4 %] girls and 26[56.6 %] boys aged 1.6-25 [19.9±6.5] years based on two different reference values for children [age dependent] and adults [cut off point of 15 µmol/L].

**Results:** Using the reference values for children, 26 cases [56.2 %] had hyper homocysteinemia including 4 1.6% of CAPD and 2/3 of hemodialysis patients with no significant difference based on age, gender, duration and modality of dialysis, and dosage of folate supplement [ $p>0.05$  for all]. Using a cut-off point of 15 µmol/L, hyper homocysteinemia was reported in 30.4% of the patients including 11 hemodialysis and one CAPD [ $P=0.022$ ], 10 out of 19 girls [52.6%] and 4 out of 26 boys [15.4%] [ $p=0.063$ ], but logistic regression analysis did not show any significant differences in the incidence rate of hyper homocysteinemia according to the modality of dialysis and gender [ $P=0.998$  and 0.137 respectively].

**Conclusion:** We found mild hyper homocysteinemia as a common finding in dialysis patients; also, the prevalence of hyper homocysteinemia was comparable in children and young adults. However, we noted that hemodialysis patients and females were more prone to more intense elevations of plasma homocysteine levels. We found that neither gender nor modality of dialysis played a role as risk factors for development of hyper homocysteinemia in children and young adults.

**Keywords:** Hyper homocysteinemia; Child; Hemodialysis; Peritoneal dialysis; Adults.

### Combination of radiofrequency and ultrasonic cavitation did not have adverse effects on hematological/liver markers in overweight women

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**Objectives:** Dietary management is the principle intervention for obesity, although other methods have been proposed including non-invasive devices in body-contouring. We aimed to explore the effects of Radiofrequency (RF) and Ultrasound cavitation (US) modalities for body contouring in females with overweight followed by evaluations.

**Materials and Methods:** In this randomized control clinical trial, fifty overweight females were enrolled and divided into two groups. Each participant was prescribed a diet with 500 kcal deficit of total energy requirement. RF and US were each used once a week for 5 weeks in the case group. Anthropometric and hematological markers were measured in all subjects before and after the interventional period.

**Results:** Abdominal-circumference, waist-circumference, Body mass Index, and body fat mass parameters were reduced significantly in both groups. Moreover, some hematological markers were significantly reduced after intervention, although all the changes were in normal range. Also the level of anti-HSP27 did not show any significant change.

**Conclusion:** Our study suggests that body-contouring devices based on RF and US reduced measures of adiposity and did not have adverse effects on hematological factors, liver-function-markers, and HSP27 level in overweight women. Further investigations are required to explore the value of this method in a larger multicenter setting.

**Keywords:** Overweight, Hb and HCT, Radiofrequency, Ultrasound cavitation.



### **Abdominal obesity and risk of hip fracture: a systematic review and meta-analysis of prospective studies**

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**Objectives:** Data on the association between general obesity and hip fracture has been summarized in a recent meta-analysis; however, no study examined the association between abdominal obesity and risk of hip fracture. The current systematic review and meta-analysis of prospective studies was done to summarize the association between abdominal obesity and risk of hip fracture.

**Materials and Methods:** We searched the online databases of PubMed, ISI Web of Science, Scopus, ProQuest, Science Direct and Embase for relevant publications until February 20 17, using relevant keywords. In total, 14 studies were included in this systematic review and 9 studies, with a total sample size of 295,674 individuals (129,964 males and 165,703 females), were included in the meta-analysis. Participants were apparently healthy and aged 40 years or older.

**Results:** We found that abdominal obesity [defined by various waist to hip ratios] was positively associated with risk of hip fracture (combined RR: 1.24, 95% CI: 1.05- 1.46,  $P=0.001$ ). Combining 8 effect sizes from 6 studies, a marginally significant positive association was seen between abdominal obesity [defined by various waist circumferences] and risk of hip fracture (combined RR: 1.36; 95% CI: 0.97- 1.89,  $P=0.07$ ). This association became significant in a fixed-effects model (combined effect size: 1.40, 95% CI: 1.25- 1.58,  $P<0.001$ ). Based on 5 effect sizes, we found that a 0.1 unit increase in the waist to hip ratio was associated with a 16% increase in the risk of hip fracture (combined RR: 1.16, 95% CI: 1.04- 1.29,  $P=0.007$ ); while a 10-cm increase in waist circumference was not significantly associated with higher risk of hip fracture (combined RR: 1.13, 95% CI: 0.94- 1.36,  $P=0.19$ ). However, this association became significant when we applied a fixed-effects model (combined effect size: 1.21, 95% CI: 1.15- 1.27,  $P<0.001$ ).

**Conclusion:** we found that abdominal obesity was associated with higher risk of hip fracture among 295,674 individuals. Further studies are needed to test whether there are associations between abdominal obesity and fractures in other bone sites.

**keywords:** Abdominal obesity, Hip fracture, Meta-analysis, Waist circumference, Waist-hip ratio.

### **Nutritional requirements and actual dietary intake of adult burn Patients**

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**Objectives:** Nutritional support of the burn patient is essential to optimize host immune defences and to promote prompt wound healing. Furthermore the increased needs in calorie requirement of burned patients, the composition of proteins, carbohydrates and fats in their diet is important. The purpose of this study was to evaluate energy and carbohydrate, fat and protein intake and compare them to Reference Daily Intake (RDI) in adult burn patients.

**Materials and Methods:** In a cross-sectional study, 60 adult participants with major burns were evaluated in Imam Reza hospital, Mashhad in 2016. Three-day intake of calorie and carbohydrate, fat and protein were obtained and analysed by Nutritionist 4 software. All macronutrients intake were compared with RDI for burn patients. Data was analysed by SPSS version 18. The P-value of  $<0.05$  was considered to be statistically significant.

**Results:** The mean energy intake was  $1091 \pm 454$  kcal which was lower than the mean total energy requirement ( $2955 \pm 803$ ) ( $p<0.001$ ). The RDI for carbohydrate, and fat intake is 60-70%, 15-20% of total energy intake respectively and RDI for protein is 1-2 g/kg/day, while the mean carbohydrate intake was  $54.6 \pm 10\%$  that was significantly lower than the RDI ( $p<0.001$ ). Also the mean fat intake was inside the range of RDI ( $20.5 \pm 8.3\%$ ). protein intake was 0.7 g/kg/day which was significantly lower than the RDI ( $p<0.001$ ).

**Conclusion:** This study showed that the energy, protein and carbohydrate intake in patient with major burn were lower than the RDI but, the

amount of fat intake was inside the range of RDI. Because energy and protein intake directly effect on morbidity, malnutrition and mortality, the sufficient amount of these are recommended.

**Keywords:** adult, burn, energy.

### Investigation of adiponectin and leptin level in a high fat diet-induced obesity rat model treated with hydroalcoholic extract of pumpkin

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**Objectives:** The adipose tissue-derived adipokines shifted towards the proinflammatory spectrum in obesity as one of the most important issues around the world, leading to a number of disease conditions. During the screening of a variety of plants, pumpkin was regarded as one of the well-known plants with substantial medicinal properties. This study was conducted to investigate the usefulness of hydroalcoholic extract of pumpkin in alleviating the risk of metabolic disease associated with obesity.

**Materials and Methods:** 50 male Wistar rats were divided in to 5 groups of 10 animal each named: a healthy control, obese control fed with high fat-diet and obese control treated with hydroalcoholic extract of pumpkin in different dosages (100, 200 and 400 mg/kg). We analyzed the plasma adiponectin and leptin concentration.

**Results:** The plasma adiponectin concentration was lower ( $17 \pm 6$ ,  $p < 0.05$ ) and the plasma leptin concentration of obese rats was more than the control group ( $0.99 \pm 0.11$ ,  $p < 0.05$ ). After 6 weeks of treatment, oral administration of pumpkin could significantly decrease the plasma level of leptin ( $0.27 \pm 0.1$ ,  $p < 0.05$  in a dose dependent manner) compared with control group. In addition, significant increase was observed in the level of adiponectin ( $76 \pm 4.1$ ,  $p < 0.05$ ) compared with rats without treatment in a dose dependent manner.

**Conclusion:** Our results showed the great potential of pumpkin as a regulator of lipolytic pathway and point out areas for future research to further use of this plant as an anti-obesity reagent.

**Keywords:** Adiponectin, Leptin, Obesity, Pumpkin, Rat.

### An inexpensive and simple method for DNA extraction from the clotted blood samples for molecular research purposes

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**Objectives:** Isolation and purification of DNA are the initial steps to perform any molecular application (Chacon-Cortes et al., 2012). Therefore finding a suitable DNA isolation method is absolutely necessary for the successful completion of such experiments. DNA extracted from blood samples is also important to determine genetic abnormalities, epigenetic studies of diagnostic and preventive tests (Shams et al., 2011). Isolation of highly purified DNA is difficult especially from old samples. The aim of this study was to improve the previous methods of DNA isolation and increase productivity to spend less time purifying DNA especially from old clotted blood samples.

**Materials and Methods:** In this report, clotted blood was stored at  $-30^{\circ}\text{C}$  for 5 to 7 years before DNA extraction. Genomic DNA was extracted from blood clot samples using manual method. Assessment of the concentration and quality of the extracted DNAs were performed by Nano Drop spectrophotometer. The isolated DNA proved amenable to PCR amplification and then gel electrophoresis.

**Results:** Based on our research, the final solutions of extracted DNA were suitable for polymerase chain reaction such as single nucleotide polymorphism genotyping and real time polymerase chain reaction (TaqMan-based assays). Extracted DNA contained no inhibitory substances. The above protocol invariably achieved good yield of quality DNA from old blood clot samples as well as fresh blood samples (table 1).

**Conclusion:** This method is simple and efficient for the isolation of DNA from old blood clot samples and very easy to use in routine laboratory tasks. The suitable quality and quantity of current method make it appropriate for purification of DNA from highly clotted blood samples. The above protocol invariably achieved good yield of quality DNA from old clot blood samples as well as fresh blood samples.

**Keywords:** blood clot, DNA extraction, old samples purification.

#### **Association of G 1359A variant of the cannabinoid receptor gene (CNR 1) with obesity-related traits and related endophenotypes, food-related traits and leptin: a meta-analysis**

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**Objectives:** We aimed to investigate the association of G 1359A variant of the cannabinoid receptor gene (rs 1049353) with obesity-related traits including body mass index (BMI), waist-to-hip ratio (WHR), fat mass (FM), fat free mass (FFM), food-related traits and leptin among healthy and non-healthy adults.

**Materials and Methods:** We searched PubMed, Cochrane, Scopus, Web of Science and EMBASE until December 20 16 for observational studies assessed each of anthropometric measurements, food-related traits and leptin of 1359 G/A polymorphism of CNR 1 gene. A total of 22 studies were included in meta-analysis of comparing mean and standard deviation differences for anthropometric measurements, leptin and dietary intake between GA/AA and GG genotypes.

**Results:** It was found that those with GA/AA genotype had significantly lower BMI (weighted mean difference (WMD): -0.57 kg/m<sup>2</sup>, p<0.00 1), energy intake (WMD: 94.29 kcal/day, p=0.00 1), and fat intake (WMD: -4.06 g/day, p= 0.02) compared with those with GG genotype. FM, FFM, carbohydrate and protein intakes, and serum levels of leptin were not significantly different between GA/AA and GG genotypes.

**Conclusion:** we found that subjects with mutant polymorphism (GA/AA) of CNR 1 compared with wild group (GG) had lower BMI (although there was unexplained heterogeneity), as well as lower intakes of energy and dietary fat.

**Keywords:** cannabinoid receptor gene, polymorphism, leptin, BMI.

#### **The effects of curcumin on CVD risk factors in patients with metabolic syndrome**

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**Objectives:** Curcumin is a yellow pigment derived from rhizomes of turmeric and can affect multiple components metabolic syndrome (MetS). In the current study, we aimed to evaluate the effects of curcumin on some CVD risk factors in patients with MetS.

**Materials and Methods:** One hundred and twenty subjects (18-65 years old) were randomly assigned to one of three treatment groups: a group receiving phospholipidated curcumin capsules (1 g/day) for 6 weeks (n=40), a group receiving unformulated curcumin capsules (1g/day) for 6 weeks (n=40), and a control group who received a placebo capsule (n=40). Socio-demographic status of all participants was documented using a self-administered questionnaire. Blood samples were collected after a 12-hour fasting. All biochemical factors and anthropometric indices were measured in all patients at baseline and after six

weeks intervention. Complete blood count (CBC), serum levels of FBG, lipid profile, apolipoproteins and hs-CRP were assessed. Physical activity level was measured using a standard questionnaire. One subject in the phospholipidated curcumin-treated group reported hypersensitivity. Also, there were reports of cold sore (n= 1) and nausea (n= 1) in the unformulated curcumin group. Statistical analyses were performed using SPSS software.

**Results:** A total of 109 subjects completed the study. There were no significant differences between the 3 study groups for any of the variables at baseline, nor after the 6 weeks intervention, including: anthropometric indices, serum biochemical factors, systolic and diastolic blood pressures and CBC.

**Conclusion:** Curcumin supplementation over a period of 6 weeks (1 gr/day) cannot improve any of the cardiovascular risk factors associated with MetS.

**Keywords:** Curcuma longa; Curcumin; Metabolic syndrome.

#### **A systematic review and meta-analysis of clinical trials on saffron (*Crocus sativus* Linn.) effectiveness and safety in male fertility problems: examining erectile dysfunction and semen Parameters**

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**Objectives:** We performed this systematic review and meta-analysis study to determine the saffron (*Crocus sativus*) effectiveness and safety in male fertility problems.

**Materials and Methods:** The databases of PubMed, Scopus, Cochrane, Google Scholar, SID, IranMedex and Magiran until July 20 16 and reference section of relevant articles, were searched to identify both English and Persian clinical trials on male fertility issue that receiving

saffron as medical treatment and their quality was evaluated by Oxford Center for Evidence Based Medicine checklist. A total of six trials were ultimately included. All statistical analyses were finished by Comprehensive Meta-analysis (CMA) Version 2.

**Results:** In only one study conducted on sperm parameters, the mean percentage of sperm with normal morphology ( $P < 0.001$ ) and sperm motility ( $P < 0.001$ ) increased. Quantitative analysis showed that saffron had a positive significant effect in all dimensions of Erectile Function questionnaire (MD for Erectile function 5.36;  $p = 0.00$ , Orgasmic function 1.12;  $p = 0.007$ , Overall satisfaction 1.23;  $p = 0.005$ , Satisfaction with intercourse 2.18;  $p = 0.00$  and Sexual desire 0.78;  $p = 0.00$  respectively, Fixed effects model; 3trials). The result of subgroup analysis based on dimensions of Erectile Function questionnaire show statistically significant difference between subgroups ( $p = 0.00$ ).

**Conclusion:** Saffron has a positive effect in men with erectile dysfunction. However our study showed contradictory results about semen parameters. So, interpretation of results is limited because of methodological flaws of the included studies, erectile dysfunction status and large heterogeneity among them. Further trials are still needed to confirm the current finding.

**Keywords:** saffron (*Crocus sativus* L.), erectile dysfunction, semen parameters, male fertility, meta-analysis.

#### **The relaxant effect of crocin on rat tracheal smooth muscle and its possible mechanisms**

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**Objectives:** Crocin, the active component of saffron, showed pharmacological effects on many organs. In the present study, the relaxant effects of crocin and its possible mechanisms on rat tracheal smooth muscle were investigated.

**Materials and Methods:** The relaxant effects of three cumulative concentrations of crocin (30, 60, and 120  $\mu\text{g/ml}$ ) or theophylline (0.2, 0.4, 0.6 mM) as positive control was examined on pre-



contracted tracheal smooth muscle by methacholine or KCl in non-incubated or incubated conditions with different agents including atropine, chlorpheniramine, indomethacin, diltiazem, glibenclamide and propranolol.

**Results:** In non-incubated tracheal smooth muscle, crocin showed significant and concentration-dependent relaxant effects on KCl induced muscle contraction ( $p < 0.001$  for two higher concentrations). However, on methacholine induced contraction of the tissue, crocin did not show any relaxant effect. In incubated tissues with chlorpheniramine, indomethacin, diltiazem and propranolol, there were no significant differences in the relaxant effects of crocin between non-incubated and incubated tissues. However, the relaxant effects of crocin obtained in incubated tissues with atropine and glibenclamide were significantly lower than non-incubated tracheal smooth muscle ( $p < 0.05$  to  $p < 0.001$ ). Theophylline showed significant and concentration dependent relaxant effect on both KCl and methacholine induced contraction of tracheal smooth muscle ( $p < 0.01$  to  $p < 0.001$ ).

**Conclusion:** The present study has shown a relatively potent relaxant effect of crocin on tracheal smooth muscle which was lower compared to the effect of theophylline. The findings also suggest that the possible mechanisms of the relaxant effect of the crocin on tracheal smooth muscle are muscarinic receptor blocking, potassium channels opening and  $\beta_2$ -adrenoreceptors stimulation.

**Keywords:** Crocin; relaxant effect; tracheal smooth muscle; possible mechanisms.

#### Examination and Determination of Heavy Metal Concentrations (Lead and Mercury) in Raw Milk in Mazandaran Province, Northern Iran

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**Objectives:** Transfer of heavy metals to milk and dairy products may cause irreparable damages to public health. In fact, the health problems of such contaminants includes accumulation in body tissues and incidence of different complications. In this regard, this study aimed to examine lead and mercury concentrations in the raw milk inflow to one of the dairy suppliers in Mazandaran Province.

**Materials and Methods:** This was a cross-sectional descriptive-analytic study. Simple random sampling was used for taking samples over 7 months from 175 raw milk specimens transferring to the specified dairy supplier from different parts of Iran. The samples were tested by a high-performance liquid chromatography (HPLC) machine with fluorescence detectors to measure lead and mercury contents. The Kruskal-Wallis nonparametric test was used to compare heavy metal concentrations in different seasons.  $P < 0.05$  was considered as the significance level in all analyses.

**Results:** Among 175 raw milk samples, lead was found in 144 (82.28%). Mercury concentration was at a detectable level in 68 (38.85%) of specimens. Lead concentration varied significantly with different seasons ( $P < 0.001$ ). The pairwise comparison of lead level among raw milk samples in different seasons demonstrated a statistically significant difference between summer and autumn ( $P < 0.001$ ). Additionally, the difference in mercury concentration was considered to be statistically significant in different seasons ( $P < 0.001$ ). The pairwise comparison of mercury level in different seasons showed a significant difference between autumn and winter ( $P = 0.035$ ). A statistically significant difference was also observed between summer and winter ( $P = 0.001$ ).

**Conclusion:** Lead and mercury levels in raw milk samples varied significantly with different seasons. Since raw milk was collected from different parts of Iran, it is not possible to form a conclusive viewpoint about such a statistical difference. Therefore, it is necessary to conduct pedological studies in source regions and examine the water and forage used by livestock therein. Eventually, because of the broad range of health problems of heavy metals, it is vitally important to monitor milk collection centers and dairy suppliers on a regular basis.

**Keywords:** Raw Milk, Lead, Mercury, Season, Food Safety

### Association of a genetic variant in antisense noncoding RNA in the INK4 locus with the increased risk of breast cancer

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**Objectives:** Breast cancer is the second leading cause of cancer-related-deaths in women. World Cancer Research Fund's analysis has reported that BMI, diet, and physical activity are among the major risk factors of breast cancer. Moreover there is an interaction between genetic variants of the Antisense noncoding RNA in the INK4 locus (ANRIL) gene on chromosome 9p2 1 and environmental-exposures (e.g., diet and physical activity). Also a significant association was detected between ANRIL polymorphism and overweight. Against this background, there is growing body of evidence showing the association of common genetic variants on chromosome 9p2 1 and breast cancer. Here we investigated the association of a genetic variant in ANRIL, rs 1333049, for the first time in 303 subjects with and without breast cancer.

**Materials and Methods:** Genotyping was carried out using TaqMan real time PCR method. The associations of this genetic variant were evaluated with breast cancer risk and pathological information of patients.

**Results:** We observed that the minor allele homozygote in total population was 10%, while this condition in heterozygote was 38%. Patients with breast cancer were associated with advanced Node status, as detected by the recessive genetic inheritance model. Moreover the logistic regression under recessive genetic model revealed that breast cancer patients with

genotypes CC/CG had higher risk of breast cancer, compared to genotype GG (e.g., OR=2.8, 95% CI: 1.4-5.4,  $p=0.001$ ), after adjusted for age, and BMI.

**Conclusion:** We demonstrated that patients carrying the genotypes CC/CG for ANRIL rs 1333049 polymorphism had an increased risk of breast cancer susceptibility, indicating further studies in a larger and prospective setting to show the value of emerging marker as a risk stratification biomarker in breast cancer. Moreover further investigations are warranted to assess the interaction between this genetic biomarker with diet, overweight and lifestyle.

**Keywords:** breast cancer, risk marker, ANRIL, rs 1333049.

### Effect of all trans retinoic acid and vitamin D3 and Their combination on serum miRNA 125a-5p, 34a, 126, 29b, in experimental model of diabetes

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**Objectives:** microRNAs is small non-coding RNAs that regulate their target gene expression and contribute to common disease complications like Type 2 diabetes mellitus (T2DM) that is a major public health problem and effect on miRNA expression profile. The purpose of this study was to evaluate whether circulating miR- 125a-5p, miR- 126, miR-34a, and 29b could be used as biomarkers for the diagnosis of diabetes through measuring their expression and find effect of ATRA and vitD3 on diabetes miRNA profile.

**Materials and Methods:** Total miRNA was extracted from serum samples. miRNA expression profiles of 30 rats in five group were analyzed after 4 week intervention, according to the following Classification, Group I: Healthy control rats, Group II: STZ-induced diabetic control rats Group III: Diabetic rats were given ATRA, Group IV: Diabetic rats given vitamin D3, Group V: Diabetic rats given vitamin D3 + ATRA. The expression levels miRNAs were measured with qRT-PCR.

**Results:** We analyzed the relationship between the expression of miRNAs in serum by the Kruskal Wallis test. This analysis showed that the expression of miR- 126 ( $p=0.15$ ), miR- 125a-5p ( $p=0.229$ ), and 34a ( $p=0.426$ ) in serum between groups (ATRA, ATRA+vitD3, vitD3, healthy control, diabetic control) and only miRNA 126 show significant difference in our experimental group. expression of miR 126, miR 125a-5p, miR34a was decreased in diabetic rats and miR29b undetectable in the serum of all rats.

among intervention, just vitD3 can increase expression of all miranas.

**Conclusion:** mir 126, mir34a, mir 125a-5p expression decreased in diabetic rats and we can consider vitaminD3 as a new therapeutic agent that can effect on gene expression and use for Preventing Cardiovascular disease consequences of Diabetes.

**Keywords:** mir 126, mir34a, mir 125a-5p, Type 2 diabetes (T2D), cardiovascular disease ,serum mirna, Circulating MicroRNA.

### **Cytokeratin (CK) 18: a noninvasive biomarker to predict the presence and intensity of liver injury in NAFLD**

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**Objectives:** Nonalcoholic fatty liver disease (NAFLD) is a major cause of liver-related morbidity. The histologic spectrum of NAFLD is wide ranging from hepatic steatosis to nonalcoholic steatohepatitis (NASH), cirrhosis and hepatocellular carcinoma. Liver biopsy is a standard procedure for diagnosis and determining the intensity of liver injury in NAFLD patients, but it is invasive, expensive and the sensitivity of this method to differentiate NASH from NAFLD is limited. So there is a need for noninvasive and more sensitive methods to distinguish simple steatosis from NASH. Hepatocellular apoptosis plays a major role in chronic liver disease. Studies have shown that apoptotic cells significantly increase in liver biopsy specimens of NASH patients compared to those with simple steatosis and healthy controls. Cytokeratin 18 (CK 18) as a major intermediate filament protein of liver appeared in serum of patients in consequence of caspase cleavage during apoptosis. Presence of CK 18 in serum as a marker of hepatocyte apoptosis, predicts the presence and intensity of liver injury. It has been shown that changes in liver histology are accompanied by changes in serum CK 18 in both children and adults with NAFLD.

**Materials and Methods:** A comprehensive Pub Med and Google Scholar literatures search was performed using the terms "NAFLD", "NASH", "Fibrosis", "Noninvasive biomarker" and "Cytokeratin 18". Articles indexed between 2004 and 2017 were used.

**Results:** CK 18 was significantly elevated in the NAFLD compared to normal patients and its Serum levels were correlated with NAS. It can be a noninvasive biomarker for the diagnosis of NASH and advanced fibrosis in NAFLD.

**Conclusion:** Cytokeratin (CK) 18 fragments is a noninvasive marker of hepatocyte apoptosis can predict the presence of chronic liver injury.

**Keywords:** NAFLD; Noninvasive biomarker; Cytokeratin 18.

### **The effects of n-3 fatty acids and rosa damascena extract on primary dysmenorrhea**

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**Objectives:** Primary dysmenorrhea is painful contractions of the lower abdomen without abnormal pelvic pathology. Because high prevalence of dysmenorrhea and its effects on women's social activities, the purpose of this study was to investigate the effects of separate and concurrent supplementation of n-3 fatty acid and Rosa damascene extract (RDE) on primary dysmenorrhea complaints.

**Materials and Methods:** In this double blind clinical trial, 120 university students were randomly allocated with equal size into two groups Fish oil (FO) Factor groups: one with one-gram soft gel capsule of fish oil (60) and other without it (60)), then each group was randomly allocated with equal size into two groups (RDE Factor groups: one with one-gram capsules of RDE (30) and other without it (30)), for 2 months. And all data was measured three times in these four groups, at the beginning of the study 30th day and 60th day. Pain intensity and quantity of bleeding were measured by VAS, Higham Pictorial blood loss assessment charts methods respectively.

**Results:** After 2 months treatment, pain intensity was decreased significantly in FO ( $p=0.02$ ), and RDE ( $p<0.01$ ) groups but remained high among those who received both of FO and RDE ( $p=0.27$ ). Reduction of bleeding days was significant ( $p<0.01$ ) with separate supplementation of FO and RDE but concurrent use of them has no significant effect ( $p=0.75$ ) on bleeding duration. The amount of bleeding does not changed significantly in any groups.

**Conclusion:** Our results suggest, omega-3 fatty acids and RDE separately have analgesic effect on pain severity and can decrease bleeding duration of dysmenorrhea as nutritional supplements only when used separately.



**Keywords:** Dysmenorrhea, Rosa, fish oils, pain

### **Increasing the effects of curcumin in combination with piperine**

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**Objectives:** Curcumin is a polyphenolic composition of turmeric, which has various pharmacological effects such as anti-inflammatory, anti-oxidants, anti-proliferation and anti-neoangiogenesis activity. Curcumin is widely used as food-additive and herbal medicine. High dose of curcumin is also safe in human. Although it suggests low bioavailability; probably because of low absorption, fast metabolism and rapid systemic removal. On the other hand, Piperine is herbal alkaloids which has been using as an herbal medicine in Indian medicine for a long time. Piperine presents wide range of biological effects including anti-apoptotic, anti-metastasis, antithyroid, anti-depressant and liver activity. Multiple methods have been examined to improve bioavailability of curcumin. Studies exhibited that Piperine not only concludes its own properties, but it also influences synergistic effects like enhanced bioavailability for other medicines. This investigation was done to review evidence and reasons of Piperine effects on influences of curcumin.

**Materials and Methods:** Searching for related publications was done using keywords "Curcumin" AND "Piperine" AND "Pharmacokinetics" in PubMed, Google Scholar, Scopus and Web of Science databases. We also have searched these keywords in Persian in order to evaluate Persian articles.

**Results:** Piperine can suppress cytochrome 3A P450, metabolism of curcumin and intestinal

liver glucuronidation; it also inverts adjustment of membrane transport protein ATP Binding Cassette transport A 1 such as P-GP, MDRP 1, MDRP2 and BCRP. Therefore Piperine in combination with curcumin has increased its effects. For instances, Shoba and colleagues has revealed that Piperine (concentration of 20 mg) enhanced bioavailability of curcumin (concentration of 2g) up to 2000 percent in human. Piperine also raised serum concentration, absorption rate and bioavailability of curcumin without any side-effect in both mice and human.

**Conclusion:** Our investigation prepares evidence that in addition to treatment characteristics, Piperine boosts serum concentration and bioavailability of curcumin probably because of increased absorption and reduced metabolism of Curcumin. Since, they are herbal substances and have no side-effect and result to accept of it by patients.

**Keywords:** Curcumin, Piperine, Combination therapy, Pharmacokinetics.

### **Challenges in Nutritional Genomics Research**

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**Objectives:** The emerging aim of multi-omics approaches (transcriptomics, proteomics and metabolomics) in nutrition research is to personalized dietary advice based on genotype in combination of phenotype and lifestyle factors. A challenges in nutritional genomics research is 1) Dealing with subtle effect of dietary intervention; 2) considering samples collection; 3) Choosing appropriate body fluids or tissue sample; 4) Using SNPs and haplotypes; 5) Establishing a reproducible methods for sample collection; 6) Reducing the impact of inter-individual variability by proper study design; 7) Designing a "proof-of-principle (PoP) study"; and 8) Considering bioethics.



**Materials and Methods:** The most recent scientific researches on challenges in nutritional genomics research were systematically reviewed. The mentioned key such as Nutrigenomics, Transcriptomics, Metabolomics, Proteomics, Nutritional Genomics, Nutrigenetic, Nutritional epigenomics, nutritional intervention, NuGO in electronic databases and books between the years 2001 and 2017 were used.

**Results:** Many dietary exposures could be considered as unwanted variations and potential confounding factors so it is better to measure by metabolomics, because proteins are the main effectors in cells, so the way diet affect biological process and signaling pathways become clear. For better physiological outcomes and nutritional assessment, plasma, platelets, peripheral blood mononuclear cells (PBMCs), urine and saliva are good samples; e.g. in transcriptomics or proteomics, studies on PBMC - which include lymphocytes, monocytes/macrophage- is appropriate; many monogenic and polygenic disorders is determined by SNPs and haplotypes as biomarkers associated with nutrition-related disease risk. Sample collection is a key element of any study; e.g. the RNA quality need to verify and extraction of sufficient high quality RNA is important in transcriptomics studies. Intervention trials (cross-over or parallel studies) or epidemiological studies are proper study design in nutritional genomics studies. An early clinical development of nutrients and nutraceuticals when they show potential effects in animal models with early safety testing is PoP study. Considering more complex bioethics in the use of nutrigenomics approaches in human studies should be followed by NuGO online Bioethics Tool.

**Conclusion:** Better dietary advice for healthy eating can be achieved by combining Omic-approach together.

**Keywords:** Nutrigenomics, Metabolomics, Proteomics, Nutritional Genomics

### The Relationship between Some of Anthropometric Indices at the Beginning of Pregnancy and Neonatal Outcomes

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**Objectives:** Pregnancy and neonatal outcomes are considered as a major health issue. Decreasing and increasing of birth weight to more than the standard level is associated with disease and mortality. The aim of this study was to determine the relationship between some of anthropometric parameters at the beginning of pregnancy on weight, height and head circumference at birth.

**Materials and Methods:** This cross-sectional study was done on 400 pregnant women with gestational age less than 12 weeks referred to gynecology clinic of Tamin Ejtemaee Hospital of Zahedan city in the year 1395. In the first prenatal visit, the questionnaire containing personal information was completed and body mass index of mothers calculated and infant's weight, height, head circumference and gender were recorded at delivery. The analysis was performed by using SPSS software and Chi-squared, t-student, Pearson correlation and linear regression tests. P value of less than 0.05 was regarded as statistically significant.

**Results:** In this study, the mean of maternal body mass index and infants weight, were  $23.20 \pm 3.6 \text{ Kg/m}^2$  and  $3.05 \pm 0.45 \text{ Kg}$ , respectively. In terms of gender, most of infants born were males. Statistical tests between the variables of mother's age, education, occupation, weight and body mass index were significantly associated with infant's weight.

**Conclusion:** Maternal body mass index and weight before pregnancy can be two important anthropometric factors associated with birth weight. Therefore, it is recommended for women to receive the necessary instructions before and during pregnancy in order to decrease low birth weight infants and macrosomia in the society.

**Keywords:** Body Mass Index, Birth Weight, Neonatal Outcomes, Anthropometric.

### Body Mass Index is an Independent Risk Factor for Cognitive Abilities in Healthy Adolescents

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**Objectives:** Obesity and overweight have increased in children and adolescents substantially, increasing a major public health concern about their cognitive consequences and psychosocial condition. In this study, we aimed to examine the hypothesis that high body mass index (BMI) is associated with impaired cognitive abilities in the girls' adolescence.

**Materials and Methods:** Participants were 1026 girl adolescents aged 12–18 years, who completed neuropsychological sub-tests and measures of routine biochemical parameters and anthropometric characteristics based on a cross-sectional survey.

**Results:** In the univariate analysis, BMI levels significantly correlated with memory ( $r = -0.194$ ;  $P = 0.01$ ), and inhibitory control and selective attention ( $r = -0.127$ ;  $P = 0.01$ ), and decision-making ( $r = -0.136$ ;  $P = 0.02$ ), and planning ( $r = -0.137$ ;  $P = 0.01$ ) completion times. In the multivariate analysis, BMI levels were found to be independently associated with memory, decision-making and total number of cognitive tasks. BMI could not predict other cognitive abilities.

**Conclusion:** Higher BMI in girl adolescents was associated with strong outcomes for some cognitive abilities in this study. Risk of higher BMI may emerge later in adulthood by decreasing cognition or educational abilities and increasing progression to Alzheimer disease in old age.

**Keywords:** cognitive abilities, BMI, adolescence, risk factor

### Clinical trial for the management of dysmenorrhea using selected spices

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**Objectives:** Dysmenorrhea is the most common gynecologic complaint among adolescent and adult females. Some dysmenorrheic females do not respond to treatment with NSAIDs or oral contraceptives and exhibit contraindications to such medications. Therefore, alternative medication, gained importance in the management of dysmenorrhea. The study conducted to compare the effects of ginger, dill seeds and cumin on dysmenorrhea and menstrual symptoms in females with primary dysmenorrhea.

**Materials and Methods:** comparative clinical trial was conducted on thirty one dysmenorrheic subjects; they were randomly assigned to three groups. The dosage was 1gr, 3gr and 3gr/day for Ginger, Dill seeds, and Cumin, respectively for the girls in respective group consumed the spice for three days during each cycle for three consecutive cycles.

**Results:** Dill seed was effective in reducing pain, followed by ginger wherein Cumin did not exhibit any effect. Although cumin intervention did not effectively reduce pain, it exhibited significant reduction in systemic responses like cold sweats, backache, fatigue and cramps.

**Conclusion:** Among the three spices studied Dill seeds were more effective in reducing pain. It was obvious from our study that reducing symptoms is also important in the total management of dysmenorrhea.

**Keywords:** clinical trial, dysmenorrhea, menstruation, spices

### Effect of curcumin in the treatment of Triple-Negative Breast Cancer patients

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**Objectives:** Common treatment of Triple-Negative Breast Cancer (TNBC: absence of estrogen, progesterone receptor and HER2) have concluded lots of limitations. Medical treatment has shown a low-sufficient response or lots of side-effects in TNBC patients. This is because of more invasiveness, lack of targeted therapy, poor prognosis and lack of therapeutic goals in common treatments of TNBC patients. Curcumin is a medicine derivative of natural food from the root of turmeric concluding polyphenolic compounds and anti-cancer effects. We expect to find out some evidence based on the effectiveness of curcumin in TNBC treatment and introduction of targeted molecules in association with curing these patients.

**Materials and Methods:** Searching for related publications were done using keywords including: "Curcumin" and "Triple Negative Breast Cancer" and "Pharmacological action" and "Therapy" in PubMed, Google Scholar, Scopus and Web of Science databases. We also searched these keywords in Persian in order to evaluate Persian articles.

**Results:** *In vivo* and *in vitro* experiments of curcumin and their analogues on TNBC cells have revealed reduction or suppress *via* an important factors/pathways. These factors and pathways involved in initiation, progression, and resistance to treatment and also resulted in effective treatment in TNBC. The targets of curcumin are included N-cadherin, catenin, Slug, AXL, Vimentin, Fibronectin, Twist 1, Vwf, EGFR, VEGF-A, VEGFR2/3, FABP5/PPAR $\beta/\delta$ , and EMT in TNBC. Curcumin also affected the expression and releasing of cytokines such as IL-6 and MCP- 1, activation of Notch 1, Hes 1, Stat3, and expression of Cyclin-D, PECAM- 1, and P65 in TNBC. On the

other hand, curcumin plays an important role in prevention, improvement and increased treatment by enhanced BRCA 1 protein, apoptosis, IL- 12, tumoral DNA damaging, and improved performance of B and T cells in the blood.

**Conclusion:** Determination of specific goals and effectiveness of curcumin in studies show new hope for auxiliary treatment of TNBC patients. However, more pre-clinical and clinical studies are needed to find other specific goals to improve and increase the therapeutic performance.

**Keywords:** Triple-Negative Breast Cancer, Curcumin, Therapeutic effects.

### **Effect of dietary supplements on nutritional status and anthropometric indicators in retirement home residents: A controlled randomized trial**

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**Objectives:** Today, aging population is a serious concern in Iran and around the world. Older adults are often nutritionally vulnerable due to dental disorders, taking different medications, poor health status, decreased daily activity, depression, and loss of appetite. The present study examined the effect of dietary supplements on nutritional status and anthropometric indicators in older adults residing at a retirement home in Kermanshah, Iran.

**Materials and Methods:** The present controlled randomized trial recruited 64 individuals, aged above 65 years and residing at a 24-hour retirement home. The subjects were selected using convenience sampling and randomly allocated to experimental and control groups. The experimental group took one dietary-supplement capsule (Gerinton, R. P. Scherer, Germany) per day for three months. No intervention was provided for the control group. The nutritional status of older adults was assessed using the Mini Nutritional Assessment (MNA), and data were analyzed in SPSS 16 using paired-samples t-test.

**Results:** Mean age of participants was 70.77 $\pm$ 8.29 years. At the beginning of the study,

the distribution of age, sex, and anthropometric indicators was equal between the two groups ( $p>0.05$ ). In the experimental group, malnutrition reached 16.7% from 20% ( $p=0.034$ ), while no change was observed in the control group ( $p=0.321$ ). Variations before and after the intervention indicated a significant weight reduction in the experimental group (paired t-test,  $t=2.258$ ,  $p=0.032$ ), while no change was observed in the control group. Waist circumference (WC) and waist-hip ratio (WHR) were also reduced in the experimental group.

**Conclusion:** The prevalence of malnutrition was relatively high among older adults at the retirement home in Kermanshah. Malnutrition decreased in older adults through intervention by dietary supplements, leading to positive changes in the intervention group in terms of anthropometric indicators. Because of the numerous nutritional problems in older adults, we recommend appropriate dietary supplements to prevent malnutrition and improve nutritional status.

**Keywords:** Older adults; dietary supplement; malnutrition; anthropometric indicators

#### **Honey and breast cancer; the potential anti-cancer drug**

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**Objectives:** Breast cancer is still in the top of the common cancers list among women worldwide. Different treatment regimens were administered for the patients with various disease stages. According to the side effects of chemotherapy drugs, complementary medicine, especially new herbal drugs, has been more considered. Honey is the ancient food which has different therapeutic characteristics. The

antibacterial and anti-inflammatory features of this material are well documented while there are some studies that demonstrated its anti-cancer effects. This review study aimed to investigate the relationship between honey and its anti-cancer role in breast cancer.

**Materials and Methods:** Two key words, "honey" and "breast cancer" were used by three important search engines, Web of Science, PubMed and Scopus.

**Results:** Reviewing the literature showed the anti-cell proliferation features of the honey by mitochondrial dependent apoptosis in MCF-7 and MDA-MB-231 breast cancer cell lines. Moreover, this anti-cancer material, able to differentiate and select the cancer cell from normal cell lines. In addition, in vivo studies also were indicated the decrease in tumor growth and metastasis in the rat. The different characteristics of the honey are due to the phenolic compounds which have various constituents and concentration based on the bees' sources of nutrition. The phenolic compounds classified as flavonoids and phenolic acids. The anti-cancer effect of the honey phenolic phytochemicals was studied on breast cancer cell lines. Apigenin, a kind of flavones, manifested anti-cancer characteristics by G2/M cell cycle phase arrest, decrease in cyclin B1, induction of caspase-3 activity and inhibited STAT3 and NF- $\kappa$ B signaling. However, Quercetin, another honey phenolic constituent, suppress the tumor proliferation similar to Apigenin mechanism, by G2/M cell cycle phase arrest and decrease the cyclins A protein expression. On the other hand, p-coumaric acid and Ferulic acid are two components of the honey with indicating their effect on cancer cells by cell cycle arrest at sub-G1 phase. In addition to the vast range of anti-tumor characteristics of honey and its phytochemicals components, the expression level of the matrix metallo peptidase (MMP), was decreased by caffeic acid, chrysin, quercetin, kaempferol and ellagic acid. As the MMP high expression level is associated with a high tumor grade and metastasis, it may be suggested that honey may suppress the invasions of the breast cancer.

**Conclusion:** In conclusion, the anti-cancer characteristics of the honey and its phenolic phytochemicals were indicated well. The human clinical trial may need to indicate the prognostic role of this ancient material in breast cancer.

**Keywords:** Breast cancer, Honey, Apigenin, anti-cancer characteristics



### Effect of brewing duration on phenolic content and free radical scavenging activity of Iranian black tea

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**Objectives:** Tea is obtained from the leaves of *Camellia sinensis* which is turned into black tea after fermentation and phenol oxidase activity. It also has strong antioxidant effects due to compounds like epicatechin. Considering the fact that tea is used after brewing, the effect of brewing heat should be studied on Phenolic content and its antioxidant properties. Therefore, the purpose of this study is to evaluate the effect of brewing time on the antiradical properties and Phenolic content in black tea.

**Materials and Methods:** Black tea was purchased from the local market in Lahijan. Then it was grinded completely and kept in dark glass jars. Experimental groups were immersed in hot water at 90°C for 10, 30 and 60 minutes. In this way, the aqueous extract was prepared and dried in vacuum and finally the required concentrations of the extract were prepared. The antioxidant activity of the aforementioned extracts was evaluated by DPPH test and total phenolic content was assessed by the use of Folin-Ciocalteu reagent with three replications. Finally, the obtained data were analyzed by SPSS and T-test.

**Results:** during DPPH test, there was no significant difference ( $P>0.05$ ) between free radical scavenging percentage in treatment groups receiving heat for 10 minutes ( $82.1 \pm 0.57$ ), 30 minutes ( $83.8 \pm 0.6$ ) and 60 minutes ( $82.05 \pm 0.48$ ). In addition, in total phenol Test, there was no significant difference ( $P>0.05$ ) between light absorbance of groups heated for 10 minutes ( $0.105 \pm 0.004$ ), 30 minutes ( $0.107 \pm 0.003$ ) and 60 minutes ( $0.106 \pm 0.003$ ).

**Conclusion:** Over the present study, it was clarified that heating black tea for one hour to

brew has no reductive effect on antioxidant properties and its Phenolic compound level.

**Keywords:** black tea, brewing time, free radical scavenging, total phenol

### Effect of Diet and Air Pollution on Ankylosing Spondylitis Disease Activity

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**Objectives:** Ankylosing spondylitis (AS) is a chronic inflammatory disease characterized by axial arthritis. The genetic-environmental factors seem to be involved in the pathogenesis of the disease and the disease debilitates patients during the most productive stages of their lives. The aim of this study was to examine the relationships between two environmental factors, diet and air pollution with disease activity and functional impairment in AS.

**Materials and Methods:** A case-control study was carried out. Thirty patients with AS and 30 age and sex-matched healthy controls were included. Disease scores including BASMI, BASDAI, BASFI, and BASG were calculated by means of the international Ankylosing Spondylitis Assessment working group consensus recommendations. The food intake was evaluated by semi-quantitative food frequency questionnaire (147 items FFQ). Level of air pollution indices, PM 10 and PM2.5 was obtained from the Tehran air quality control network.

**Results:** Total energy and fat intake, some vitamins (A, B 1, B2, C) and mineral intake (potassium, calcium, iron, phosphorus, magnesium, zinc, copper and selenium) were significantly higher in patients with AS compared to controls. Fat component consumption especially Saturated Fat of Food was moderately correlated with BASFI score. PM2.5 long term

exposure was strongly correlated with BASMI, BASFI and BASDAI scores of patients.

**Conclusion:** High-fat diet and long term exposure to air pollution are associated with worse disease outcomes reported in patients with AS. This is an interesting area of investigation in AS pathogenesis and management.

**Keywords:** diet, Ankylosing Spondylitis, air pollution.

### **Electrochemical biosensing of High Risk HPV in Cervical cancer**

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**Objectives:** Cervical cancer is the second most common cancer among the women in worldwide and is the most common causes of death in women. The cause of cervical cancer is a genital human papilloma virus (HPV). HPVs based on potential carcinogenicity are classified as low risk or high risk types. Low risk HPVs (6, 11) cause papillomatosis in respiratory tract and genital warts, while high risk HPVs (16, 18, 45, 31, 33, 52, 58, 35, 59, 51, 56, and 39) can be oncogenic, establishing persistent infection and induce cellular changes which leading to cancer. Together, HPV-18 and -16, as single infections or combined with other HPV types are responsible for up to 70% of all cervical cancer types and with a significant number of anal, vaginal, penile and vulvar cancers. So Due to the key role of HPV in induction of some serious diseases, development of rapid, accurate and sensitive detection methods are in demand.

**Materials and Methods:** The traditional and common ways to detect HPVs are Pap smear and Liquid-Based Monolayer Cytology, which have many disadvantages such as expensive, unsuitable for low resource settings, requires trained personnel and long assay time. So, utilizing a method to solve these problems such as DNA biosensor has been considered and developed in recent years. DNA biosensors are analytical devices that are designed for detection specific sequence of DNA (target) by binding (hybridization) with complementary probes immobilized on a solid substrate. Among the all different methods used to detect HPVs, the electrochemical methods are more advantageous

characteristics due to their portability, cost effectiveness, small size, and ease of use.

**Results:** The HPV detection by electrochemical DND biosensor presented high sensitivity and broad linear response to the synthetic-target concentration comprised between 18.75 nM and 250 nM with a detection limit of 18.13 nM.

**Conclusion:** The HPV detection by electrochemical DND biosensor presented high sensitivity and broad linear response to the synthetic-target concentration comprised between 18.75 nM and 250 nM with a detection limit of 18.13 nM.

**Keywords:** Cervical cancer, Electrochemical DNA biosensor, Human papillomavirus

### **Evaluating the effect of an educational interventional program for parent on nutritional behaviors of teenagers in Isfahan in 2016**

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**Objectives:** Family participation is an important element on nutritional education especially for students. Parents have a key role in instilling and understanding healthy eating habits, but yet the use of family participation strategies in the nutrition education was low. Aim of this study is determining the effect of parental educational intervention program for parents on adolescents' nutritional behaviors in Isfahan in 2016.

**Materials and Methods:** This study was a kind of field trial that conducted on 63 girl teenagers from junior high schools of Isfahan in 2016 that were randomly divided into two groups of intervention and control. The data collection tool which was a researcher made questionnaire was completed in both groups before and one month after the intervention. The intervention included three training sessions for parents and giving educational CD and forwarding SMS. To analysis of data independent t-test and paired t-test were used.

**Results:** Paired t-test showed that in intervention group the average score of fruit ( $p=0.03$ ) and in control group the average score of vegetables

( $p < 0.05$ ) were significant statistical difference, but in other aspects of nutritional behaviors was not a significant difference. Independent t-test showed that after intervention, mean scores nutritional behavior of adolescent girls in both groups had no significant differences.

**Conclusion:** No significant difference was in the nutritional behaviors before and after the intervention. So, just educating the parents is not enough for achieving appropriate nutritional behaviors in the adolescents.

**Keywords:** field trial, nutritional behaviors, parents, adolescent.

### The effect of digital educational package on generating motivation for taking vitamin D pill

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**Objectives:** The significant changes that occur in one's adolescence and insufficient vitamin intake in this period can lead to various diseases; therefore, the present study aims at investigating the effect of using the Digital Educational Package on generating motivation for taking Vitamin D pills.

**Materials and Methods:** The present study is an applied, quasi experimental research. Samples of the study include 50 students from among 120 female students of 10<sup>th</sup> grade from Niayesh Technical School located in the 2<sup>nd</sup> region of Tehran, in 95-96 educational year (the students were randomly divided into 2 groups of 26, one as experimental and the other as the control group). The Digital Educational Package developed in Adobe Director by the researcher was distributed among the members of the experimental group; the result of the Package on generating motivation for taking Vitamin D pills was then evaluated using Valerland Motivational Questionnaire and a test developed by the researcher according to the comparison between grades of experimental and control group members.

**Results :** According to results of the pre-test, the students of the two groups had low levels of motivation for taking Vitamin D pills. After receiving the treatment (i.e. the Digital Educational Package), however, the data analysis showed that the effect of the Package was  $F=625.1924$  and  $p > 0.001$  on the inner motivation of the experimental group, and  $F=0.397$  and  $p > 0.0$

1 on the lack of motivation of the experimental group (which is statistically meaningful but, meaningless in terms of outer motivation).  $F=454$  and  $p < 0.05$ , the inner motivation for taking Vitamin D pills in the experimental group increased and the lack of motivation for taking Vitamin D pills decreased; the outer motivation in the experimental group was not affected. In analyzing the data, multivariate covariance analysis (MANCOVA), single-variant (ANOVA), SPSS as well as Pillais, Wilks Lambda, and Hotelling's tests were used.

**Conclusion:** According to the abovementioned results, the study demonstrates the positive effect of Digital Educational Package on motivation for taking Vitamin D pills. Similar packages can increase the motivation for taking Vitamin D pills just as the Digital Educational Package does, and, accordingly, prevent vitamin intake deficiency and its serious consequences.

**Keywords:** Motivation, Vitamin D, Digital Educational Package

### Nutrition Education to mothers about child care home chemotherapy to prevent nausea and vomiting

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**Objectives:** Nausea and vomiting are common side effects of chemotherapy. Chemotherapy-induced nausea and vomiting; due to health complications such as electrolyte imbalances, malnutrition, dehydration, fatigue and injury of the esophagus. Physical and psychological effects caused by chemotherapy in patients starting chemotherapy because of fear of rejection or resistance to anti-cancer treatment programs. Therefore, prevention of nausea and vomiting in improving the treatment and prevention of progression and survival of these patients were admitted to the frequent fluctuations helpful

**Materials and Methods:** This study is a clinical trial with two groups' control and intervention. 30 mothers of children with cancer undergoing chemotherapy in the intervention group and 30 mothers in the control group were. Protocol and Training Guide care of cancer

patients in three empowerment sessions with focus on complications: nausea, vomiting. The program was developed and based on the Process of empowerment as conceptualized by Gibson's theory program was composed of 4 steps. Data using standard questionnaire chemotherapy side effects in three stages before, during and after the intervention in both groups were collected. Data Using Spss Version 18 and Spearman's correlation test and Friedman test one-way analysis were analyzed.

**Results:** %6 1/7 of males and %38/3 were female. The mean age of the patients studied  $5/6 \pm 3/23$  years and the average age mothers for the  $32/1 \pm 8/08$  was. Average side effects in intervention group after the intervention lower than the control group. Nausea was decrease from 53/7% to 26/3%, vomiting from 66/7% to 33/3%. Intervention group has been shown significant differences between incidence rate side effect before and after the intervention ( $p < 0/001$ ).

**Conclusion:** The educational program can help the main mothers to discover and use critical thinking skills, enhance their ability and increase adherence, which results in decrease. Chemotherapy causes gastrointestinal side effects in children.

**Keywords:** nausea, vomiting, Chemotherapy, Child, Nutrition education

### The prevalence of vitamin D deficiency in Iran, A literature review

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**Objectives:** Vitamin-D deficiency is a common medical condition worldwide. In Iran, it has been

reported that between 30-90% of people have vitamin-D deficiency. However, its distribution in different parts of the country and among different age and regional groups is unclear. Therefore, the aim of this study was to review the recent literature of vitamin-D deficiency in Iran.

**Materials and Methods:** The literature review was conducted using Web of Science, PubMed-Medline, Scopus and Scientific Information Database (SID) with a cut-off date of November 2016 to identify articles on vitamin-D status in Iran published in the last 10 years. Studies in English and Persian that reported vitamin-D levels in male and female subjects of all age groups and in healthy populations were included.

**Results:** From 325 studies that were identified; 82 articles met the inclusion criteria. A high prevalence of vitamin-D deficiency was reported, in some regions this was reported as >90%, and was found in all age groups and in all regions of Iran.

**Conclusion:** This review highlights the very high prevalence of vitamin-D deficiency in Iran. It will be important to recognize the importance of vitamin-D deficiency as a major public health problem in Iran.

**Keywords:** Vitamin-D deficiency; Iran; Review.

### Assessment of Nutritional Status of Patients on Hemodialysis by Patient-Generated Subjective Global Assessment: a Hospital-Based Study

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**Objectives:** Hemodialysis patients are at increased risk of abnormal nutritional status due to numerous causative factors, both nutritional and non-nutritional. They frequently suffer from malnutrition and poor nutrition as one of the most serious health problems of these patients, increases morbidity and mortality. Early diagnosis of malnutrition can be important for nutritional supports in hemodialysis patients. Therefore, the present study aimed to evaluate



the nutritional status and assess the prevalence of protein-energy malnutrition in hemodialysis patients using subjective global assessment.

**Materials and Methods:** This cross-sectional study was carried out in 64 dialysis patients in hemodialysis and nephrology wards of the Imam Reza Educational Hospital of Tabriz University of Medical Science in the spring 2017. Routine clinical data and anthropometric parameters included height, body weight, triceps skin fold thickness, mid arm circumference, mid arm muscle circumference % and body mass index (BMI) were collected. Nutritional screening and assessment were performed by Patient-Generated Subjective Global Assessment (PG-SGA) as the gold standard to diagnose malnutrition.

**Results:** In total, 64 patients were assessed using SGA: males, n = 38; females, n = 26; mean (SD) age 69.7 (9.6) years and mean (SD) BMI 21.0 (3.4) kg m<sup>-2</sup>. The findings of PG-SGA showed that 21.87% (14) were well nourished and 48.44% (31) were moderately or suspected of being malnourished and 29.69% (19) were severely malnourished. Weight and BMI of patients with malnutrition were significantly lower than other patients (P=0.01). Mean calorie intake and calorie requirement were 1777 ± 428.48 and 1805.7 ± 311.3, respectively. It was found that the serum albumin level correlate well with the middle arm circumference (r = 0.31, P = 0.02).

**Conclusion:** This study showed that the prevalence of malnutrition (78.13%) was high in hemodialysis patients. Thus, regular and careful assessment of nutritional status is warranted in these patients.

**Keywords:** Nutritional status, Hemodialysis patients, Subjective Global Assessment, Malnutrition

### Nutrition and Exercise

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**Objectives:** World-class athletes know that success depends on training and nutrition. They carefully choose the foods they eat, so the right combination of nutrients will fuel them to success. Take some tips and transform eating habits into a world-class diet. By eating wisely, you will reap the benefits of being properly fueled. Maximize muscle growth, aide recovery and replenish glycogen stores, and you'll have the energy and endurance to power you through your workouts and athletic endeavors.

**Materials and Methods:** This study is a systematic review articles on the site and journals and related books have been made. 40 articles by searching electronic databases, SID, Magiran, Pubmed and Iranmedex from 2000 to 2017 found that 22 articles were reviewed.

**Results:** Food eaten before exercise should be relatively low in fat and fiber, moderate in protein and relatively high in carbohydrate to maximize maintenance of blood glucose. Within 30 minutes after exercise, dietary goals are to provide adequate fluids, electrolytes, calories, protein and carbohydrates to replace muscle glycogen and promote recovery.

**Conclusion:** Food eaten before exercise provides adequate material for body.

**Keywords:** Nutrition, Exercise, athletes

### Effect of a hot meal on improving nutritional characteristics in rural children preschool programs in villages Ghochan city in 2016

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**Objectives:** Malnutrition is a global problem with destructive consequences. Therefore, the effect of a hot meal in beside nutrition education will play an important role in improving indices malnourished.

**Materials and Methods:** This study is cross-sectional. According to the questionnaire sent from Province monitoring measurements (height and weight) was carried out in two steps in 20 kindergarten Village Ghochan. the beginning of the first phase of the project was done in November 2015, the second step was performed 4 months later in Mar 2016. The questionnaires were collected and were analyzed using ena program.

**Results:** In the first stage were wasting (2/2%) children with stunting, (5/2%) children with underweight, (4.6%) child. And secondly, (2/2%) children stunting and (2/5%) children underweight and (2/8%) were wasting. The prevalence of stunting in the first stage (2/2%) than the second (2/2%) had not a significant change. The prevalence of underweight in the second stage (2/5%) is lower than the first stage (5/2%). Prevalence of wasting in the second (2/8%) is lower than the first stage (4/6%).

**Conclusion:** Improved indicators of underweight and wasting in the second stage than the first stage shows that with training mother with children less than 6 years, training employees in different parts of the correct nutrition and proper

eating pattern and participation and cooperation agencies outside part can improve the nutritional status of children and their health steps effective harvest.

**Keywords:** stunting- underweight - wasting - Malnutrition

### **Association of genetic variants in ABCB 1/MDR 1 with poor prognosis in patients with esophagus squamous cell carcinoma**

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**Background:** Esophageal cancer (EC) is highly prevalent and among the leading cause of cancer death in the developing countries. It has been reported that smoking, alcohol consumption, hot tea drinking, red meat intake, inadequate consumption of fresh fruit and vegetables, poor oral hygiene, low socioeconomic status, and genetic variants are related to a higher risk of esophageal squamous cell carcinoma (ESCC). Particularly ATP-binding cassette superfamily (ABC) is involved in transferring drugs, detoxification, regulation of protein synthesis, and cell resistance. Rs2032582, which is a tri-allelic missense variant on ABCB 1 gene, has reported to be associated with drug resistance. Here we explored the association of ABCB 1

rs2032582 with ESCC for the first time in 376 subjects, with and without ESCC.

**Materials and Methods:** DNA was extracted from ESCC patients and genotyped by TaqMan real-time PCR. Kaplan Meier was applied to analyze overall survival and progression-free survival followed by log-rank to compare the data. Logistic regression was utilized to assess the relationship between ESCC risk and genotypes .

**Results:** Our data showed that ESCC patients had a higher frequency of a T/A (TT/TA/AA) genotype for rs2032592 than individuals with GG-genotype. There were no associations between patients BMI and genotypic frequencies. Furthermore patients with TT/TA/AA genotype had poor disease-free survival (p.value=0.016) in comparison with GG genotype.

**Conclusion:** We demonstrated the significant association of ABCB 1 rs2032582 with prognosis of ESCC patients, although we cannot exclude the possible influence of dietary intake and habit.

**Keywords:** Esophagus Squamous cell carcinoma, ABCB 1, rs2032582 ,malnutrition

### **A genetic polymorphism in CYP 1B 1 gene as a biomarker in patients with esophagus squamous cell carcinoma: an Iranian Mashhad cohort study conducted over 10 years**

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**Objectives:** Esophageal cancer (EC) has been reported as the eighth most common cancer universal. It has been reported that diet and lifestyle are among the major risk factors for EC. Large amounts of daily intake of fruits and vegetables have been suggested to prevent Esophageal cancer. In this respect, the enzyme cytochrome P450, family 1, subfamily B, (CYP 1B 1) plays a role in metabolic procedures that involve some fruit components and produce substances that are suspected of having anti-cancer activity. CYP 1B 1 has been shown to play an important role in NADPH-dependent mono-oxygenation of a variety of substrates including steroids, fatty acids, xenobiotics and metabolic pathways. With this background, genetic variants in CYP 1B 1 gene are found to be associated with the risk of developing several malignancies. Therefore in the present study, we investigated the impact of CYP 1B 1-rs 1056836 on esophagus squamous cell carcinoma (ESCC) patients.

**Materials and Methods:** overall 317 subjects, with and without ESCC were recruited. DNA was extracted and genotyped via Real-time PCR-Based Taq Man. Kaplan Meier curves were utilized to assess overall and progression-free survival. To evaluate the relationship between patients clinic pathological data, genotypic frequencies, disease prognosis, and patients survival, Pearson chi-square and t-test were used. Logistic regression was utilized to assess the association between the risk of ESCC and genotypes.

**Results:** the genotypic frequency for GG, GC, and CC are respectively 58.6%, 29.8%, 11.5% in the healthy group and 51.8%, 36.14% and 12% in ESCC group. With respect to the recessive genetic inheritance model, an association between the GG genotype and stage of ESCC were found. Also, statistically significant results were not found for this variation and risk of ESCC. Patients with GG genotype had a decreased risk of nodal metastasis in comparison with patients with CC/CG genotype, although this link was not statistically significant.

**Conclusion:** Our findings illustrated the correlation of CYP 1B 1-rs 1056836 as a potential biomarker for ESCC patients, supporting further studies in larger populations in different ethnic groups. Moreover, further investigations are warranted to evaluate the association of emerging marker with dietary intake and lifestyle.

**Keywords:** cytochrome p450, esophagus squamous cell carcinoma, dietary intake, lifestyle

### **The combination of non-invasive radio-frequency and ultrasound cavitation ameliorates the condition of obesity**

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**Objectives:** Different non-invasive body contouring techniques are being used for reduction of subcutaneous fat, including radiofrequency and ultrasound cavitation. The aim of current study was to assess the effects of combined RF and USC on different anthropometric indices.

**Materials and Methods:** 134 obese and overweight participants were enrolled and divided into four groups: abdomen and flanks (group 1), abdomen and hips (group2), abdomen and thighs (group3) and arms (group4). The participants received RF/USC twice a week for 5 weeks with a low calorie diet.

**Results:** in results except for hips circumferences we observed a significant decrease in abdomen, waist, thighs and mid arm circumferences after treatment with combined RF and USC therapy. Although no statistically significant difference was detected between 4 groups for fat mass and body weight before and after treatment.

**Conclusion:** Our findings demonstrated that, combined use of RF and USC in each session after 10 sessions with this method could reduce abdomen, waist, thighs and arm circumferences and improve body contouring.

**Keywords:** radiofrequency, ultrasound cavitation, obesity/overweight, anthropometric parameters

### **Effect of conjugated linoleic acid supplementation on serum leptin concentration: a systematic review and meta-analysis.**

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**Objectives:** Conjugated linoleic acid (CLA) have attracted researchers for their effect on circulatory hormone-like peptides affecting weight control. We conducted a systematic review and meta-analysis on randomized controlled trials assessed the effects of conjugated linoleic acid supplementation on serum leptin concentration.

**Materials and Methods:** We searched Ovid, PubMed/Medline, SCOPUS, Google Scholar, and ISI data bases up to January 20 17. The searches included articles conducted among human adults, and studies on the effect of conjugated linoleic acid on serum leptin concentrations as outcome variables. The mean changes' variance in leptin was computed assuming a correlation coefficient of 0.8. To account for between-study variation, the method of DerSimonian and Laird random effects model was used to calculate pooled estimates and 95% confidence interval.

**Results:** Eleven trials with thirteen effect sizes were pooled in this meta-analysis. CLA supplementations could not reduce serum leptin levels significantly (-0.12 (ng/ml); 95% CI: -1.29, 1.05; P=0.837). However, the impact of CLA supplementation differed by sex and body mass index (BMI) status. Compared with control group, CLA administration reduced serum leptin levels significantly in trials that conducted either among male (-0.86 (ng/ml); 95% CI: -1.11, -0.62; P<0.0001) or among overweight individuals (-1.37 (ng/ml); 95% CI: -2.55, -0.20; P=0.022) or lasted for less than 8 weeks (-0.90 (ng/ml); 95% CI: -1.64, -0.17; P=0.0016).

**Conclusion:** In conclusion additional RCTs that are well controlled for energy intakes may be necessary to explain the cause of short- and long-term effects of conjugated linoleic acid.

**Keywords:** Leptin, Meta-analysis, Systematic review, conjugated linoleic acid.

### Investigation and comparison of lethal effects and toxicity of Nanomicelle Curcumin, Sorafenib and the combination of Nanomicelle curcumin with sorafenib on HUH7 cell line also gene expression levels of cyclin D 1 after treatment with Nanomicelle curcumin and sorafenib

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**Objectives:** The most common type of liver cancers, accounting for approximately 75% of all primary liver cancers, is HCC, there has been an alarming increase in HCC cases in IRAN.

There exists a critical need to investigate and evaluate possible alternative chemopreventive and therapeutic strategies which may be effective in the control of liver cancer. HCC, most often, develops and progresses in a milieu of oxidative stress and inflammation. Phytochemicals, such as dietary polyphenols endowed with potent antioxidant as well as anti-inflammatory properties, provide a suitable alternative in affording alleviation of HCC. Curcumin, the principal polyphenolic curcuminoid, obtained from the turmeric rhizome *Curcuma longa* has long been used to cure several chronic ailments, such as neoplastic and neurodegenerative diseases. Liver cell carcinoma is one of the non-definitive treatments and is often diagnosed in the terminal stages, in addition, the response of this tumor to common chemotherapy regimens, unfortunately is low. The sorafenib medication prescribed for these patients, like most chemotherapy drugs and The high price as well as many side effects that supply and are difficult for patients. On the other hand, the properties of the Nanomicelle curcumin are characteristic The anticancer drug has been considered by many researchers. Nanomicelle curcumin, in addition to its low cost, has very low side effects due to multiple molecular targets, its therapeutic effects have been proven in many cases. In this study, we have compared the effects of Nanomicelle curcumin, sorafenib and their combination on the cell line of liver cells, and examine the extent of expression of the Cyclin D 1 gene in the presence of these three compounds. To investigate and compare the Lethal effects and toxicity of Nanomicelle curcumin the drug sorafenib and the combination of Nanomicelle curcumin with sorafenib on HUH7 cell line And to study gene expression levels of cyclin D 1 after treatment with Nanomicelle curcumin and sorafenib.

**Materials and Methods:** The cell line after treatment with different concentrations of the two drugs, using MTT, LD<sub>50</sub> of Nanomicelle curcumin and sorafenib was founded. in the next step RNA was extracted from treated cells with LD<sub>50</sub>, After synthesis of DNA from RNA, And Real time PCR, Gene expression levels were calculated.

**Results:** MTT test demonstrates that, the relative similarity lethal dose of the two drugs together was Good. Real time PCR gene expression data



related to cyclin D 1 relative to the reference gene GAPDH, calculated with  $\Delta\Delta C_T$  DNA assay, Gene expression compared to sorafenib, and Nanomicelle curcumin and compound of them were calculated respectively. The statistical analyzes ANOVA statistical difference was found between the three groups. according to Tukey test were also statistically different between groups ( $P < 0.001$ ). The results showed that the  $LD_{50}$  of Nanomicelle curcumin and in combination with sorafenib -treated cell lines HUH7, Cyclin D 1 gene expression than when the cell line is treated with sorafenib alone, can be significantly reduced.

**Conclusion:** After animal test and conformation of the laboratory results curcumin Nanomicelle alone or in combination with Sorafenib might have the same or greater cytotoxic effects as Sorafenib alone and reduce the expression of the desired gene Nanomicelle curcumin. As an add-on therapy to the standard drug Sorafenib to increase therapeutic effects for patients.

**Keywords:** Hepatocellular carcinoma, HUH7, Nanomicelle curcumin, Real time PCR, cyclin D 1

#### Preparation of a eco-friendly nanocomposite from soluble soy bean polysaccharide/ Cloisite 30B and evaluation of its antimicrobial and anti-mold activities

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**Objectives:** Addition of nanoparticles to composites formulation could profoundly enhance their performance. Incorporation of nanoparticles to composites matrix could profoundly reinforce their anti-microbial activity.

**Materials and Methods:** In this work, the antibacterial activity of soluble soybean polysaccharide (SSPS)/cloisite 30B against some standard strains of bacteria (*Escherichia coli* PTCC 1330 ATCC 8739, *Bacillus subtilis* PTCC 1023 ATCC 6633 and *Pseudomonas aeruginosa* ATCC 9027 PTCC 1074).

**Results:** The results revealed that the antibacterial activity of tested samples against these bacteria was strongly dependent on the nanoparticle concentration. The SSPS/cloisite 30B inhibited bacterial growth of *Bacillus subtilis* PTCC 1023 ATCC 6633 at low concentration level (0.008%). With increase of nanoparticle up to 4.5% (28.1 mg/ml), the bacterial counts decreased. This bactericidal activity is low when compared to Eritromycin as a positive control. The effect of cloisite 30B concentration on anti-mold activity against *Aspergillus niger* ATCC 16404 and *Penicillium expansum* was also evaluated. The results anti-mold activity of the nanocomposites samples illustrated that SSPS-cloisite 30B nanocomposite could not prevent from the growth of tested molds.

**Conclusion:** In conclusion, SSPS/cloisite 30B nanocomposite films can be introduced as an eco-friendly antimicrobial packaging that can be used to extend the shelf life of food products.

**Keywords:** Antimicrobial activity; Cloisite 30B; soluble; Soybean polysaccharide.

#### Physical and antimicrobial properties of soluble soybean polysaccharide/ nanoclay Na<sup>+</sup> bionanocomposite

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**Objectives:** Literature review revealed that with the incorporation of montmorillonite (MMT) into nanocomposites, films' physical and thermal properties profoundly improved.

**Materials and Methods:** In the present work, physical and antimicrobial properties of biodegradable soybean polysaccharide (SSPS) nanocomposites prepared by the different



content of nanoclay Na<sup>+</sup> (MMT) nanoparticles were investigated.

**Results:** Due to low level of water vapor permeability of MMT/SSPS, it can be found that this nanocomposite can be introduced as appropriate packaging material in foodstuff. The results of antimicrobial test indicated that prepared nanocomposites had no antibacterial activity in comparison to Streptomycin and tetracycline

**Conclusion:** The results illustrated that the MMT/SSPS nanocomposites can be introduced as appropriate packaging material for food products with high moisture sensitivity.

**Keywords:** Physical properties; Antimicrobial activity; Nanoclay Na<sup>+</sup>; soluble soybean polysaccharide

### **Innovation of Gold Nanoparticle-Organophosphorus Hydrolase (OPH) Nanobioconjugate for Detection & Detoxification of Organophosphore (OP) in Food Products**

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**Objectives:** In recent years, nanoparticles (NPs) have increasingly found practical applications in technology, research and medicine. One of the most potential of nanoparticles is their capabilities in detection and detoxification of various toxins such as Organophosphore (OP) Neurotoxicant. Due to high critical hazards in exposure of OP Neurotoxicant, it is needed to develop and promote Nano biosensors for detection and detoxification of OP Neurotoxicant in food products, water resources and etc.

**Materials and Methods:** In this study, we developed two gold-organophosphorus hydrolase (OPH) enzyme nanobioconjugate using purified OPH coated with 10±2 nm-spherical cystamine-gold nanoparticle. Gold nanoparticles were synthesized by reduction of tetrachloroauric acid by trisodium citrate. OPH was purified from the soil isolated bacteria by salting out method and ion exchange chromatography. Glutaraldehyde linked to OPH; Then cystamine was linked to gold nanoparticles and Glutaraldehyde-OPH, by its sulfur and -NH<sub>2</sub> group respectively.

In the next step utilizing comarin\_1 as a fluorescence comparison inhibitor of OPH

enzyme approved a proper function of synthesised nanobioconjugate.

**Results:** Conclusive Assay using spectrofluorometric apparatus showed Innovative Nano biosensor detected final concentrations 0 - 150 - 300 - 450 - 600 - 750 - 900 - 1050 nM paraoxon (selectivity substrate of OPH enzyme) in OP toxified food products and water resources. Because in the presence of paraoxon, comarin-1 displaced from the active site of the OPH enzyme which resulting to decrease in the fluorescence intensity of comarin-1.

In another method, Organophosphore(OP) Toxified food products and water resources assay using spectrophotometric apparatus (absorbance peak at 450 nm) showed purified OPH and two nanobioconjugate can decompose OP toxins of diazinone and paraoxon.

**Conclusion:** The obtained results showed that gold nanoparticle-OPH nanobioconjugate in addition to comarin-1 could be used efficiently for detection of OP neurotoxicant (laboratorial spectrofluorometric method). Free purified OPH and gold nanoparticle-OPH nanobioconjugate have capability of detoxification of OP toxified food products & water resources too (use in food industry).

**Keywords:** Biosensor; Nanobioconjugate; Gold nanoparticles; Organophosphorus hydrolase; Food products.

### **Food-mediated synthesis of Fe<sub>3</sub>O<sub>4</sub> nanoparticles and investigation of their *in vitro* cytotoxicity effects**

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**Objectives:** Superparamagnetic iron oxide nanoparticles (SPIONs), are attractive materials

with significant potential can be used in various medical and industrial applications.

**Materials and Methods:** In this paper, SPIONs ( $\text{Fe}_3\text{O}_4$ ) were synthesized by a "green" co-precipitation method in aqueous starch solution as a food media.

**Results:** Powder X-ray diffraction (PXRD) patterns indicated that the synthesized samples were pure  $\text{Fe}_3\text{O}_4$  with a spinel structure, and the coating of starch did not undergo any phase change. Fourier transform infrared (FTIR) spectra confirmed the formation of starch coated  $\text{Fe}_3\text{O}_4$  nanoparticles. FESEM micrographs illustrated the formation of nanoparticles in the size range of below 25 nm. Magnetic measurements revealed that the saturated magnetization of the starch-SPIONs reached 36.5 emu/g. The non-toxic effect of SPIONs concentration below 50 and 100  $\mu\text{g}/\text{ml}$  was observed in the studies of *in vitro* cytotoxicity on normal and cancerous cell lines, respectively.

**Conclusion:** This study suggests a simple method to fabricate starch-SPIONs. Besides, the dose dependent toxicity of the nanoparticle made it suitable candidate for various medical applications.

**Keywords:** Superparamagnetic iron oxide nanoparticles (SPIONs), Food; Starch, Powder X-ray diffraction (PXRD), *In vitro* cytotoxicity

### Phytosomal curcumin inhibits cell growth in pancreatic cancer via Cyclin D 1

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**Objectives:** Pancreatic cancer (PC), although infrequent, has a very poor prognosis, making it currently one of the fourth or fifth most common causes of cancer mortality in developed countries. In fact, pancreatic cancer is anticipated to move from the fourth to the second leading cause of cancer death in the United States by 2020. In spite of the large number of preclinical

and clinical studies focused on the improvement of existing therapies and the development of new therapeutic strategies, pancreatic adenocarcinoma remains an incurable lethal disease. Therefore, it is necessary to identify new drugs with less toxicity and more efficacy. Curcumin is a major constituent of *Curcuma longa*, which exerts its anticancer properties in various human cancers including PC. However, instability at physiological pH, low solubility in water and rapid metabolism results in a low oral bioavailability of curcumin. The aim of the present study was to evaluate the therapeutic potential of the phytosomal curcumin in PC *in vitro* model.

**Materials and Methods:** MiaPaCa-2 cells were cultured in F 12 medium with 10% FBS and 1% Penicillin and Streptomycin and incubated at 37 ° C and 5% CO<sub>2</sub>. In order to evaluate the viability of cells treated with different concentrations of phytosomal curcumin, the MTT assay was used. real-time RT-PCR was utilized to measure the level of Cyclin D 1 expression involved in cell cycle regulation.

**Results:** Curcumin inhibited MiaPaCa-2 cell growth, as detected by MTT assay. Moreover, phytosomal curcumin suppressed Wnt pathway via modulation of CyclinD 1.

**Conclusion:** our data showed the ability of the novel formulated form of curcumin in PC cells, supporting further studies on this potential therapeutic agent the in treatment of pancreatic cancer.

**Keywords:** Pancreatic cancer, phytosomal curcumin, MiaPaCa-2

### Development of a soluble soybean polysaccharide/ SiO<sub>2</sub> bionanocomposite: Appearance, mechanical and anti-mold properties

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**Objectives:** Eco-friendly packaging systems can be manufactured from various materials such as carbohydrates, proteins, resins and lipids. Polysaccharide polymers have high advantages

in comparison to other resources. For example, these materials have good physical properties, convenient structure. Therefore, mechanical and color properties of a film produced by a new source of polysaccharide were investigated. Furthermore, anti-mold activity of the developed films was tested.

**Materials and Methods:** The evaluated composite films were prepared by casting technique. In the next step, mechanical and appearance attributes and also anti-mold activity of the samples were analyzed.

**Results:** The results of mechanical analysis showed with increasing MMT concentration up to 10 wt. %, storage modulus of the samples increased. Addition of nanoparticles into SSPS films resulted in an increase in lightness, greenness and yellowness of the samples. Based on MIC test, Na<sup>+</sup>-MMT did not show any anti-mold activity.

**Conclusion:** The results of the present research proposed that prepared films may be applied as novel food packaging materials with appropriate mechanical and appearance properties.

**Keywords:** Mechanical properties; Anti-mold activity; SiO<sub>2</sub> nanoparticle; soluble soybean polysaccharide.

#### **Anti proliferative activity of novel formulated form of curcumin in hepatocellular carcinoma**

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**Objectives:** hepatocellular carcinoma is among the leading cause of cancer related death, supporting the need for identification of novel agents for targeting key signaling pathways to either improve the efficacy of the current therapy, or reduce toxicity. There is some evidence that curcumin may have antitumor activity in liver cancer, although it is associated with low bioavailability. The aim of current study was to evaluate anti proliferative activity of novel formulated form of curcumin, phytosomal curcumin, in Huh7.

**Materials and Methods:** The cytotoxic activity of phytosomal curcumin was assessed by MTT

assay. The expression pattern of Cyclin D 1 was studied by real time RT-PCR method.

**Results:** The results of this study showed that phytosomal curcumin inhibits cell proliferation in a dose dependent manner. Also, the expression of Cyclin D 1 was significantly reduced in the curcumin-treated group compared to control group.

**Conclusion:** We demonstrated that phytosomal curcumin was able to inhibit the cell proliferation of Huh7 cells through Wnt signaling pathway.

**Keywords:** Curcumin Phytosome, hepatocellular carcinoma.

#### **A genetic variant in CDKN2A/2B locus was associated with poor prognosis in patients with esophageal squamous cell carcinoma**

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**Objectives:** Here we explored the association of rs 108 1 166 1 in CDKN2A/B gene in patients with esophageal squamous cell carcinoma (ESCC).

**Materials and Methods:** Data in computer-based patient records (CPRs) of Mashhad University of Medical Sciences were used to retrieve ESCC patients. One hundred and twenty one ESCC



patients and two hundred and eight healthy subjects were recruited. DNA was extracted, followed by genotyping. Overall survival (OS) and progression-free survival (PFS) curves were analyzed by Kaplan–Meier method, and compared using log-rank tests.

**Results:** In order to explore whether there was an association between CDKN2A/2B Rs 108 1 166 1 (C/T) polymorphism and ESCC, genotyping was performed in all the subjects. The study included a total of 273 age and sex-matched subjects ( 12 1 ESCC patients and 208 healthy controls). Minor allele frequencies (MAF) for T allele were 0. 16 for rs 108 1 166 1. The frequencies of CC, CT, and TT genotypes for rs 108 1 166 1 were 8.9, 13.2, and 77.9 %, respectively in the ESCC group, while these frequencies in control group were 4, 25.3, and 70.7%, respectively. We then evaluated the genotype distribution of the CDKN2A/B polymorphism with respect to clinic pathological features of ESCC patients under recessive genetic model. This subgroup analysis showed that 70% of women carried a TT genotype and 80% of patients who had family history had a TT genotype, although this association with clinical outcome was not significant.

**Conclusion:** We observed a lack association between CDKN2A/2B Rs 108 1 166 1 (C/T) polymorphism and ESCC.

**Keywords:** esophageal squamous cell carcinoma, risk marker, C

### Mild hyperhomocysteinemia in Dialysis Patients: A Single Center Study

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**Objectives:** Hyper-homocysteinemia is common in end stage renal diseases. We aimed to determine the prevalence of hyper homocysteinemia in dialysis cases and define independent risk factors of the development of hyper homocysteinemia.

**Materials and Methods:** The total plasma homocysteine values were measured in 46 dialysis patients including 20[43.4 %] girls and 26[56.6 %] boys aged 1.6-25 [ 19.9±6.5] years based on two different reference values for children [age dependent] and adults [cut off point of 15 µmol/L].

**Results:** Using the reference values for children, 26 cases [56.2 %] had hyper homocysteinemia including 4 1.6% of CAPD and 2/3 of hemodialysis patients with no significant difference based on age, gender, duration and modality of dialysis, and dosage of folate supplement [p>0.05 for all]. Using a cut-off point of 15 µmol/L, hyper homocysteinemia was reported in 30.4% of the patients including 1 1 hemodialysis and one CAPD [P=0.022], 10 out of 19 girls [52.6%%] and 4 out of 26 boys [ 15.4%] [p=0.063], but logistic regression analysis did not show any significant differences in the incidence rate of hyper homocysteinemia according to the modality of dialysis and gender [P=0.998 and 0. 137 respectively].

**Conclusion:** We found mild hyper-homocysteinemia as a common finding in dialysis patients; also, the prevalence of hyper-homocysteinemia was comparable in children and young adults. However, we noted that hemodialysis patients and females were more prone to more intense elevations of plasma homocysteine levels. We found that neither gender nor modality of dialysis played a role as risk factors for development of hyper-homocysteinemia in children and young adults.

**Keywords:** Hyper-homocysteinemia; Child; Hemodialysis; Peritoneal dialysis; Adults.

### Incorporating Bioactives into Functional Foods: Pasta from Pigmented Grains

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**Objectives:** Pigmented grains are rich in dietary phytochemicals, and represent a convenient source of phenolics with demonstrated biochemical activities, including inhibition of enzymes involved in carbohydrate metabolism and uptake, and anti-inflammatory properties. We found these features to be abundant in

various pigmented cereals (Abbasi et al., 2016), but assessing feasibility of their transformation into functional foods calls for stable and process resistant incorporation. This study aims at testing whether the properties of bioactive in selected pigmented grains are retained after processing into pasta. This should pave the way to in-vivo studies aimed at assessing the effects of human consumption of these enriched products, including effects on the intestinal microflora.

**Materials and Methods:** Samples Anthocyanin-rich fractions were obtained by combining a dehulling procedure and physical separation. Bioactive-enriched spaghettis (Zanoletti et al., 2017) were prepared by adding 14.2 g of an anthocyanin-rich fraction from purple wheat to 85.4 g of semolina. Phenolic in each sample were extracted with ethanol-HCl. TAC, TPC, and FRAP were assessed on the extracts according to Abdel Aal et al. (2006) and Benzie and Strain (1996). Anthocyanin profiles were obtained by HPLC (Hosseini et al., 2008). Immunomodulatory activity was tested in a transfected Caco-2 cell model (Taverniti et al., 2014). Inhibitory activity toward pancreatic  $\alpha$ -amylase and intestinal  $\alpha$ -glucosidase was assessed as in Lavelli et al., 2016.

**Results:** Purple wheat was used in this study, as enriched purple wheat fractions had the highest TAC, TPC, and antioxidant activity among the various pigmented cereals used in previous studies. Purple wheat extracts were also very active in  $\alpha$ -amylase inhibition, and in suppressing the response to inflammatory stimulus in our model cell system. All of these properties were retained in the anthocyanin-enriched purple wheat pasta after cooking. In particular, the use of anthocyanin-enriched fractions allowed to obtain a TAC of  $67.9 \pm 0.9 \mu\text{g/g}$  in the cooked pasta. This figure is much higher than what reported for pasta from whole meal purple wheat semolina ( $16.89 \mu\text{g/g}$ ; Ficco et al. (2016)), and accounts for  $\approx 70\%$  retention of the added anthocyanins in the product to be consumed.

**Conclusion:** Using anthocyanin-rich fractions from purple wheat allows improved retention of anthocyanins and of associated biological activities in cooked pasta.

**Keywords:** Bioactives, functional foods, pasta.

#### Antibacterial effect of essential oil of *Ferulago angulata* on *Staphylococcus aureus* growth isolated from subclinical mastitis, in vitro study

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**Objectives:** *Staphylococcus aureus* is one of the important causative agents in mastitis. The purpose of this study was determination antimicrobial effect of *Ferulago angulata* and different common therapeutic antibiotics on growth of *Staphylococcus aureus* isolated from subclinical mastitis cases.

**Materials and Methods:** In this Study the antibacterial effect of *Ferulago angulata* essential oil, aqueous and alcoholic extract on growth of *Staphylococcus aureus* was done and compared with common therapeutic antibiotics such as tetracycline, erythromycin, kanamycin and gentamicin by diffusion disk method. Minimum Inhibitory Concentration and Minimum Bactericide Concentration were tested through tube standard method.

**Results:** Anti-bacterial effect of essential oil and ethanoic extract was increased by dose-dependently. 40mg/ml extract and 20% essential oil are the highest dose with anti-bacterial effect. Extract of *Ferulago angulata* has maximum antibacterial activity on the growth of *S. aureus*.

**Conclusion:** *Ferulago angulata* had remarkable anti-bacterial effect on *Staphylococcus aureus* growth isolated from subclinical mastitis cases. In comparison *Ferulago angulata* essential oil was more powerful than extract. Regarding the fact that antibiotic resistance is growing, *Ferulago angulata* as an herbal plant with anti-bacterial effect could be used in *Staphylococcus aureus* isolated from subclinical mastitis cases.

**Keywords:** Subclinical Mastitis, *Staphylococcus aureus*, *Ferulago angulata*, Antibacterial effect

#### A comprehensive review of the health concerns of potassium sorbate application as important preservative in food products

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**Objectives:** Synthetic preservative is widely used in the food industry to stabilize the freshness, nutritive value, favour and colour and also to prevent from products spoilage. Recently, increased chronic diseases result in concerns of consuming and government about food additives. Fostering tight regulation which still remains controversial due to the high number of studies concerning food additives that produce conflicting results and different interpretations by governments.

**Materials and Methods:** This review aimed assessing of the potassium sorbate (PS) safety by collecting of various investigations on PS from databases such as MEDLINE, Scopus, Science Direct, and Scientific Information Databases (SID) from 1975 to 2017 by using key words such as potassium sorbate, health, diseases and food additives.

**Results:** The results of this review showed that increased intake of PS (>25mg/kg) may induce cytotoxic and genotoxic effects via producing of mutagenic compounds such as 1,4-dinitro-2 methylpyrrole, 4,5-oxohexenoate, inducing of chromosome aberrations, sister chromatid exchange, increased DNA breakage, inducing of inflammatory pathways such as gene expression of NFκB, GADD45α, MAPK8, oxidative stress due to advanced glycation end products (AGEs) activation, other reactive carbonyl compounds such as oxidative glycated intermediate products with the ability to react with free amino groups of proteins and interaction with albumin. The pathogenic roles of aforementioned agents of PS can develop many chronic diseases especially diabetes mellitus and cancers. There is not exact data on source and content of PS intake in Iran.

**Conclusion:** According to this review, it was made to design more investigation to explain the effects of PS on health. Furthermore, it expects that nutritionist determine content of PS intake in Iran to confer with adverse effects and aid to government for establishing exact laws to its application in food industry.

**Keywords:** Potassium Sorbate, Health Concerns, Diseases, Food additives

### **Comparison of antibacterial effect of honey and bee pollen and a mixture of honey and pollen on a number of pathogenic bacteria with antibiotics than Chloramphenicol**

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**Objectives:** The medical resistance due to inordinate use of antibiotics in the recent years led to the necessity of finding a harmless substitute. Honey is one of them. Based on its application in curing various topical and bacterial infections, the goal of the present research is analyzing the antimicrobial effect of honey and pollen Honey on some pathogenic bacteria compared to antibiotic chloramphenicol.

**Materials and Methods:** the honey product (honey and honey pollen) is randomly selected from some bikes received from two areas (Sepidan and Sarvestan of Fars province). The antibacterial impact of honey and honey pollen were evaluated by diffusion in vitro in Mueller Hinton agar medium (MHA) on E. coli bacteria, Bacillus cereus and Pseudomonas. The lack of bacteria growth diameter was measured in millimeters. The test was repeated three times and it was analyzed by SPSS 16 software. In order to compare the lack of bacteria grown diameter average among groups, the one-way ANOVA was used. Since some significant statistical differences were seen among groups, Tukey's test was used.

**Results:** the findings of the research showed that both honey and honey pollen affect the avoidance of bacteria growth in samples. However, the most diameters have been found in honey pollen samples belong to Bacillus cereus (6±0/1 8 millimeter), honey on E.coli (83±0/75 millimeter), the mixture of honey and honey pollen on Bacillus cereus (13 /6±1 /63 millimeter) and chloramphenicol on Bacillus cereus (12 /5±1 /04). The dense sugar solution had no significant effect on avoiding the microbe growth.

**Conclusion:** the results of the present research showed that the honey and honey pollen can have a similar effect in destroying some pathogenic bacteria aside from chloramphenicol.

**Keywords:** Honey, Honey pollen, Antibacterial effects, Chloramphenicol

### The effects of genistein on metabolic features of NAFLD: A review of the literature

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**Objectives:** Genistein, the major soy isoflavone, has emerged as a promising dietary component in management of metabolic disorders. This review aimed to summarize the effects of genistein on metabolic features of NAFLD including obesity, hyperlipidemia and hyperglycemia.

**Materials and Methods:** Databases of PubMed, Scopus and Google scholar were searched up to June 20 17 using the keywords "genistein", "isoflavones", "non-alcoholic fatty liver disease", "insulin resistance", "dyslipidemia" and "obesity". All English-language articles that were conducted in the experimental models as well as randomized control trials (RCTs) were included in the review.

**Results:** In studies conducted in the experimental model of NAFLD, genistein supplementation could significantly reduce the body weight, percentage of body fat and serum levels of triglyceride (TG) and total cholesterol (TC). Although the effects of genistein supplementation on serum levels of low-density lipoprotein cholesterol (LDL-C) and high-density lipoprotein cholesterol (HDL-C), as well as glycemic status varied between studies which had been attributed to the several differences such as the supplementation dosage and duration, and co-administration with other isoflavones including diadzein. In human, only one RCT had assessed the effects of daily supplementation of genistein (250 mg) in 82 NAFLD patients during 8 weeks. At the end of the trial, genistein significantly decreased the body fat percentage, serum TG and insulin, and homeostasis model assessment for insulin resistance (HOMA-IR). However, changes in body mass index, fasting blood glucose, TC, LDL and HDL were not significantly different.

**Conclusion:** This review demonstrated that genistein might be a beneficial dietary component in treatment of the metabolic abnormalities associated with NAFLD. Further RCTs on this topic with larger sample size and longer duration are suggested.

**Keywords:** Genistein; isoflavones; Non-alcoholic fatty liver disease

### Prevalence of abdominal obesity and Metabolic Syndrome in Type 2 Diabetes Mellitus

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**Objectives:** The aim of study determines the prevalence of abdominal obesity and metabolic syndrome (MetS) in people with type 2 diabetes mellitus (T2DM). Abdominal obesity, also known as central obesity, is when excessive abdominal fat around the stomach and abdomen has built up to the extent that it is likely to have a negative impact on health. Visceral and central abdominal fat and waist circumference show a strong association with type 2 diabetes. National Cholesterol Education Program (NCEP) ATP III Criteria, International Diabetes Federation and the World Health Organization (WHO) definitions were used in quantifying the metabolic syndrome and in this study we have used the definition of NCEP-ATP III Criteria

**Materials and Methods:** This cross-sectional study involved 340 type 2 diabetic subjects from the Samen Health Center in Mashhad. Subjects in the age group of 33-86 years were included in the study. Pregnant ladies and Type I Diabetics were excluded from the study. Abdominal obesity, Fasting blood glucose, HbA 1c, Blood lipids (T-cholesterol, triglyceride, HDL-cholesterol) were assessed and anthropometry blood pressure were measured from all the subjects.

**Results:** The Prevalence of abdominal obesity and metabolic syndrome was found to be 76.9% and 53% following NCEP-ATP III Criteria. Prevalence of abdominal obesity and Metabolic Syndrome was higher in women in all age groups. 89.6% of them had HbA 1c > 7 and there was a significant correlation between HbA 1c and abdominal obesity and Metabolic Syndrome ( $p < 0.05$ )

**Conclusion:** There was a high prevalence of abdominal obesity and metabolic syndrome, which explains strategies for promoting healthy eating habits and changing lifestyle with a focus on patients with diabetes type 2.

**Keywords:** diabetes, metabolic syndrome, prevalence, NCEP-ATP III criteria, abdominal obesity



### Multi-spectroscopic and molecular modeling studies of bovine serum albumin interaction with Ascorbyl palmitate (AP) food additive

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**Objectives:** Ascorbyl palmitate (AP) has been used as food additives, antioxidants, reducing agents, flavor stabilizers, dough modifiers, browning inhibitors and color stabilizers in food industry and the possible effect of this additive on the binding to albumin should be taken into consideration.

**Materials and Methods:** for the first time, the mechanism of SA interaction with bovine serum albumin (BSA) has been examined by multispectroscopic and molecular modeling methods under physiological conditions (pH=7.4).

**Results:** Stern-Volmer fluorescence quenching analysis showed an increase in the fluorescence intensity of BSA upon increasing the amounts of Ascorbyl palmitate. The high affinity of AP to BSA was revealed by a binding constant value (KB) ( $4.04 \times 10^2$  at 40°K). The thermodynamic parameters indicated that hydrophobic binding plays a main role in the binding of Ascorbyl palmitate to Albumin. Furthermore, the results of UV-vis spectra confirmed the interaction of this additive to BSA.

**Conclusion:** Molecular modeling study demonstrated that A binding sites play the major central role in the interaction with Ascorbyl palmitate of BSA where these sites have lowest binding energy values and more H-Bonding compared to sites B. Overall, the binding of this food additive to BSA is greatly important in food safety, food chemistry, food science, nutrition, which can lead in the conformational change of BSA.

**Keywords:** Multi-spectroscopic, bovine serum albumin, molecular modeling, Interaction, Ascorbyl palmitate, Food additive.

### Kinetic and thermodynamic study of bovine serum albumin interaction with Ascorbyl

### stearate using surface plasmon resonance and molecular docking methods

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**Objectives:** Ascorbyl stearate (AS) (E 305) is one of the food additives that derived from ascorbic acid (vitamin C) and used in commercial antioxidant preparations. It's used as food additives, antioxidants, reducing agents, flavor stabilizers, dough modifiers, browning inhibitors and color stabilizers. The interaction of bovine serum albumin (BSA) with food additive; Due to the importance of BSA in drug, nutrient and vitamin delivery has attracted increasing research attention at present.

**Materials and Methods:** Therefore, the aim of this study was investigation of BSA interaction with Ascorbyl stearate using surface plasmon resonance (SPR) and molecular docking methods under the imitated physiological conditions. BSA immobilization on carboxymethyl dextran (CMD) hydrogel sensor chip has been carried out after activation with N-hydroxysuccinimide/ N-ethyl-N-(3-diethylaminopropyl) carbodimide.

**Results:** The dose-response sensorgrams of BSA upon increasing concentration of Ascorbyl stearate were attained in SPR analysis. The high affinity of rifampicin to BSA was demonstrated by a low equilibrium constants (KD) value ( $1.45 \times 10^{-4}$  at 3 13°k). The process of kinetic values changing shows that affinity of BSA to Ascorbyl stearate decreased with rising temperature. The positive value of both enthalpy change ( $\Delta H$ ) and entropy change ( $\Delta S$ ) showed that hydrophobic force plays major role in the BSA interaction with Ascorbyl stearate. The positive value of free binding energy ( $\Delta G$ ) was indicative of nonspontaneous and enthalpy-driven binding process. In addition, according to the molecular docking study, hydrogen binding has some contributions in the interaction of Ascorbyl stearate with BSA.

**Conclusion:** The experimental results revealed that BSA has high affinity to Ascorbyl stearate, which confirmed with low value of KD. However, KD of BSA interaction with Ascorbyl stearate



increased upon rising temperature, which showed that affinity between two material decreases upon rising temperatures. The results of thermodynamic and BSA is hydrophobic due to the hydrophobic food additive. Also positive value of  $\Delta G$  confirmed that the binding between BSA and Ascorbyl stearate is enthalpy-driven and nonspontaneous. In addition, molecular docking study showed the involvement of hydrogen binding in the formation of Ascorbyl stearate-BSA complex.

**Keywords:** Kinetic, Bovine serum albumin, Interaction, Ascorbyl stearate, molecular docking, Food additive

### Short-term use of creatine and beta alanine on the level of carnosine in physically active women

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**Objectives:** The purpose of this study was to compare the short-term use of creatine and beta-alanin on the level of carnosine in physically active women.

**Materials and Methods:** 45 women who attended Gym daily aged 18-30 years old were selected and monitored for 3 years. They were randomly given one of these three supplements: creatine supplements, beta-alanine, and simultaneous administration of creatine and beta-alanin supplements. The supplementation protocol for the creatine receptor group consumed 0.3 grams per kilogram of body weight per week in the first week and 0.1 grams per kilogram of body weight per day in the second week. The group receiving beta alanine consumed 0.1 g / kg of body weight per day, and the group receiving combined creatine and beta alanine for 14 days, received 0.1 g / kg body weight of beta alanine daily plus 1 / 0 grams per kg of body weight per day. Food sampling was done for each group at the beginning and at the end of supplementation.

**Results and conclusion:** The result of analysis of variance showed that the short-term use of creatine and beta alanine did not have a significant effect on the level of carnosine.

**Keywords:** Beta alanine, active women, carnosine, creatine.

### Eating and drinking water habits

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**Objectives:** Lifestyle is one of the concepts of social sciences and anthropology which recently has drawn a lot of attention. Lifestyle is based on culture, climate, religion and many more factors. Each culture exhibits different eating habits. In this study we have investigated eating and drinking water habits.

**Materials and Methods:** This study was descriptive and 403 people participated. A face to face questionnaire was filled for each of them and the study took place in Khalil Abad city. The data were analyzed by IBM SPSS software version 22.

**Results:** Based on descriptive analysis, the mean age of the participants was  $36.11 \pm 14.23$  years old. 75.7% of participants were women and 24.3% were men. 15.9% of people immediately slept after eating. 30.5% did not consume any water while dining while 23.1% drink water after eating. 88.8% of people used iodized salt, and the rest used other kinds of salts including mineral salts, sea salts. 48.1% of participants suffered from at least one disease including diabetes, hypertension and joint and back pain. There was a significant relationship between salt intake and history of diabetes mellitus ( $P < 0.001$ ). No relationship was found between timing of water consumption and the history of diabetes ( $P < 0.02$ ).

**Conclusion:** There are few people in the community who are still not using iodized salt. Men do not have physical activity after dining while women have ( $P < 0.001$ ). Health education seems to have made house wives less likely to use salt on the table. While it is recommended that you do not sleep immediately after eating, men are more likely to do that.

**Keywords:** Lifestyle-physical activity-Food and Water

### The anti-cancer effect of crocetin on acute promyelocytic leukemia cells

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**Objectives:** Crocetin, the major carotenoid in saffron, exhibits potent anticancer effects. However, the antileukemic effects of crocetin are still unclear, especially in primary APL cells.

**Materials and Methods:** In the present study, the potential anti-promyelocytic leukemia activity of crocetin and the underlying molecular mechanisms were investigated.

**Results:** Crocetin (100  $\mu$ M), like standard ATRA (10  $\mu$ M) and  $As_2O_3$  (50  $\mu$ M), significantly inhibited proliferation and induced apoptosis in primary APL cells, as well as NB4 and HL60 cells. The effect was associated with the decreased expressions of pro-survival genes Akt and BCL2, the MDR proteins ABCB1 and ABCC1 and inhibition of TDP1, while the expressions of proapoptotic genes CASP3, CASP9 and BAX/BCL2 ratio were significantly increased. Crocetin also significantly inhibited TDP1 activity. In contrast, crocetin at low concentration (10  $\mu$ M), like ATRA (1  $\mu$ M) and  $As_2O_3$  (0.5  $\mu$ M), induced differentiation of leukemic cells towards granulocytic pattern, and increased the number of differentiated cells expressing CD11b and CD14, while the number of immature cells expressing CD34 or CD33 was decreased. Furthermore, crocetin suppressed the expression of clinical marker PML/RAR $\alpha$  in NB4 and primary APL cells, and reduced the expression of HDAC1 in all leukemic cells.

**Conclusion:** The results suggest that crocetin can be considered, alone or in combination with ATRA/ $As_2O_3$ , for preclinical and also clinical testing in APL patients.

**Keywords:** APL; Crocetin; Apoptosis; Differentiation; MDR; TDP1.

### The gluten free and casein free diet in autism

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**Objectives:** Autism is a severe neurodevelopment disorder. Autism spectrum disorder (ASD) is characterized by repetitive behaviors, limited interests, disability in verbal and nonverbal communication and social communication. ASD is more common in boys than girls (5 to 1). Environment and genetics are

the two main factors in etiology of autism. One of the most popular experiments among families with autistic children is the use of gluten and casein free (GFCF) diet. In GFCF diet, the intake of bread, potato and grains are lower but fruit and vegetable intake is higher than regular diet (RD). The exorphins produced during gluten digestion have also been found in the spinal fluid of people with autism and Schizophrenia, Because of increased intestinal permeability. Another finding is the negative effect of gluten on the immune system.

**Materials and Methods:** The google scholar, PubMed, SID, Elsevier, and nature was searched by using autism, gluten free diet, casein free diet and GFCF diet key words. About 50 review and original articles were found and checked.

**Results:** In one study using GFCF diet, the "communication" score was improved. Most of these studies suggested that gastrointestinal (GI) symptoms and psychological disorders of autism were improved with GFCF diet. A few studies, on the other hand, didn't find any significant difference between GFCF and RD consumers. Only two studies reported that gluten free diet could be a negative factor for social communication in patients with predominant social disabilities. Autistic children suffer from micronutrient deficiencies Such as Zn<sup>2+</sup>, Ca<sup>2+</sup>, Fe<sup>2+</sup>, vitamin A, B6, B12, riboflavin, omega3, and probiotics. So they should use supplements and multivitamins. The important point is that 40-55% of these children have deficits in vit D and Ca<sup>2+</sup> even after receiving supplements.

**Conclusion:** To evaluate the effect of GFCF diet, many studies have been done, but with inconsistent results. therefore the efficacy of GFCF diet is not confirmed by scientific researchers, yet. Supplement therapy in autistic children is advised concerning the low levels of Ca<sup>2+</sup> and vitD in these patients.

**Keywords:** autism, gluten free diet, casein free diet, GFCF diet, micronutrient supplements.

### Potential effect of Quercetin supplementation on plasma C-reactive protein: a systematic review and meta-analysis of randomized controlled trials.

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**Objectives:** Inflammation have fundamental role in progress of many chronic diseases and C-reactive protein (CRP) is one of the famous inflammatory agents which is produced in the

liver. Several studies have reported a decreased serum level of CRP with Quercetin supplementation. But in some studies, this effect was not observed. This study was designed to conduct a systematic review and meta-analysis of randomized control trials (RCTs) to confirm the effect of Quercetin supplementation on CRP level.

**Materials and Methods:** We searched the PubMed and Scopus up to July 20 16 to identify RCTs investigating the effect of Quercetin on CRP. Meta-analysis was performed using either a fixed-effect or random-effect model according to I<sup>2</sup> statistic. Weighted mean differences (WMDs) and 95% confidence intervals (CIs) were calculated for net changes in CRP levels.

**Results:** Seven trials with eight data sets and 346 participants met our inclusion criteria. There was no significant differences for CRP reduction between the subjects with Quercetin supplementation and placebo controls [WMD, 0.01 mg/L; 95% CI: -0.18 to 0.21, p = 0.88]. Moreover, analysis in a random effect model (I<sup>2</sup>=48.9%; p=0.05) was not significant [WMD, 0.00 mg/L; 95% CI: -0.35 to 0.35, p=0.99] in comparison with placebo condition. Also, when the studies were categorized according to dose and duration, no significant effect was observed.

**Conclusion:** No statistically significant evidence for the potential effect of Quercetin supplementation in the reduction of CRP were detected in this study. Further larger scale and well-designed studies are necessary to confirm this conclusion.

**Keywords:** C-reactive protein, Quercetin, inflammation

### Relationship between students micro- and macronutrient intake and the dining menu of Bushehr University of Medical Sciences

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**Objectives:** Every person especially students need micro and macronutrient for growth, physical activity and physiological maintenance. Malnutrition leads to limited mental and physical performances. This study is conducted to find out the amount of dietary micro and macronutrients in the foods served in the university dining hall compared to the registered dietary allowance (RDA).

**Materials and Methods:** Thirty students aged 19 to 23 years old were selected randomly from

those who regularly had breakfast, lunch and dinner at university dining hall. A food frequency questionnaire (FFQ) was filled by expert dietician for each student. In addition the weekly menu of the campus restaurant was obtained. The FFQ and menu were analyzed by nutritionist 4 (N4) software. SPSS software version 19 was used to compare the intakes of nutrients. One-Sample T-test was used for statistical analysis.

**Results:** Calorie, Protein, Carbohydrate, fat, Cholesterol, Sodium, Iron, Calcium and Zinc intake from restaurant menu was 2434 Kc (110%RDA), 101.95g (175%RDA), 272.18g (74%RDA), 1045.43mg (26%RDA), 21.14mg (107%RDA), 623.35mg (37%RDA), 8.45mg (92%RDA) respectively. The calorie, Protein, Carbohydrate, Fat, Cholesterol, Sodium, Iron, Calcium and Zinc intake from FFQ were 2754±1142 Kc, 92.34±55.07g, 383.1±197.2g, 105.45±0.28g, 228.42±194.2mg, 2674.04±2623.18mg, 9.28±9.85mg, 920.78±392.58mg, 8.26±3.76mg respectively. There were no significant differences between micro and macronutrients intake from menu and FFQ.

**Conclusion:** The intake of micro and macronutrients in Bushehr University dining hall menu were not as RDA recommendation.

**Keywords:** micronutrient, macronutrient, student, food frequency questionnaire

### Review of Medicinal Plants in the Treatment of Obesity

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**Objectives:** The prevalence of obesity is on rise worldwide, which has led to an increase in the use of medicinal herbs as the treatment method. The purpose of this study is to investigate some herbs that are effective in the treatment of obesity.

**Materials and Methods:** In this study we investigated Pubmed database 2007 to 2017 by using the key words "Medicinal Plants", "Traditional Medicine" and "Weight Loss", "Obesity", "Overweight", "Metabolic Syndrome", "Cardiovascular Diseases," "Type 2 Diabetes" and "High Blood Pressure".

**Results:** Green tea with its polyphenolic components and purple seeds with antioxidant properties contain nutrients that will increase energy consumption in the obese patients.

Fenugreek seeds with high fiber content and rose flowers with oxidative and stress reducing



properties have been shown to have beneficial effects in combating obesity. Capsaicin increases the sense of satiety and reduces the intake of food. Synergism can be effective in treating obesity as an active ingredient in the orange spring, as well as caffeine, due to similar properties with aminogenic catechol.

**Conclusion:** Medicinal plants can be effective in obesity treatment by reducing inflammation, oxidative stress, blood lipids, and improving glucose homeostasis.

**Keywords:** "Medicinal Plants", "Weight Loss", "Overweight", "Obesity"

### **Al-Razi concepts and manuscripts on the effect of nutrition in treatment and health care**

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**Objectives:** The use of nutrition in medical practice has a long history dating back to 6000 years. The great Persian physician and alchemist, Razi (854-925 AD), wrote over 200 books in different branches of science. Some of his works drew attention to the notion that nutrition is an important part of treating diseases. The aim of this study is to introduce his concepts on the effect of nutrition in treatment and health care.

**Materials and Methods:** We searched international databases including PubMed, EMBASE, Cochrane library, and databases in Iranian SID, Magiran and textbooks of Razi using a searching strategy with specific key words from 2000-2015. Analysis of data and quality evaluation of the Literature were performed with content analysis methods.

**Results:** Razi formulated highly developed concepts of nutrition and wrote several special books about food and diet which includes:

1. Food benefits and harms (manfe' al aghzie va mazareha),
2. Medicines for kings (teb al moluki),
- and 3. Foods for illnesses (Ata'me al marza). His writings included detailed instructions on eating fruits before or after a meal (ma iaghdam men al favakeh va al aghzieh va ma yoakhar), food quality and body needs (kefiat al eghteza) and brief facts about foods (al aghziat al mokhtasareh). He believed that when individuals eat only one group of foods at a meal, it is easier for the GI system to digest and absorb the food efficiently. He administered dietary regimes for weight gain and weight loss.

**Conclusion:** Razi attributed great importance to foods in medical practice. Our findings demonstrated that he knew much about nutrition

and diet. Many of his highly developed concepts are scientifically tested and approved today. Publishing a book focusing on nutrition and diet introducing Razi as one of the pioneers in nutritional science will definitely be helpful.

**Keywords:** History, nutrition, Razi, Complementary of alternative medicine

### **Do formula fed infants overeat? Formula amount to provide sufficient vitamin E**

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**Objectives:** Vitamins are essential nutrients that should be obtained from food. Lower or higher intake of these compounds will cause health problems. Vitamin E ( $\alpha$ -tocopherol) is a soluble fat vitamin that serves as a powerful biologic antioxidant which is essential for normal function of immune system. Early life nutrition is important for growth. Low vitamin E intake in infancy is associated with asthma and hemolytic anemia. However, high intake of vitamin E is associated with liver and kidney failure in infants. According to Food and Nutrition Board, Recommended Daily Allowances (RDAs) for vitamin E from birth to six months, and from seven to twelve months are 4 and 6 mgs respectively. Tolerable upper intake level (UL) of vitamin E in these age groups have not yet been determined. Infant supplemental formulas usually contain vitamins. This study aims to determine vitamin E content of infant supplemental formulas and its amount in breast milk in order to determine RDA for vitamin E.

**Materials and Methods:** In this study we worked on five different brands of infant formulas available in Tabriz pharmacies. Vitamin E content of these formulas were determined by HPLC-UV at 296 nm. Formula amount to provide RDA for vitamin E was calculated and compared to the amount of formula recommended to be used daily.

**Results:** Consumption of at least 17.9, 120.5, 130.7, 120.5 and 130.4 grams of these powders



can provide 100% of RDA daily need of vitamin E in five brands. Factsheets of these formulas showed more vitamin E content than the recommended daily allowance in all brands, with only one exception in one of the powders which did not exceed the amount needed for ten months infants.

**Conclusion:** Vitamin E intake of formula fed infants is more than RDA, though vitamin amount of formulas didn't exceed US regulations for infant supplements. Considering the fact that higher levels of vitamin E can be harmful, it is important to bear in mind the problems associated with high amount of vitamin E consumption and over nutrition in formula fed infants.

**Keywords:** Vitamin E, Determination, Infant formula, Recommended Daily Allowance, Tolerable Upper intake Level.

Yersinia Enterocolitica and campylobacter jejuni: Antimicrobial Resistance Evaluation as Important Causes of Zoonosis

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**Objectives:** Yersiniosis and Campylobacter are among the most important and common causes of zoonosis in the world. Yersinia enterocolitica and a different group of strains, which are divided into six groups of biographies, among which more groups belong to the group O 57. The main route of Y. enterocolitica infection is through the use of contaminated foods or water. The primary route of disease is colonization in the gastrointestinal tract, in which most pathological effects and clinical manifestations occur. Campylobacter jejuni is also known as one of the most common causes of bacterial gastroenteritis in the world. For both bacteria, gastrointestinal infections are often self-limiting and antimicrobial therapy is not appropriate. Antimicrobial therapy is only required in patients with more severe forms of disease and those with immune deficiency. The purpose of this study is to introduce the most effective antibiotics tested in the treatment of these two bacteria in foods to reduce the formation of resistant Yersinia and Campylobacter species.

**Materials and Methods:** Despite the excessive consumption of antibiotics in food production, this substance reduces the consumption of excess nutrients. By studying various studies, it

was examined that Yersinia and Campylobacter resistant to antibiotics is still going on.

**Results:** The most commonly used antimicrobial drugs used to treat Campylobacter and Yersinia infections are macrolides, including erythromycin and fluoroquinolones, such as ciprofloxacin. Tetracyclines have been suggested as an alternative to the treatment of Clinical Campylobacteriosis, but they are often not used in practice. However, over the past few decades, more and more resistant Campylobacter and Yersinia isolates have been created against fluoroquinolones and other antibiotics such as macrolides, aminoglycosides and beta-lactams. Antimicrobial resistance has shown the common use of antibiotics in veterinary medicine and human medicine, and finally the creation of resistance to Campylobacter and Yersinia in humans

**Conclusion:** Fluoroquinolones or the third generation cephalosporins, the best treatment options, are for the treatment of enterocolitis in patients with septicemia or an invasive infection, in which mortality can be up to 50%. One of the methods of biological control, which products and results are promising, is the use of lecithin bacteriophages.

**Keywords:** Yersinia enterocolitica, Campylobacter jejuni, anti-microbial resistance, zoonosis.

### Investigation of lycopene content (natural functional pigment) in two variety of watermelon: Mahboobi and Charlstongary

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**Objectives:** Nowadays, natural pigments considering their useful functional properties are used as alternatives for artificial colors. In contrast to artificial colors, natural colors don't have toxic effects such as allergy and cancer induction. Some health promoting properties are attributed to them like antioxidant, antimicrobial, and anticancer characteristics. Therefore using of natural additives increase immunity and quality of food products. Lycopene is a natural carotenoid pigment which has

significant effects in protection against oxidative damages, lowering the risk of cancer and cardiovascular diseases.

**Materials and Methods:** In this study lycopene was extracted from two variety of watermelon: Mahboobi and Charlstongary through maceration method and the effects of treatment including solvent to solid ratio and temperature on the content of lycopene extraction were investigated. Lycopene content was determined by spectrophotometric method based on beer – lambert law.

**Results:** The results showed that variety of watermelon has a significant effect on the lycopene extraction yield, and the lycopene content of Mahboobi variety was higher than Charlstongary. Also, the increase in the ratio of solvent to solid from 1:20 to 1:60 had a significant effect on extracted lycopene content. Based on ANOVA results, selected temperatures in this study showed no significant effects on the lycopene extraction.

**Keywords:** Lycopene, Watermelon, Carotenoid, Spectrophotometry

#### **Possibility of using damaged wheat flour by bug in bread making process**

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**Objectives:** Certain heteropterous insects (true bugs) deposit salivary enzymes into immature wheat grain while feeding. These enzymes survive in harvested wheat, destroy gluten structure in dough, and cause poor quality bread. In this study the effects of guar gum and ascorbic acid, in improving chemical rheological and baking properties of bug damaged flour were investigated.

**Materials and Methods:** Guar and ascorbic acid were added in three levels: 0.5, 1 and 1.5% and 100, 150 and 200 ppm respectively. Data were analyzed in factorial experiment design and the means were evaluated in form of mathematical models with 3d- surface charts.

**Results and conclusion:** Results showed that bread baked with bug-damaged flour had poor quality and low sensory scores. Addition of guar and ascorbic acid could improve dough and bread quality but the best treatment was

addition of 0.5% guar and 200 ppm ascorbic acid together.

**Keywords:** Bread shelf life, Dough rheology, Wheat bug.

#### **Effects of different extraction condition on the annatto dye yield using response surface methodology**

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**Objectives:** In recent years, as the consequence of growing public nutritional information, there is increasing demand for natural colors in food products providing positive functional effects as well as adding color. Annatto dye is a natural reddish-yellow extract obtained from seeds of *Bixa orellana* L. and has a wide usability in food, cosmetic, medical and hygienic industries.

**Materials and Methods:** In this study, solvent extraction was applied to extraction of annatto dye. The effects of different treatment including solvent (100% acetone, 100% NaOH, 50% acetone+50% NaOH), solid/solvent ratio (1:1-1:5), temperature (25-60°C) and time (2-6h) on the dye extraction yield were evaluated.

**Results and conclusion:** The results of the analysis of variance (ANOVA) revealed that solvent and solvent/solid ratio were the most effective parameters on the extraction response. Temperature and time showed no significant effects on the extraction yield. The values of R<sup>2</sup> was determined as 0.915 and revealed that the full quadratic model was the most adequate models for the extraction efficiency and could be used to predict the response up to 91.5% accuracy.

**Keywords:** Annatto dye, Extraction yield, methodology.

#### **Effects of partnership- supporting development in improving children less than 6 years of East Azerbaijan province during the year 1395**

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**Objectives:** Given the multi-dimensional nature of child malnutrition, program participation and support improved nutritional status of children under 6 years through nutrition education and nutritional support to health workers and mothers of children with malnutrition and failure to thrive through the distribution of food baskets in East Azerbaijan province implemented. This study aimed to determine the effectiveness of the collaborative model - Supporting the improvement of growth and nutritional status of children under age 6 in low-income households was conducted during the year 1395.

**Materials and Methods:** This descriptive study in East Azerbaijan province malnutrition on children under 6 years of having a developmental disorder and the condition of poverty of households was conducted. During this period, the child malnutrition by providing food baskets were nutritional support. Besides the food basket nutritional education for mothers and health workers as well as nutritional counseling was provided. To evaluate the effectiveness of the program, children are covered for six months after receiving a food basket were analyzed further by measuring the weight. Evaluation of growth and nutritional status of the children improved ratio (state of the program) took place. The optimal ratio of program guidelines must be greater than 50%.

**Results:** The proportion of children improved on the 1395 figure of 66% respectively.

**Conclusion:** The prevalence of malnutrition among children in the intervention area declined partnership and support can improve as a successful model of malnutrition among children is used.

**Keywords:** nutritional support, Food Basket, Children under 6 years.

#### Novel formulated form of Curcumin inhibits cell growth of CT26 colorectal cancer cells

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**Objectives:** Colorectal cancer (CRC) is third leading causes of cancer-related death with poor prognosis. Thus, there is an urgent need to

develop novel anticancer agents that either exert a better efficacy than conventional therapy or improve them in the context of combinatorial regimens. The anticancer activity of curcumin has been investigated in different tumor types in preclinical and clinical trials. Curcumin is a polyphenolic compound (1,7-bis(4-hydroxy-3-methoxyphenyl)-1,6-heptadiene-3,5-dione) derived from turmeric (*Curcumin longa L.*). Here we explored the the antitumor effect of novel form of turmeric oleoresin in CRC.

**Materials and Methods:** The cytotoxic activity of turmeric-oleoresin was determined in monolayer cell cultures and spheroids models followed by gene expression analysis by quantitative-RT-PCR.

**Results:** Curcumin inhibited cell-growth via modulation of Wnt-pathway. Tumor-shrinkage was observed in the cells treated with curcumin.

**Conclusion:** We demonstrated the anticancer activity of turmeric oleoresin in a colorectal cancer cell line, supporting further-studies on this potential-therapeutic-agent in treatment of CRC.

**Keywords:** Curcumin, colorectal cancer.

#### The anti-tumor effect of crocin on breast cancer

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**Objectives:** Breast cancer is one of the common malignancies around the world and the second leading cause of cancer death among women. Crocin is a pharmacological active component of *saffron*. Recent studies have shown that crocin has anti-tumorigenic properties in different cancer cell lines including breast cancer. The aim of this study was to assess the anti-tumor mechanism of crocin alone or in combination with 5-FU in a mice model systems of breast cancer.

**Materials and Methods:** Breast cancer was developed by injection of 4T1 cells to mammary fat pad of mice. Our experiment includes 4 groups (control, 5-FU, crocin and crocin+5-FU) with five mice per group. After 21 days the mice were sacrificed. Anti-tumor activity was evaluated by measuring tumor size and weight and histological examination. Oxidant/antioxidant assay was applied to investigate the role of crocin in oxidant-antioxidant status in breast cancer.

**Results:** Combination treatment with crocin and 5-FU reduced the size and weight of breast tumors in comparison with other groups. Levels of anti-oxidant molecules were significantly increased in crocin+ 5fu group. Protective



histological changes including level of vascularization and necrotic area were improved in crocin and 5-FU treated mice.

**Conclusion:** Here we explained a novel mechanism for the anti-tumor effect of crocin on breast tumors. Our results clearly support the therapeutic potential of crocin alone or in combination with standard regimen for breast cancer therapy.

**Keywords:** Ramadan fasting, Hematological parameters, Biochemical Parameters, Complete blood coun.

### Determinants and Associated Factors of Serum Cytokines in a Healthy Population from Iran

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**Objectives:** The pro- and anti-inflammatory cytokines mediate several pathophysiological responses and are involved in functions of immune system. Growth factors are also associated with a variety of reactions and responses in cellular and molecular level that end in substantial effects. Different physiological conditions such as aging and pregnancy, as well as pathological ones (e.g. obesity and inflammation) have been linked to alterations in the concentration of cytokines and growth factors. We have assessed the relationship between the serum concentrations of several inflammatory cytokines and growth factors, with anthropometric and biochemical factors in a healthy Iranian population sample.

**Materials and Methods:** In this analytical cross-sectional study, anthropometric factors were measured and blood samples were taken from 103 healthy Iranian subjects. Fasting plasma glucose (FPG), serum lipid profile, and hs-CRP were measured in all subjects. Twelve serum markers (IL-1 $\alpha$ , IL-1 $\beta$ , IL-2, IL-4, IL-6, IL-8, IL-

10, TNF- $\alpha$ , MCP-1, IFN- $\gamma$ , EGF, and VEGF) were measured using sandwich and competitive chemiluminescence assays on Evidence Investigator® system. The data were analyzed by SPSS v.20 using descriptive statistics, Spearman correlation, Mann-Whitney test, Chi-square test, and regression modeling.

**Results:** Of 103 subjects, 62 were females and 41 were males. Mean age was 47.9 $\pm$  1.1 years. Serum IL-4 and EGF were positively associated with age ( $P < 0.001$ ). IL-8 was inversely associated with systolic blood pressure ( $P = 0.002$ ) and gender ( $P = 0.028$ ). There was a positive association between serum VEGF and HDL ( $P = 0.007$ ). Serum IFN- $\gamma$  and IL-1 $\beta$  concentrations were positively associated with hip circumference ( $P = 0.029$  and  $0.001$ , respectively).

**Conclusion:** Results showed possible associations between the serum concentrations of cytokines and some anthropometric factors that are determinants of metabolic disorders such as diabetes mellitus, metabolic syndrome, atherosclerosis, and coronary artery disease. Therefore, evaluating the concentration of circulating cytokines can be a prognostic measurement to evaluate metabolic disorders.

**Keywords:** Cytokines, Anthropometric Factors, Interleukins, Growth Factors, Inflammation

### The Relationship between Dietary Diversity at Third Trimester of Pregnancy and Infant's Anthropometric indices at Birth

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**Objectives:** Due to the importance of nutrition during pregnancy and its role in the health of future generations, the study tried to determine dietary diversity and its relationship with newborns anthropometric indices at birth.

**Materials and Methods:** In this cross-sectional study, 400 pregnant women (28-40 weeks of pregnancy) whom were referred to the health centers in Zahedan were studied in 2016. To assess the usual dietary intake, food frequency

questionnaire and the 24-hour recall were used. Dietary diversity was calculated based on scoring 8 food groups using by Food Pyramid of Department's Food and Agriculture, and Kant method. Newborns Anthropometric indices were measured by the standard and analyzed by using descriptive statistics and analytical tests.

**Results:** The mean ( $\pm$  Standard deviation) of the total score of dietary diversity was  $0.73 \pm 2.60$  and the highest diversity was seen in the dairy group ( $0.19 \pm 0.45$ ) and the lowest diversity of food was observed in grains group ( $0.10 \pm 0.20$ ). There was a significant difference between various groups of birth weight at the score of dietary diversity and dietary diversity was significantly increased by rising of family incomes. Linear regression analysis has shown that the variables including; weight at the beginning of pregnancy, a variety of dairy products, vegetables and total dietary diversity could be considered for predicting birth weight.

**Conclusion:** The study has shown that there was a significant correlation between the score of dietary diversity and infant anthropometric indices at birth.

**Keywords:** Dietary Diversity, Pregnancy, Birth Weight.

#### **Effect of Garlic Powder Consumption on Blood Pressure in NAFLD Patients: A Randomised, Double-Blind, Placebo-Controlled Trial**

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**Objectives:** Non-alcoholic fatty liver disease (NAFLD) affects nearly a third of the population in many countries. There are some metabolic risk factors, like high blood pressure which is common among NAFLD patients, that may cause cardiovascular disease. Thus, control of hypertension is one of management strategies in NAFLD. The aim of the present study was to

evaluate the effects of the consumption of garlic on blood pressure in subjects with NAFLD.

**Materials and Methods:** According to inclusion and exclusion criteria of study 120 patients with NAFLD were selected. They were stratified according to sex, age and degree of fatty liver, and randomly allocated into two groups each comprised of 60 patients. One group received garlic powder and another received placebo for 16 weeks. Dietary intake and physical activity of participants were collected by validated questionnaire. Anthropometric measures and blood pressure were assessed at baseline and end of the study. All of data were analysed by SPSS version 16.

**Results:** The administration of garlic powder decreased the systolic (SBP) and diastolic blood pressure (DBP) ( $p < 0.05$ ). No serious side effects associated with the intervention were reported.

**Conclusion:** Our clinical trial study suggests that garlic powder may be a suitable choice for reducing blood pressure in individuals with NAFLD.

**Keywords:** blood pressure, garlic, NAFLD

#### **Synergistic Inhibitory Effects of Curcumin Nanoform and Chemotherapy agents on Development of Colorectal Cancer in Vivo.**

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**Objectives:** Curcumin a phenolic compound obtained from the herb *Curcuma longa*, is known to have anti proliferative and anti-tumor properties. In this study we investigate the effect of liposomal form of curcumin in combination with 5-Fluorouracil in colorectal cancer (CRC) model.

**Materials and Methods:** A transplanted tumor model by injecting  $2 \times 10^6$  CT26 cells into subcutaneous tissue of the right flank of inbred BABL/C mice was established and its growth



curve was measured. 24 BABL/C mice with palpable tumors were divided into 4 groups, (control, 5-Fluorouracil, liposomal curcumin and 5-Fluorouracil plus liposomal curcumin). Liposomal curcumin and 5fu were gavaged and injected respectively, 25mg/kg every other day. The changes of tumor volume were measured continuously and tumor inhibition rate was calculated. At last the tumor tissue resected and stained with H&E method.

**Results:** An inhibition effect on tumor growth was observed in treatment groups. When combination of liposomal curcumin with 5-Fluorouracil was treated on mices, tumor growth reduction and increased apoptosis was noted, in comparison with single drug treatment, may indicate the ability of liposomal curcumin to increase the sensitivity of tumor cells to chemotherapy drugs.

**Conclusion:** Combination of liposomal curcumin with single drug chemotherapy showed marked synergistic inhibitory effect against tumor growth in CRC model. These results suggest that curcumin can be used as a modulator, which may have a potential therapeutic value for the treatment of CRC patients.

**Keywords:** CRC, liposomal curcumin, 5-Fluorouracil, apoptosis, CT26 cells

#### Evaluation of the level of serum vitamin D among more than 17000 patients referred to Shafa laboratory of Birjand city, Iran

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**Objectives:** Vitamin D is a fat- solvent vitamin that helps regulation of body calcium, phosphate levels, and bone mineralization. Besides its nutritional value, a huge body of evidences revealed different roles in a range of disorders such as cell growth, cancer prevention hypertension, cardiovascular disease, type 2 diabetes. In spite of its importance in health and diseases, vitamin D deficiency is common around the world and it is realized that around 1 billion individuals on the planet have vitamin D deficiency or inadequacy most of them in Middle East and South Asia. Iran is a fairly sunny country

but some studies have shown that the rate of vitamin D deficiency is high in different parts of Iran and also in different age groups even in young active people. Birjand is located in East of Iran and has enough sun in most of the year and the aim of this study was to evaluate the prevalence of vitamin D deficiency among a large sample of Birjand inhabitants who referred to Shafa laboratory for any reasons.

**Materials and Methods:** Records of 17278 people who referred to Shafa laboratory of Birjand for vitamin D detection during five years from (2012-2016) were extracted. The level of vitamin D measured by electrochemiluminescence performed on Cobas e4 11 Machine. According to the kit's manual, vitamin D level divided into four category as the following: Deficiency (< 10 ng/ml), Insufficiency (10-30 ng/ml), normal (30- 100 ng/ml) and toxicity (> 100 ng/ml).

**Results:** The mean age of participant was 25.4 ± 19 (range 1-98) years. The mean level of vitamin D was 16.93 ± 12.7 ng/ml. 33.4% and 54.3% of all cases had vitamin D deficiency or insufficiency respectively. The highest and lowest rate of deficiency was for age between 30-40 years and older than 70 years respectively. There rate of vitamin D deficiency was significantly higher in less than 30 years cases than older than 60 years group (14.4 ng/ml vs 24.2 ng/ml, P<0.001). There was no significant difference in average of vitamin D level between different years through 2011-2016. Table 1 shows the level of vitamin D among different age groups.

**Conclusion:** The results of this study confirmed high rate of vitamin D deficiency and insufficiency among all ages in Birjand city with more severe deficit in young adults. Further studies for finding the best strategy for correcting of this problem is an urgent need.

**Keywords:** vitamin D, Deficiency, Birjand

#### The effects of hydro-alcoholic extract of Plantago major on acid and mucus secretion of gastric in cyclooxygenase inhibit conditions in rat

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**Objectives:** Antioxidant, anti-ethanol-induced gastric-ulcer and gastric mucosa protective effects has been reported for *Plantago major*. Studying the effects of hydro-alcoholic extract of *Plantago major* on acid and mucus secretion of gastric in cyclooxygenase inhibit conditions in rat.

**Materials and Methods:** 48 male Wistar rats were divided into 6 groups as follows: The indomethacin solvent (carboxymethylcellulose 1%), indomethacin (35 mg/kg) and ranitidine group (50 mg/kg) and 3 groups of the *Plantago major* extract (200, 400, 800 mg/kg doses of *Plantago major* extract). The animals were gavaged for 5 days by the extract; the following day, they were gavaged with Indomethacin for inducing ulcer; 6 hours later the acid and mucus secretion were studied.

**Results:** The acid secretion in 200, 400 and 800 mg/kg doses of extract was significantly lower than that of Indomethacin group.

**Conclusion:** *Plantago major* extract can protect the gastric mucosa by decrease acid secretion.

**Keywords:** Cyclooxygenase inhibition, *Plantago major*, Rat

#### Association of plasma lipoprotein (a) levels with Cardiovascular Disease

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**Objectives:** Cardiovascular disease is a major cause of death worldwide. Lipoprotein (a) [Lp (a)] is an emerging cardiovascular risk factor that exhibits a potential therapeutic target.

This lipoprotein is enriched in cholesterol but differs from low-density lipoprotein (LDL) in that it contains an additional protein called apolipoprotein (a). Similar to LDL, an Lp (a) particle contains one molecule of apolipoprotein B.

**Materials and Methods:** We searched about the association between plasma Lp (a) levels and the

risk of coronary heart disease (CHD) in PubMed, Scopus, Web of Science and Google Scholar databases.

**Results:** Numerous studies have documented that high plasma Lp (a) concentrations are causally associated with CHD. A Meta-analysis of 27 prospective studies on 5436 CHD patients showed that individuals with Lp (a) concentrations in the top one-third of baseline measurements are at a 70% increased risk of CHD compared with low amounts. According population data, increased plasma Lp(a) levels enhanced the risk of myocardial infarction. In another study, 55 smokers were followed up for 1 year and determined that the Lp (a) level was 12% more than non-smokers.

**Conclusion:** A wide range of studies have shown that there is relationship significant association between high plasma levels of Lp (a) and coronary heart disease. Lowering plasma levels of Lp (a) either through pharmacological agents or nutraceuticals can be regarded as a rational strategy to prevent coronary heart disease.

**Keywords:** Lipoprotein (a); Cardiovascular Disease; Nutritional habits.

#### Microbiological quality of some spices in Zabol

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**Objectives:** The cultivation of spices in parts of the world characterized by warm climate and high humidity provides excellent conditions for the development of microorganisms, including the undesirable ones.

**Materials and Methods:** In this study, 64 samples of spices (cinnamon, thyme) widely used in Iran were analyzed for the presence of *Bacillus cereus*, *Clostridium perfringens*, *Escherichia coli*, *coliforms*, total mesophilic aerobic organisms and mold based on ISIRI. Samples were non-packaged or packaged.

**Results:** High levels ( $10^5$  to  $10^7$  CFU/g) of mesophilic aerobic microorganisms were found in most of the samples of cinnamons powder. Lower levels ( $< 10^3$  CFU/g) were found in packaged thymes. The data indicated that 16 samples of cinnamons (39.2 %) and three samples of thymes ( 13.05 %) of total samples



were contaminated with *E. coli*. The presence of *B. cereus* was confirmed in 25 out of 41 samples of cinnamons and 12 out of 23 samples of thymes. *Clostridium perfringens* was isolated from 27 (65.85%) of cinnamons samples and 13 (56.53%) of thymes samples. Mold was detected in 5.12% and 30.24% of cinnamons and thymes samples respectively.

**Conclusion:** Spices can be regarded as important vectors for various microorganisms implicating possible health problems for the consumer and quality and shelf-life problems for foods. When establishing standards, two main points should be considered primarily, to give the consumer a safe product and to be orientated at the specific usage of the condiment. In light of the results presented in this study, treatment of spices by gamma irradiation or alternative procedures are necessary.

**Keywords:** Spices, *Bacillus cereus*, *Clostridium perfringens*, *E. coli*, Mold.

#### **The effect of oral Alpha lipoic acid (ALA) on serum Leptin, Irisin and plasminogen activator inhibitor- 1 (PAI- 1) in nonalcoholic fatty liver disease (NAFLD): A double blind randomized controlled clinical trial**

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**Objectives:** Nonalcoholic fatty liver disease (NAFLD) is a pathologic disorder which describes by accumulation of fat more than 5 – 10% in hepatocytes, without consuming alcohol more than 30 g/day in men and 20 g/day in women. Due to the documented association of Leptin, Irisin and PAI- 1 in NAFLD and also the probable role of ALA in reduced levels of fat accumulation in the liver, this study conducted to assess LA role in human NAFLD patients, and its effect on Leptin, Irisin and PAI- 1 level.

**Materials and Methods:** 45 NAFLD obese patients with BMI 30 to 40 kg/m<sup>2</sup> and aged 20 – 50 years were recruited in this double blind randomized controlled clinical trial. Ultrasonography done to assess the accumulation of fat in the liver. Allocating into “LA” and “placebo” groups were randomly by computer. LA group received 400 IU/day vitamin E plus two tablets of “LA” and another group, received placebo after breakfast and after lunch, for twelve weeks. Leptin, Irisin and PAI- 1 were measured before and after twelve weeks

supplementation. Statistical analysis was performed by SPSS software version 21

**Results:** Result showed significantly reduced level of leptin and PAI- 1 after 12 weeks supplementation with ALA in patients with NAFLD. Moreover, considerable reduced levels of liver enzyme status were observed in those patients received placebo. There were any significant differences in Irisin in LA and placebo groups.

**Conclusion:** The current study suggests that LA supplementation may suggested in NAFLD patient due to its beneficial effects on reducing levels of leptin and PAI- 1.

**Keywords:** Nonalcoholic fatty liver disease, Alpha lipoic acid, Leptin, Irisin.

#### **Folic acid deficiency and risk of cervical cancer**

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**Objectives:** Cervical cancer is among the most common cancer in female, human papillomavirus is the major risk factor of this cancer, which causes inflammation in cervix. Folic acid deficiency is also associated with activation/enhancing inflammation process. There is growing body of data evaluating the relationship between cervical cancer and inflammation with respect to folic acid deficiency. Here we explored the possible association of folic acid deficiency and inflammation in cervical cancer.

**Materials and Methods:** A literature searches in different databases, including PubMed, and Scopus was done for evaluating the correlation of acid folic deviancy and increase expression of P 16 protein, inflammation process with respect to the progression of cervical cancer.

**Results:** Folic acid deficiency is associated with an increase in the expression of protein P 16, which can cause inflammation. High expression of P 16 could raise inflammation, leading to the progression of cervical cancer. Moreover it has been shown that 5 mg/d folate supplementation for 6 months in women with CIN 1 resulted in its regression a. Also it leads to reduced serum insulin, HOMA-B, plasma MDA and increased plasma GSH levels, although it does not increase

the regression of early epithelial abnormalities of the cervix

**Conclusion:** Our findings indicated that both serum folate deficiency and high expression of p 16 protein could increase the risk of cervical cancer and cervix inflammation. Folic acid supplementation could reverse the abnormal expression of p 16 protein, and effectively promote apoptosis.

**Keywords:** Acid folic deficiency, cervical cancer, human papillomavirus.

### **Curcumin regulates proinflammatory signaling function of thrombin in endothelial cells**

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**Objectives:** Inflammation is part of the complex biological response of body tissues to harmful stimuli, such as damaged cells and irritants. Chronic inflammation may lead to inflammatory diseases, such as atherosclerosis, rheumatoid arthritis, and even cancer. Curcumin, the dried root of turmeric, is a highly valued agricultural product that is mainly used as a food coloring and flavoring agent. Thrombin, one of the key proteins in the coagulation cascade, is a serine protease that initiates inflammatory responses and exacerbates pathological complications of inflammatory diseases. Thrombin-induced inflammatory processes play critical roles in the pathogenesis of inflammatory diseases such as cardiovascular, diabetes, cancer and metabolic syndrome. Heat shock proteins (Hsps), are critical regulators of the inflammation process that some of them have inflammatory properties and some others exert anti-inflammatory signaling. Curcumin, the dried root of, is a highly valued agricultural product that is mainly used as a food coloring and flavoring agent. Curcumin is an anti-inflammatory molecule decreases expression of proinflammatory cytokines, chemokines and cell adhesion molecules in inflammatory processes. In this project, the effects of thrombin on the expression of inflammatory and anti-inflammatory HSP were investigated. Next we determined the effect of curcumin on thrombin-induced inflammatory responses in Human Umbilical Vein Endothelial Cells (HUVEC).

**Materials and Methods:** HUVEC isolated and cultured in the presence and absence of curcumin (10 μmol/L) for 1, 3 and 5 hours followed by incubation with thrombin (40 nM). Then total RNA was extracted, cDNA was synthesized and the expression of inflammatory HSPs including Hsp60, 70, and Hsp 90 and anti-inflammatory hsp 10 were analyzed by Real time PCR.

**Results:** The results of this research showed that treatment of HUVECs with thrombin significantly increased expression of inflammatory Hsps including Hsps60, 70, and 90 compared to non-treated HUVECs and this effect was entirely suppressed by curcumin. Curcumin also increases thrombin-induced anti-inflammatory hsp 10 expression in HUVEC cell line.

**Conclusion:** As a result, thrombin increases inflammatory Hsps expression and triggers inflammatory mechanisms. Curcumin as an anti-inflammatory molecule reduces thrombin-induced proinflammatory signaling responses. It is suggested that Curcumin is an attractive candidate target for therapeutic intervention in thrombin-associated inflammatory disorders including cancer, cardiovascular disease, and metabolic syndrome.

**Keywords:** Thrombin, inflammatory and anti-inflammatory Hsps, HUVECs.

### **Curdlan biopolymer production by *Agrobacterium radiobacter* in grape syrup medium**

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**Objectives:** Curdlan is an expensive polysaccharide that is made up of D-gulucose monomers with β- (1→3) bonds.

**Materials and Methods:** The production of this polysaccharide was evaluated by *Agrobacterium radiobacter* PTCC 1654 in a culture medium containing variable carbon source (grape syrup and neat sucrose) at different concentrations (5, 7.5 and 10%) and a time range up to 144 hours. Based on the efficiency of curdlan, the optimum carbon source was determined. Additionally, the amount of biomass produced in each situation and pH changes in the fermentation cultures

were also measured. The polysaccharide sugar composition was evaluated by thin-layer chromatography technique.

**Results:** The results showed that the highest amount of polysaccharide production was obtained in the fermentation medium containing grape juice with Brix - and after the time - the time of fermentation. Over time, the fermentation temperature decreased from about 7 to about 5/5, which also reduced the growth rate of bacteria. Therefore, at the end of fermentation, the production of both polymer and bacterial biomass showed a decreasing trend. Chromatography results showed that glucose was the only monomer that formed the polymer's structure

**Conclusion:** Based on the findings of the present study, agricultural waste such as grape syrup can be used as a carbon source for the fermentation process to produce curd polymer. Grape syrup has a higher yield in curd polymer production than neat sucrose so it has a comparative advantage in this regard.

**Keywords:** curd polymer, biopolymer, *Agrobacterium radiobacter* PTCC 1654, grape syrup

### Effect of Nutrition Training on Mothers on Prevention of Oral Wounds in Children With Cancer Under Chemotherapy

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**Objectives:** Mucositis is one of the most debilitating side effects of chemotherapy. Approximately, 52% to 81% of children undergoing chemotherapy being affected side effects. Therefore, we must find solutions for control it. This study aimed to effect of Empowerment program to caregivers of children with cancer Undergoing Chemotherapy on their adherence to preventive health recommendations mouth ulcers.

**Materials and Methods:** 60 children aged 1 to 18 years old undergoing chemotherapy in Sheikh Hospital in Mashhad in 2013 allocated randomly into two groups; Intervention and control in this clinical trial. In Intervention group, the necessary care based on clinical guideline developed by

oncologists and special nurses was conducted, and cryotherapy was performed in one group. Mucositis was scored by Eilers and WHO scales. The empowerment program was composed of 4 steps: discovering reality, critical reflection, taking Charge, and holding. The program was developed and based on the Process of empowerment as conceptualized by Gibson's theory Data analysis was accomplished using independent and paired t, correlation coefficient, and Mann-Whitney tests.

**Results:** In terms of the proportion of cancer patients, acute lymphoblastic leukemia, acute Myeloblastic leukemia, lymphoma, sarcoma and rhabdomyosarcoma, respectively 56/7, 13/3, 10, 6/7, 3/3, 20% of patients had. 61.7% of males and 38.3% were female. The mean age of the patients studied  $5/6 \pm 3/23$  years and the average age caregiver for the  $32/1 \pm 8/08$  was. Average Impact of Health Education Program recommendations for the prevention of mouth ulcers is  $14/2 \pm 2/1/4$  and empowerment program on compliance has a significant impact on carers intervention group ( $p < 0/001$ ). Moreover, the incidence of mouth ulcers intervention group compared to the control indicates significant differences ( $p < 0/001$ ).

**Conclusion:** Empowerment program for caregiver's children with cancer undergoing Chemotherapy increased their adherence to treatment and reduce the incidence of oral ulcers in children.

**Keywords:** Oral ulcer, Chemotherapy, Child, Nutrition Training, Caregivers

### The effect of probiotic consumption on the most common neurological diseases

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**Objectives:** Probiotics are live microorganisms which when administered in adequate amount confer a health benefit on the host. They modulate intestinal flora and affect the central nervous system (CNS) through the gut-brain axis. Because of that, the range of food products containing probiotic strains is wide and still growing, especially dairy products including fermented milk, cheese, milk powder and etc.

Nowadays, the neurological diseases (NDs) are one of the greatest threats to public health so that is expected to become an even more serious and unmanageable problem worldwide. In 2015 the WHO has announced the most common NDs in this way: Migraine, Cerebrovascular disease, Epilepsy, Alzheimer, Parkinson's disease (PD) and Multiple Sclerosis (MS).

**Materials and Methods:** Systematic search was performed in PubMed, Elsevier and google scholar databases. Articles addressing clinical outcomes in children, adult and animals were included. Approximately 40 eligible studies were obtained according to the type of diseases.

**Results:** The effects of probiotic on cognitive function, biomarkers of oxidative stress, inflammation and metabolic status in Alzheimer have been proven. Probiotic potentials of producing vitamins with antioxidant properties and improving constipation have been demonstrated to be beneficial for PD pathology. Probiotics stimulate the immune system by increasing the secretion of immunoglobulin A and the producing of cytokines. The benefits of this stimulation are prevention from inflammation and it is useful for MS. Many studies suggested increasing the gut permeability and inflammation as underlying causes of migraine headaches. Also, probiotics can decrease intestinal permeability as well as inflammation. There is a hypothesized that probiotics through reducing reactive oxygen species and inhibiting apoptosis in the brain can benefit in cerebral ischemia treatment.

**Conclusion:** The studies prove the beneficial effects of probiotics in MS, PD, and Alzheimer and there are many hypotheses about these effects of migraine and cerebral ischemia that should be considered for future studies. Oxidative stress is implicated as a common etiological factor in NDs such as epilepsy. Due to effects of probiotics on oxidative stress, we hypothesize that using probiotics may improve epilepsy disease.

**Keywords:** probiotic, neurological diseases, dairy products.

### Study of serum level of 25 hydroxyvitamin D in patients referred to Specialized Clinical Laboratory ACECR- Khuzestan

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**Objectives:** Vitamin D deficiency has contributed to the development of many chronic diseases such as obesity, hypertension, cardiovascular

disease, diabetes and metabolic syndrome, autoimmune and inflammatory diseases, and some cancers. The aim of this study was to evaluate the serum levels of vitamin D in population referred to the Specialized Clinical Laboratory ACECR Khuzestan.

**Materials and Methods:** This was an analytical cross-sectional study. Experimental results The serum level of 25 hydroxyvitamin D was evaluated in 2000 patients referring to the ACECR-Khuzestan clinic in the first quarter of 1395 from the experts (internist, orthopedic and endocrinology) of Ahwaz city. Vitamin D was classified in three levels of deficiency (less than 10 ng/ml), inadequate (29- 10 ng/ml) and sufficient (29- 100 ng / ml). Chi-square and descriptive statistics were used to analyze the data using SPSS software.

**Results:** The study population consisted of 79.8% ( 1596) females and 20.2%(404) males. Mean age at was 38.8 years. Mean serum 25(OH)D was 22.57 ng/ml. the prevalence of vitamin D deficiency and insufficiency was 26.7% and 49.5% respectively. Also, the results showed that inadequate vitamin D levels were higher in women than in men. (38.3% vs. 11.2%) Vitamin D deficiency had a significant relationship with gender. (P = 0.01). The results of Cramer's test were 0.072. The results of Cramer's test showed that the severity of this relationship is low.

**Conclusion:** Since various studies indicate a significant association between low levels of vitamin D and an increased risk of chronic diseases such as diabetes, cardiovascular disease, autoimmune diseases, and so on. It is advisable to use supplements and use sunlight at the right time.

**Keywords:** 25 hydroxy vitamin D, patients, Specialized Clinical Laboratory

### Evaluating the association between dietary and serum levels of vitamin D and calcium in girls with/without primary dysmenorrhea

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**Objectives:** Primary dysmenorrhea is painful contractions of the lower abdomen without abnormal pelvic pathology. Due to high prevalence of dysmenorrhea and its effects on women's social activities, the purpose of this study was to investigate the possible association between vitamin D and calcium intake with



serum vitamin D and PTH levels in university students.

**Materials and Methods:** In this case-control study, 45 students at the Tabriz University of Medical Sciences were in the case group and same number in the control group. The subjects in case and control groups were similar in terms of age distribution, physical activity level and anthropometric parameters. 10 ml of blood from the veins of the elbow was taken from all subjects while they were fast for 10- 12 hours. The Serum 25-hydroxyvitamin D, PTH, Vitamin D and calcium intake were measured by ELISA and 24-hour questionnaire methods respectively.

**Results:** The mean serum level of PTH in the case group was lower than control group. The difference between two groups was significant in terms of serum PTH level ( $P=0.008$ ). About the level of serum vitamin D mean in control group was higher than cases. So the difference is statistically significant ( $P=0.005$ ). By the way in our study, the family history of dysmenorrhea had a significant difference in the two groups ( $p=0/00$ ).

**Conclusion:** Our results suggest, although the intake of vitamin D and calcium was not significantly different in the cases and controls, but there was a significant difference between the levels of vitamin D and PTH. Current results suggest that there may be a link between the risk of primary dysmenorrhea and calcium and vitamin D amounts.

**Keywords:** Dysmenorrhea, Vitamin D, PTH, Calcium

### Nutritional defense against oxidative stress based on the teachings of Iranian traditional medicine

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**Objectives:** oxidative stress can be defined as a lack of balance in the antioxidant and prooxidant reactions that cause macromolecules damage or disruption in messaging and biological control of redox signaling system. Food and nutrition have basic role in the performance of these systems, and recent studies emphasize on the importance of nutrition in redox signaling message protection; because sensible nutrition including fruit and vegetable consumption in order to maintain of the health can be considered the best protective strategy against internal and external sources of oxidative stress. Because the photosynthesis plants are rich sources of

antioxidants that cleanup radicals. This article, with aim of the development of these studies, is paid to the role of nutritional teachings of Iranian traditional medicine in this category.

**Materials and Methods:** this article has a descriptive-analytical method and is based on a published library resource.

**Results:** most of the food sources that have been introduced as antioxidants; including the foods, containing vitamins E, C and selenium, in Persian traditional medicine resources are eligible of "TERYAGHYAT" or "PADZAHRY" (antioxidant). in addition the observance of the health principles of nutrition in the prevention of many diseases, that have the origin of the oxidative stress, is emphasis in this medical school and even in these diseases, diet modification has been considered as a first line treatment.

**Conclusion:** nutritional teachings of Iranian traditional medicine can be considered a suitable option for nutritional defense against oxidative stress.

**Keywords:** oxidative stress, Iranian traditional medicine, nutrition.

### Survey correlation between the level of health literacy and nutrition in the population over the age of 18 years in Qods Clinic of Islamic Azad University

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**Objectives:** The level of health literacy has four components, which include identifying information, understanding information, using information and processing information. Over the past years, extensive studies have been conducted in different countries of the world, including the United States and India, on the impact of health literacy on the type of nutrition in different groups, including pregnant and lactating women - children at an early age, elderly and diabetic.

**Materials and Methods:** This is a cross-sectional study that statistical population included the defined population of Qods Clinic, which included 199 households, the information provided by the volunteer, 73 records of the prevention clinic, and people who came to the Qods Clinic by the notification. From two standard questionnaires, Iranian health literacy and Diabetes Association nutrition questionnaire has been used. Data collection was carried out with the help of 9

interns from Tehran University Medical Branch under supervision of experts from Qods Clinic Statistics and Research Center during three days.

**Results:** In this study, 42.9% male and 57.1% was female. The access point to the correct source did not differ between the two sexes ( $P > 0.05$ ); However, the average of processing points ( $P = 0.002$ ) and perception of information ( $P = 0.001$ ) and decision-making ( $P = 0.001$ ) were significantly higher in females. Points of access to the correct source, rating of information comprehension, rating of information processing and decision points were not related to age ( $P > 0.05$ ). There was no significant relationship between health literacy and consumption of fruits, vegetables, fish, milk and dairy products, oil and salt.

**Conclusion:** Studies conducted in the country indicate an undesirable and inadequate awareness of the specific age and sexual groups in the community regarding the various dimensions of nutrition and the poor performance of families regarding the proper nutrition program. On the other hand, it has been shown that training individuals and raising awareness of people has a very effective role in improving nutritional status.

**Keywords:** Health literacy, Nutrition, Population

### The effect of ginger extract and its components on metabolic syndrome parameters

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**Objectives:** Metabolic syndrome (MetS) is a common pathophysiologic disease with a range of cardiovascular and metabolic disorders. According to the International Federation of Diabetes, about 20-25% of the world's population suffers from MetS. Metabolic syndrome is a major public health challenge, and since there is no known method for preventing or improving the overall Mets, treatment for patients with Mets is difficult. Therefore, the aim of this study was to review the effect of ginger extract and its components on MetS parameters.

**Materials and Methods:** By searching in databases Pubmed, Scopus, Science Direct, Scholar, ISI, using the keywords Gingerol, Ginger extract, ginger, metabolic syndrome, diabetes,

hypertension, obesity, and dyslipidemia articles were obtained. Finally, according to our entry criteria, 29 papers were selected.

**Results:** In two animal studies that aimed to investigate the relationship between ginger extract and Mets parameters, insulin levels increased significantly ( $p < 0.05$ ). However, in most animal and human interventional studies, total cholesterol ( $188.6 \pm 35.6$  to  $173.1 \pm 28.7$ )  $p < 0.01$ , TG ( $187.0 \pm 68.9$  to  $141.5 \pm 47.4$ )  $p < 0.001$ , LDL ( $8.1 \pm 2.1$  to  $5.8 \pm 1.7$ )  $p < 0.001$ , Plasma glucose ( $94.20 \pm 13.50$  to  $86.17 \pm 8.25$ )  $p < 0.0001$ , insulin ( $5.20$  ( $2.30, 8.50$ ) to  $2.40$  ( $1.80, 4.00$ ))  $p < 0.0001$ , blood pressure ( $143.06 \pm 0.2$  to  $142.07 \pm 0.2$  mmHg,  $p = 0.02$ ) Decreased significantly in the dose-dependent manner But in body weight ( $66.2 \pm 8.2$  to  $66.1 \pm 8.2$ ), this decrease was not significant. The increase in HDL ( $0.24 \pm 0.06$  to  $0.27 \pm 0.06$ ) ( $p < 0.005$ ) was also significant.

**Conclusion:** This review study showed that ginger extract leads to improvement of Mets factors such as dyslipidemia, hyperglycemia and insulin resistance, hypertension and anthropometric indices.

**Keywords:** Metabolic syndrome, Ginger

### Vitamin D: a modifying factor for the gut microbiome

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**Objectives:** The gut microbiome plays an important role in susceptibility to disease, with consequence on host immune function. Dietary factors have effects on the gut microbiome community and affecting their function. The

vitamin D receptor (VDR) and 1,25(OH)<sub>2</sub>D<sub>3</sub> regulate the gut microbiome and it helps to maintain integrity in the gastrointestinal tract.

**Materials and Methods:** A review was done in papers that were related to Vitamin D and the gut microbiome. These papers were in the electronic databases such as Web of Sciences. No restriction about language or study design was made.

**Results:** Results suggested that the absence of VDR or the deficiency of 1,25(OH)<sub>2</sub> D<sub>3</sub> leads to the expansion of Proteobacteria. Proteobacteria out-compete the Firmicutes phyla, a beneficial phylum. These changes lead to a shift in the gut microbiome composition. In addition, Intestinal bacteria could affect the expression and transcriptional activity of the VDR. Gliding biofilm bacteria have produced a sulfonolipid capnine which is a kinetic inhibitor on the VDR ligand binding. Furthermore, decreased vitamin D intake was associated with changes in the gut microbiome.

**Conclusion:** These studies have been shown increasing evidence that the vitamin D pathway is an important modifying factor for the composition of the gut microbiome. However, there is less well-designed clinical trials that have been evaluated in this association.

**Keywords:** vitamin D; gut microbiome; Receptors, Calcitriol.

### The role of ketogenic diet in pediatric epilepsy management

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**Objectives:** Epilepsy is a neurological disorder characterized by episodes that can vary from brief to long periods of vigorous shaking. Intractable or refractory epilepsy is a term defined as inadequate control of seizures despite full treatment with conventional medications. This article investigates the role, mechanism and efficacy of the ketogenic diet in the treatment of refractory epilepsy, especially in children. The ketogenic diet, described as a high-fat, low-carbohydrate, and low-protein diet, is designed to imitate a fasting state in the body's tissues, shifting the main source of calorie from carbohydrate to fat. To provide more flexibility different forms of ketogenic diets have been made such as the modified Atkins diet (MAD), the low glycemic index treatment (LGIT), or the

ketogenic diet combined with medium chain triglyceride oil (MCT).

**Materials and Methods:** Firstly searches were performed using the keywords epilepsy/ therapy and the ketogenic diet separately to get a broad image of the subject and then using the keywords ketogenic diet therapy cross-referenced with the keyword epilepsy. The World Wide Web Search was done using google scholar engine. A medical search was also done using the PubMed engine with the key words diet therapy and cross-referenced with epilepsy.

**Results:** Although this diet is rigid and requires careful supervision, studies on children with refractory epilepsy showed that the KD is a safe and effective alternative compared to adding a new drug to the pre-existing conventional treatments. Studies have made an interesting discovery that KD is the better choice for RE regardless of the type or etiology. In each study few people experienced (dehydration, GI disturbances) and (osteopenia, renal stones, iron-deficiency anemia) respectively as early and late complications which are not a worry and can be managed easily with conservative treatments.

**Conclusion:** The ketogenic diet is a safe and effective approach for refractory epilepsy, but during the ketogenic diet treatment pediatricians have to make sure the diet is perfectly obeyed by the patient and monitor any complications that might happen.

**Keywords:** ketogenic diet, pediatric epilepsy, drug-resistant epilepsy, side effects, effectiveness.

### Liposome encapsulated curcumin antagonizes growth, cell-cycle progression, and migration, induced by thrombin through AMP-Kinase in breast cancer

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**Objectives:** Breast cancer is the second leading cause of death due to cancer in women, indicating the need for identification of novel agents that either improve the efficacy of current therapy or have a better efficacy. There is growing body of data showing the antitumor effect of curcumin in different cancers; however the molecular mechanism underlying of this inhibition in breast cancer is unknown. Here we investigated the antitumor activity of Liposome encapsulated curcumin alone or in combination with 5-FU in vitro and in vivo.

**Materials and Methods:** The antiproliferative activity of phytosomal curcumin was assessed in 2D and 3-dimensional cell culture model. The migratory behaviors of the cells were determined by migration assay. The expression levels were studied by qRT-PCR and Western blotting. The anti-inflammatory of curcumin was assessed, while antioxidant activity was evaluated by malondialdehyde (MDA), superoxide dismutase (SOD), catalase (CAT) and total thiols (T-SH). To understand dynamic behavior of genes, we reconstructed a Boolean network, while the robustness of this model was evaluated by Hamming distance.

**Results:** Curcumin suppressed cell growth followed by tumor shrinkage in 3D model through perturbation of AMP-activated protein kinase. Curcumin reduced the invasiveness of MCF-7 through perturbation of E-cadherin. Moreover, this novel form of curcumin inhibited the tumor growth in xerograph model. Histological staining of tumor tissues revealed vascular disruption and RBC extravasation, necrosis, tumor stroma and inflammation. Co-treatment of curcumin and 5-FU reduced the

lipid peroxidation and increased MDA and SOD level. Of note, curcumin reduced cyclinD 1 expression in breast cancer cell treated with thrombin, and activates AMPK in a time-dependent manner. Also suppression of AMPK abrogated inhibitory effect of curcumin on thrombin-induced cyclin D 1 over-expression, suggesting that AMPK is essential for anti-proliferative effect of curcumin in breast cancer.

**Conclusion:** Our finding demonstrated that liposome encapsulated curcumin antagonizes growth, cell-cycle progression, and migration, induced by thrombin through AMP-Kinase in breast cancer, supporting further investigations on the therapeutic potential of this novel anticancer agent in treatment of breast cancer.

**Keywords:** Breast cancer, curcumin, anti-tumor effect, spheroid, oleoresin

### **Nutrigenomics in type 2 diabetes mellitus etiopathology**

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**Objectives:** Type 2 Diabetes mellitus (T2DM) is notoriously prevalent among people of western and developing countries. Nutrient-gene interactions appear to be involved in the pathogenesis of T2DM.

**Materials and Methods:** This paper was provided as a review by selecting related items, which published between the years 2010-2017. Documents were collected from databases, PubMed and Google Scholar.

**Results:** According to the molecular studies of T2DM, genotypes significantly affect on disease by environment interactions. Higher consumption of flavonoids, particularly from blueberries, apples, and pears were consistently related to lower risk of T2DM. These compounds regulate genes involved in insulin signaling, insulin secretion, and glucose uptake by insulin sensitive tissues. Triterpenoids are other bioactive compounds with anti-diabetic potential, which is found abundantly in the olive leaf. Principle defensive genes, in which nuclear factor-like 2 (Nrf2) play a more important role, are up-regulated by Triterpenoids. The resultant change is to protect the functionality and survival of pancreatic  $\beta$ -cells. Moreover, low levels of vitamins particularly ascorbic acid, alpha-tocopherol, and beta-carotene suppress the expression levels of key anti-oxidant enzymes, including superoxide dismutase and catalase in the T2DM patients.



**Conclusion:** There are significant interactions between gene variants and functional compounds present in foods. Proper nutrients and dietary intervention facilitate cell signaling related to insulin/glucose, which help to prevent T2DM or its complications.

**Keywords:** Diabetes, nutrigenomics, nutrients

### Effects of Vitamin D on Neutrophil-to-lymphocyte Ratio and Platelet-to-lymphocyte Ratio as inflammatory markers in End-stage renal disease patients

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**Objectives:** NLR (Neutrophil-to-lymphocyte Ratio), PLR (Platelet-to-lymphocyte Ratio) and CRP (C - reactive protein) are suggested as predictors of inflammation in ESRD (end-stage renal disease) patients. Recent studies showed the effect of Vit D (Vitamin D) on serum level of the above factors. We aimed to overview the relationship between Vit D uptake and CRP, NLR and PLR in ESRD patients.

**Materials and Methods:** We searched the PubMed, Scopus and Web of Science databases up to July 20 17 regarding the effect of vitamin D on CRP, NLR and PLR as inflammatory markers in ESRD patients by searching below keywords; "Vit D supplementation" in combination with "CRP", "NLR", "PLR" and "ESRD patients".

**Results:** There is significantly favorable effect of Vit D on the level of hs-CRP in order to reduce CRP and NLR. We also know that human adipocytes could secrete CRP and also Vit D could reduce circulating CRP by decreasing fat weight. Moreover, there is a positive correlation between PLR, NLR and CRP and other inflammatory factors such as IL-6 and TNF- $\alpha$ . These are lead to suppression of inflammatory factor production.

**Conclusion:** Vit D supplementations could reduce inflammation in ESRD patients by affecting inflammatory markers such as CRP, NLR and PLR. Although well-designed additional RCTs (randomized controlled trial) are required for confirmation of these findings, and better understanding the relationship between vitamin D and inflammatory markers.

**Keywords:** NLR, PLR, CRP, ESRD patients, Vitamin D

### Curcumin Synergistically enhances the anti-proliferative activity of 5-FU through Wnt/PI3K pathway in MCF-7 cell line

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**Objectives:** Breast cancer is the second leading cause of cancer-related-death in women, representing the need for identification of novel-agents to improve the efficiency of current-therapy. There are growing bodies of evidences illustrating the antitumor-activity of curcumin in modulating numerous protein expression and signaling molecules, while its activity and molecular-mechanisms in breast cancer are still remaining to be explained. Here we explored the therapeutic-application of curcumin or its combination with 5-Fluorouracil in vitro

**Materials and Methods:** The anti-proliferative-activity of curcumin was assessed in 2- and 3-dimensional cell-culture-models in vitro, The migratory-behaviors were determined by invasion assays, while for investigation of signaling pathways and cell cycle, the expression-levels of CyclinD 1, and E-cadherin were studied by qRT-PCR and Western-blotting.

**Results:** Phytosomal curcumin inhibits the MCF-7 cell growth in a dose-dependent manner. It also inhibits invasion in breast cancer cell line. In addition, curcumin decreased tumor cell proliferation by inhibiting expression of cell cycle key modulators including cyclin D 1, and inhibition of mTOR and Wnt/ $\beta$ -catenin signaling pathways involving in breast cancer.

**Conclusion:** We revealed the antitumor-activity of curcumin in breast cancer cell line and its potential mechanism in inhibition of tumor cell growth. Our result is supporting further-investigations on the therapeutic-potential of this novel product.

**Keywords:** Curcumin, Cancer, Breast

### **Application of a percutaneous endoscopic gastrostomy in patients with Amyotrophic lateral sclerosis**

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**Objectives:** Amyotrophic lateral sclerosis (ALS) is a progressive neurodegenerative disease that might affect the nutritional status and causes dysphasia and reduction in body mass index. When nutrition is compromised by dysphagia and weight loss (5%- 10% of usual body weight) or body mass index <20 kg/m<sup>2</sup> and when forced vital capacity is >50%, a percutaneous endoscopic gastrostomy (PEG) placement is indicated to provide reliable access for medications and nutrition. Most clinics considered some combination of respiratory decline, weight loss, dysphagia and/or patient readiness when reaching a decision. PEG is preferably done while forced vital capacity (FVC) is greater than 50% of predicted to reduce risk of postprocedural respiratory complications.

**Materials and Methods:** We searched for all papers on usage of PEG in ALS. The results were screened to identify controlled trials. We also checked references in published articles and enlisted personal communications to identify any additional references.

**Results:** Also, percutaneous radiologic gastrostomy has been shown to have higher success rates and lower complication rates compared with PEG. In addition, safety of PEG in ALS patients with varying respiratory compromise was shown. In patients with FVC <50%, percutaneous radiologic gastrostomy is recommended due to lessened aspiration and respiratory risk. Besides, Weight loss is increasingly considered as a negative prognostic marker in ALS. Peri-interventional PEG management should include prophylactic single-shot antibiotics, slow increase of caloric intake, and long-term high-caloric nutrition.

**Conclusion:** Although the results indicate that PEG might be more beneficial when applied early but it is believed that it can also be performed safely in patients with far advanced disease. In addition, peg has a beneficial effect on improvement of nutritional status of patients for providing reliable access for medications and nutrition. Additional researches regarding effects of percutaneous gastrostomy are highly recommended.

**Keywords:** Amyotrophic lateral sclerosis, percutaneous endoscopic gastrostomy

### **Probiotics and mental disorders: a new strategy**

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**Objectives:** As the burden of mental disorders grows worldwide, the need for new strategies with more efficiency and lower costs, in preventing and treatment of such disorders, is felt more. Depression, one of the main causes of disability, is a common mental disorder that affects about 300 million people worldwide. Bipolar disorder, Schizophrenia, autism and cognitive problems are also important concerns in global mental health.

Gut microbiota with ten trillions of microorganisms plays an important role in human health as an effective massive guest. Microbiome affects host's neural system through gut - brain axis with molecular mimicry and producing neuro-active molecules. When rodent models treated with vancomycin, for altering gut microbiome, features of anxiety and depression observed.

Probiotics are living microorganisms that confer a health benefit on the host by modulating gut microbiota. Animal studies showed that they can affect systemic inflammatory cytokine levels, neurotrophic factor production, intestinal permeability and oxidative stress. Restoring normal inflammatory status and increasing systemic antioxidant capacity observed in human after administering probiotics, orally.

**Materials and Methods:** PubMed and Google Scholar databases were searched with Mesh term "probiotics" along with "depression", "bipolar disorder", "schizophrenia", "autism" and

"cognitive problems". Articles which are well - related included and reviewed.

**Results:** Probiotic consumption, can significantly decrease Beck Depression Index in patients with major depressive disorder and the severity of abdominal symptoms in Children with autism. The results of stool microbiota analysis were obviously different between persons with and without bipolar disorder. In persons with Schizophrenia, abnormal immune responses have been found. Due to modulatory effects of probiotics on the immune system, they can be beneficial as an adjuvant treatment for Schizophrenia. Probiotic administration in healthy humans improves problem- solving and decreases self - blame scores which show the possible preventive effect of probiotics against cognitive problems and Alzheimer disease.

**Conclusion:** since many studies indicated that using probiotics have no adverse effects in the short and medium term of use, probiotic enriched food can make a bright prospect in prevention and treatment of mental disorders. Also, more studies suggested making clear the probiotic effects on Schizophrenia and bipolar disorder.

**Keywords:** mental disorders, probiotics, gut microbiome

#### **The Effect of aerobic interval exercise training on 25-OH Vitamin D Serum and calcium levels in obese and overweight women**

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**Objectives:** Studies have shown that there is an inverse relationship between on 25-OH Vitamin D Serum and obesity. The main role of vitamin D is calcium homeostasis. The purpose of this study was to determine the effect of eight weeks of aerobic interval exercise training on 25-OH Vitamin D Serum and calcium levels in obese and overweight women referred to Khuzestan University jahad Clinic.

**Materials and Methods:** The strategy and design of the research were experimental and pretest-posttest with control group, respectively.

The statically sample consisted of 20 obese and overweight women who were Purposive sampling selected and divided into experimental and control groups. The experimental group was affected by an eight-week exercise training program including 10 minutes of warm-up, 30-45 minutes of aerobic interval exercise (two minutes of exercise and two minutes of rest) with an intensity of 40-45% and 70-50%, 10 minutes of cooling-up and for three weeks. 25-OH Vitamin D Serum and calcium levels were measured before and after intervention in both groups. Data analysis was performed using independent and dependent t test. The significance level was considered as  $\alpha = 0.05$ .

**Results:** Eight weeks of aerobic interval exercise training resulted in a significant increase on 25-OH Vitamin D Serum level ( $P = 0.002$ ), but no significant changes were observed in serum calcium level ( $p = 125$ ).

**Conclusion:** Regarding the results of the study, aerobic interval exercise training for 8 weeks can improvement in the 25-OH Vitamin D Serum levels in obese and overweight individuals.

**Keywords:** 25-hydroxyvitamin D; calcium; aerobic interval exercise training; obese and overweight women.

#### **The effect of education through short massage system on blood glucose control of prediabetic pregnant women**

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**Objectives:** Nowadays, there is a controversy regarding the efficacy of different educational methods on controlling of blood glucose in diabetic patients. This study aimed to assess the effect of education thorough short massage system with face to face education on blood glucose control of prediabetic pregnant women.

**Materials and Methods:** This clinical trial was carried on 100 prediabetic women who referred



to selected health centers of Ahvaz in southwest of Iran, during 2016. Women were randomly assigned into intervention and control groups equally. The control group received face to face education and intervention group received short message addition to face to face education. In both groups, fasting blood glucose (FBG), was evaluated before and after the education and oral glucose tolerance test (OGTT) was assessed after the education. Data were analyzed using chi-square and independent and paired t-tests.

**Results:** There results showed that there was not statistically significant difference between studied groups regarding to FBG and 1-hour and 2-hour OGTT after the intervention, but after intervention the blood glucose level in intervention group was lower than that in control group)  $P < 0.001$ ).

**Conclusion:** Based on the results, it seems that education through short message system cannot control the blood glucose in prediabetic pregnant women; however, for confirmation of these results other studies are recommended.

**Keywords:** Short message system, blood glucose control, Prediabetes

### The effect of spirulina on the treatment of fatty liver: the algae lovely for the health of the liver

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**Objectives:** Non-alcoholic fatty liver is one of the most common diseases in the world and the general health problem of the community. Various factors such as lipid accumulation and inflammation can cause tissue fibrosis and cirrhosis in the liver. Obesity, diabetes, insulin resistance and metabolic syndrome are the most important factors in the development of fatty liver. Spirulina is an iridescent green-algae, microscopic, which has been used for centuries as a food supplement for humans and animals. Spirulina is made from two species of cyanobacterium in the genus *Arthrospira*. It has high nutritional value (a rich source of proteins, vitamins, minerals, carotenoids) as a safe food supplement by the US Food and Drug Administration, generally recognized as safe. Some of the special types of spirulina have an effect on metabolism (lipid lowering, blood glucose) as well as antiviral activity, protects blood vessels and cells, relaxes, anti-cancer, anti-

inflammatory and anti-oxidant properties, and have special safety.

**Materials and Methods:** In this research, the basic library has tried to investigate this issue by using the articles published in the PubMed and SID databases (2005-2015).

**Results:** Mild chronic inflammation is very important in the development of non-alcoholic fatty liver, and its key characteristic is obesity. It is known that inappropriate diet is one of NAFLD's main factors. Not only the amount of energy, but also the quality of the diet plays an important role in the development of NAFLD. A diet rich in saturated fats, cholesterol, and low in unsaturated fats, fiber and antioxidants, and vitamin C and E have been associated with NAFLD and liver inflammation. Therefore, Spirulina, which has a small amount of saturated fat and carbohydrates and is rich in unsaturated fatty acids, has vitamins and fiber in the diet, has made it attractive to manage non-alcoholic fatty liver.

**Conclusion:** Research has shown that spirulina has several beneficial metabolic effects on human health and also increases the health of our lives, and it can also be said that the supplementation of spirulina can be used as a dietary supplement in non-alcoholic fatty liver patients.

**Keywords:** Spirulina, Fatty liver, Obesity.

### Nigella sativa Extract Improves Unilateral Ureteral Obstruction-Induced Kidney Dysfunction through Angiotensin II Inhibition in the Rat

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**Objectives:** Unilateral ureteral obstruction (UUO) is a good and common laboratory models



for evaluation of renal fibrosis pathophysiology. Renin-angiotensin system plays an important role in the pathophysiology of kidney injury following UUO. Nigella sativa (NS) is a plant with many pharmacological effects. In the present study, the effect of losartan and NS extract against kidney damage following UUO was evaluated.

**Materials and Methods:** 32 male albino Wistar rats were randomly divided into 3 groups: 1- sham-operated, 2- UUO, 3- losartan (15 mg/kg)+UUO, 4- NS (400 mg/kg)+UUO. 3 days after the administration of losartan and NS extract, the animals were anaesthetized. Then, the abdomen was opened with a midline abdominal incision and the left ureter was ligated with 4-0 silk at two points and was cut between the ligatures to prevent urinary tract infection. The administration of losartan and NS extract was continued two weeks after UUO. Blood sample was collected on day 1 and 48 h, 5 days, one and two weeks after UUO. Serum osmolarity and urea and creatinine concentrations were determined.

**Results:** Compared with day 1 in the UUO group, there was a significant increase in serum osmolarity and urea and creatinine concentration 48h, 5 days, one and two weeks after UUO. Serum osmolarity and urea concentration in losartan+UUO group showed no significant change 48h and 5 days after UUO compared with day 1. Serum creatinine concentration in losartan treated rats significantly increased in different days following UUO. However, two weeks after UUO, serum level of creatinine decreased by 8.5% compared with one week following UUO. In NS (400 mg/kg)+UUO group, there was no significant change in serum osmolarity and urea concentration between different days following UUO. In this group, serum creatinine concentration significantly increased compared with day 1. However, serum level of creatinine significantly decreased one and two weeks following UUO, compared with 48h after UUO.

**Conclusion:** The current study suggests that NS extract are able to improve the UUO-induced renal dysfunction. These favorable actions of NS extract on UUO model in rat are comparable with the well-known RAS inhibitor losartan.

**Keywords:** Unilateral Ureteral Obstruction, Renin-Angiotensin System, Losartan, Nigella sativa.

#### **A review of the relationship between nutrition and oral health during pregnancy**

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**Objectives:** Pregnancy may pose an increased risk for the development of caries and other oral health problems. Changes in the state of pregnant women's hormones (the most prominent of which are increasing estrogen and progesterone levels), and increase the acidity of the mouth because of changes in salivary composition, food habits and repeated vomiting causes swelling and increased gingival sensitivity, tendency to bleed, periodontitis, and dental plaque formation.

The aim of this review is to critically appraise the currently available data on diet and maintenance of periodontal health during pregnancy.

**Materials and Methods:** By searching for the key words in the Pubmed, Science Direct, Wiley databases, the available articles were examined in English from 1950 to 2016, and finally, out of a total of 65 articles, 28 eligible sources were selected. Then they were criticized.

**Conclusion:** Preserving of oral health during pregnancy is predominantly influenced by the following factors: 1) healthy diet, 2) oral hygiene, 3) patients' education, 4) regular control of oral health. Caries prevention through healthy diet implicates the reduction in frequency and amount of intake of cariogenic food, above all of refined carbohydrates, i.e. sugars and sweets and Foods known to have caries-prophylactic effects should predominate in healthy diet plans. In this paper, the role of vitamins (A, B, D, C, E, K), minerals (Ca, Mg, Iron, zinc), carbohydrates, proteins on oral health during pregnancy has been explained and nutritional recommendations for prevention and treatment are presented.

**Keywords:** Nutrition, Periodontal, Pregnancy

#### **Investigating the effect of curcumin on the level of trace elements copper and zinc and liver function tests in patients with metabolic syndrome**

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**Objectives:** Metabolic syndrome is a complex disorder with high socio-economic costs that is pandemic around the world. It is mainly characterized by dyslipidemia (elevated triglycerides and apolipoprotein B containing lipoproteins and decreased HDL-C), increased blood pressure and impaired glucose homeostasis. Moreover, abdominal obesity and

insulin resistance syndrome, as main symptoms of this syndrome, have gained more attention. The prevalence of this disease is on rise and it poses individuals at the risk of serious complications including cardiovascular, kidney and liver diseases. One of symptoms of this disease is non-alcoholic fatty liver disease. Also, unexplained increase in liver enzymes has been found to be strongly correlated with lipotoxicity caused by metabolic syndrome. Further, studies have shown a strong relationship between trace elements and metabolic syndrome. As suggested in the literature, the level of trace elements and liver enzymes in people with metabolic syndrome is higher than normal people. In recent studies, curcumin, as an anti-inflammatory and antioxidant, has been found to play an important role in cardiovascular risk factors including metabolic syndrome.

**Materials and Methods:** This study was a double blind clinical trial in which 109 people with metabolic syndrome were randomly assigned to three groups of A, B, C and studied for 6 weeks in two stages before and after intervention. At the baseline, in addition to obtaining the anthropometric characteristics of participants, 20 cc of fasting blood sample was taken from each subject. In addition to the observance of the approved diet, they were treated with three groups of ordinary curcumin, phospholipid complex and placebo (starch). After this period, 20 cc of blood was taken again, and the concentration of alkaline phosphatase, aspartate aminotransferase, alanine aminotransferase, total lactate dehydrogenase, direct bilirubin, albumin and total protein with enzymatic method were measured using Iranian commercial kits produced by Pars Azmoon Company by an auto-analyzer device (BT 3000 model) and the value of Cu, Zn were evaluated by atomic absorption (Varian AA 240 FS model).

**Results:** The administration of curcumin at a dose of 1 g daily for 6 weeks caused significant changes in the level of lactate dehydrogenase, aspartate aminotransferase, alanine aminotransferase, zinc serum level and zinc to copper ratio of serum before and after treatment with curcumin and phospho-curcumin.

**Conclusion:** According to the results of this study, it can be concluded that curcumin with a daily dose of 1 g does not make any complication for the liver. Also, by exerting a significant positive effect on the zinc serum level and zinc to copper ratio, it can prevent cardiovascular disease in patients with metabolic syndrome.

**Keywords:** metabolic syndrome, curcumin, liver enzymes, trace elements

### Ocular manifestation of Metabolic Syndrome

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**Objectives:** Met Syndrome indicates a widespread cluster of naturally relationship risk factors including high BMI, high blood pressure, insulin resistance, dyslipidemia, proinflammatory cytokine secretion, and status. Any persons have Met Syndrome at the risk increase of coronary artery disease (CAD), Diabetes Mellitus, and Vascular disease. This systemic change can stimulate ocular problem.

**Materials and Methods:** A systematic literature search of the PubMed, Science Direct and SID databases was conducted for original articles published before 2017. The keywords were used include : (Cataract, central retinal artery occlusion, intraocular pressure, Met Syndrome, retinopathy Introduction).

**Results:** The relationship between diabetes and HTN with retinopathy, cataract, and raised intraocular pressure is well known.

**Conclusion:** This review highlights the relationship of Met Syndrome, including all its components, with various ocular conditions such as retinopathy, central retinal artery occlusion, cataracts, and raised intraocular pressure.

**Keywords:** Cataract, central retinal artery occlusion, intraocular pressure, Met Syndrome, retinopathy Introduction.

### Potential risk of fish-borne helminth infections in humans in Iran

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**Objectives:** There are many zoonotic fish-borne helminth species belong to Trematoda like *Heterophyes heterophyes*, Cestoda like *Ligula intestinalis* and Nematode phylum like *Anisakis* spp. in free rivers, dams and sea in Iran. These zoonosis parasites affect fish and probably human health.

**Materials and Methods:** A literature survey in PubMed and Scopus identified a variety of potentially these zoonotic fish-borne helminth in freshwater which are common throughout Iran via eating raw and undercooked fish.

**Results:** Some cases of *Heterophyes* sp reported in humans in Iran. Of course there is no human case of other parasite but helminth infection in fish reported of different cities of Iran.

**Conclusion:** The difficulties of diagnosing of human infections with these parasites are very complicated. Requirements for an integrated approach to avoid the infection are including: a) human fish-borne cestodes may constitute a problem of public health in Iran; b) effective regulations to prevent the infection should be adopted; c) people must refrain from eating raw or undercooked fish dishes; and d) an intensive campaign alerting people about the feeding risk behaviors should be undertaken.

**Keywords:** Fish-borne helminth, Human infection, Zoonosis, Iran

### Dietary diversity, health and nutrition adequacy

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**Objectives:** Access to food is one of the social and cultural rights of individuals, and the lack of access to food, as a major social problem, has been going on for centuries. The assessment of dietary intake is important for several reasons, as monitoring dietary intake and dietary intake according to dietary recommendations can be a sign of health Society and the effect of diet on health and illumination. There are various ways to assess dietary intake that the selection of each method should be in accordance with the goal of the study and the culture of each society. Data from these assessments for food and nutrition policies is often critical. Food intake plays an important role in assessing food security.

Therefore, this study was conducted to evaluate the role of dietetic nutrition on health and nutritional adequacy.

**Materials and Methods:** This study is a review study. All published articles were collected over the years 2017- 1995 from databases, SIDs, Google Scholar, Scopus, Pubmed, Medlib, Magiran, and Science Direct. Comprehensive search with the keywords of Dietary diversity, health, nutritional adequacy for Persian articles and their English equivalent for English articles. After reviewing the studies, a total of 30 papers were reviewed.

**Results:** The results of various studies indicate that the food diversity score has a positive correlation with the mean index of nutrient adequacy ratio. The findings of the study on children and elderly and elderly show similar results in this regard. Therefore, the use of Diet Score to predict the nutritional adequacy of the diet is practical, and counting food groups and scoring it as an easy way can be used to estimate the nutritional adequacy of the future studies.

**Conclusion:** Dietary indices are used to assess the adaptation of people to dietary guidelines, and their evaluation is typically expensive, time-consuming and requires a strong method. If dietary diversity can be a sign of nutritional status, it can be considered as a cheap and simple indicator in this regard.

**Keywords:** Dietary diversity, health, nutritional adequacy

### Effective food in the preventing of depression

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**Objectives:** Depression is a mood that includes boredom and escape from activity or unwillingness and reluctance, and can affect one's thoughts, behavior, feelings and health and well-being. People with depression may feel discomfort, anxiety, emptiness, frustration, helplessness, loss of life, embarrassment or restlessness. They may lose their passion for performing activities that are once enjoyable for themselves, lose their focus on food, lose their focus, have difficulty remembering details and make decisions, deal with problems in their relationships Thinking about suicide, they're going to have it and even commit suicide. Depression may also cause insomnia, excessive sleep, tiredness and burning, digestive problems, or reduced body energy. Fortunately, some of the causes of mental illness are just about nutrition, so you can fix it by changing your diet. Accordingly, this study was conducted to

evaluate the effective food in preventing depression.

**Materials and Methods:** This study is a review study. All published articles were collected over the years 2017- 1995 from databases, SIDs, Google Scholar, Scopus, Pubmed, Medlib, Magiran, and Science Direct. Comprehensive search with the keywords of Nutrition, Depression, Prevention for Persian articles and their English equivalent for English articles. After reviewing the studies, a total of 22 papers were reviewed.

**Results:** The results of the study showed that receiving 4 nutrients: 1-adenine, 2-thiamine, 3-cytosine, 4- Guanine, preventing depression. These four substances are present in flesh like veal or sheep, liver, brain. Also, lack of vitamins in group B causes nerve disorders such as severe anxiety, depression, anger and nervous pressure. The most important is the thiamine.

**Conclusion:** Having the right lifestyle and proper diet can prevent many diseases such as depression.

**Keywords:** Nutrition, Depression, Prevention

### Increased memory by feeding

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**Objectives:** Memory and memorial in psychology, memory, or memory is a talented mentor to store, memorize and retrieve information and experiences. The basis of this is the formation of strong and sufficient interfaces in the cerebral cortex. Scientifically speaking, memory can be divided into two parts: "long-term memory" and "short-term memory". Human memory is very sensitive and vulnerable and affected by many factors. By examining these factors and reducing the disruptive factors, it is possible to increase the capacity and memory of the memorial. One of the factors affecting memory is nutrition. Accordingly, this study was conducted to investigate the effects of food on memory.

**Materials and Methods:** This study is a review study. All published articles were collected over the years 2017- 1995 from databases, SIDs, Google Scholar, Scopus, Pubmed, Medlib, Magiran, and Science Direct. Comprehensive search with the keywords of brain, nutrition, memory for Persian articles and their English equivalent for English articles. After reviewing the studies, a total of 25 papers were reviewed.

**Results:** In many studies, many foods have been suggested to enhance memory and fecundity.

Generally, foods that contain selenium, resveratrol, vitamin C, fistin, omega-3, antioxidants and flavonoids, polyphenols, vitamin E And vitamins of group B (B 1 - B6 - B12) are recommended for this purpose.

**Conclusion:** Nutrition should be considered as one of the most important factors in increasing the capacity of the brain, memory and concentration.

**Keywords:** brain, nutrition, memory

### Vegetarian diet: a way to prevent chronic disease

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**Objectives:** Concerning the widespread outbreak of chronic diseases, prevention has an important role in improving health in the society. Having a proper diet can prevent the disease. The aim of this study was to find out the effect of a vegetarian diet on chronic diseases.

**Materials and Methods:** This study was a library-based by using the published articles in scientific databases like PubMed, Google Scholar and SID from 2000 to 2017 as period of time by using keywords including nutrition, vegetarian diet, chronic disease.

**Results:** Diets is the cause of cancer in 30% of Western countries and 20% of developing countries. Vegetarian diet can decrease the risk of cardiovascular diseases, diabetes mellitus, hypertension, obesity and cancer. For example, people with lacto-ovo diet have less risk of gastrointestinal cancers. Women on vegetarian diets had less risk of getting uterine and breast cancers. In some studies done in England and California, it was also observed that the rate of colon cancer was less especially in pescos group. Studies show that high fat diet increase estrogen and prolactin in body and their impact on intestinal flora bacteria that increase secretion of bile acids. Bile acids stimulate tumor growth. Grilled red meat can produce amino heterocyclic compounds. These compounds have been linked with increased risk of cancer. High-fiber foods increased sensitivity to insulin. Insulin and IGF-1 act as promoters for most



normal and pre-neoplastic tissues. Their down-regulation may reduce cancer rates. Fiber, antioxidants, phytochemicals maintain a healthy weight and lower incidence of cancer. Soy and its derivatives are rich in phytoestrogens that reduce breast cancer risk. In LACTO group Calcium reduces proliferation and induce apoptosis in the digestive tract cells.

**Conclusion:** Although vegetarianism is considered a deprivation in diet, it should be included in diet meal planning

**Keywords:** Nutrition, vegetarian diet, chronic disease, cancer.

### Application of Nanotechnology for the Treatment of Metabolic Syndrome

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**Objectives:** Metabolic syndrome is a major and an ever-increasing clinical challenge of global health following urbanization around the world. It would be resulted from over-consumption of energy, increased obesity and lack of mobility in life. The metabolic syndrome causes a five-fold increase in the risk of type 2 diabetes mellitus and a twofold increase in the risk of developing cardiovascular disease over the next 5 to 10 years. Based on this, more attention has been drawn to the diagnosis and treatment options of this disease. One of the preferred methods is the use of nanotechnology to improve the disease. Nanotechnology is a natural development in many health domains including synthetic and nanostructures.

**Materials and Methods:** We searched the literatures using the Scopus, Google scholar, Google, PubMed and Web of Science databases.

**Results:** The use of nanoparticles in order to increase the efficacy of treatment, reduce the side effects and the amount of used drugs via their small size, permeability and maintenance strength lead to their absorption by target organs. Meanwhile, different nanoparticles with consumption values and particle size have been investigated. A study has shown the effect of gold nanoparticles on the reduction of body fat mass. In another study, the effect of magnetite nanoparticles of aliskiren with magnetite in reducing systolic blood pressure has been investigated.

**Conclusion:** The all reported studies have shown the effects on nanoparticles and nonmetals on treating of metabolic syndrome.

**Keywords:** Metabolic Syndrome; Treatment; Nanoparticles

### Investigating the relationship between success in first feeding and exclusive breastfeeding in neonatal period

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**Objectives:** Breastfeeding is one of the public health priorities in the world and is one of the most effective preventive and health promotion behaviors. In this regard, the World Health Organization and UNICEF are recommending breastfeeding as well as its continuation until the end of 2-years old and emphasizing the promotion of breastfeeding as one of the four strategies for children's health. The aim of this study was to determine the relationship between success in first feeding and exclusive breastfeeding during neonatal period.

**Materials and Methods:** This cross-sectional study was done on 92 primiparous women in Mashhad, Umm al-Banin Hospital. The Infant Breastfeeding Assessment Tool (IBFAT) was used to measure success in first breastfeeding of neonate. Then mothers and neonates were followed up to assess the rate of exclusive breastfeeding by the end of the neonatal period and the relationship between these two variable was measured. Data analysis was done using SPSS software and descriptive and inferential statistics.

**Results:** There was a statistically significant difference in frequency of exclusive breastfeeding in neonatal period based on success in the first breast feeding of the neonate ( $p = 0.03$ ). So that, frequency of exclusive breastfeeding during neonatal period, was approximately twice more in neonates who were successful in the first breast feeding, than who did not succeed in the first feeding.

**Conclusion:** Success in the first breast feeding of a neonate could be related to her/his success in exclusive breastfeeding. Therefore, in order to increase breastfeeding rates especially exclusive breastfeeding, mother and child health care



providers can plan to implement interventions for successful breastfeeding after delivery.

**Keywords:** Success in first feeding, exclusive breastfeeding, neonatal period

### **Nano Food: New Opportunities, New Approach, New Concern**

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**Objectives:** The term 'Nano-food' describes food that has been cultivated, produced, processed or packaged using nanotechnology techniques, or to which manufactured nanomaterials have been added. The purpose of Nano-food is to improve food safety, enhance nutrition and flavor, and cut costs. Like any new technology, public confidence, trust, and ultimately acceptance will be the key determinants for the success or failure of nanotechnology applications for food.

**Results:** There are a number of knowledge gaps that need further research; these include: a clear, fit-for-purpose, definition of nanomaterials and nanotechnologies is needed; validated methods for detection and characterization of nanomaterials in complex food matrices; toxicological research on nanomaterial safety; lack of specific guidelines, guidance documents for testing, or testing requirements under any of the existing regulations.

**Conclusion:** These challenges require efforts at an international level to realize the potential of nanotechnologies in a manner that is both beneficial and safe to the consumer. Possible ways to achieve this could be through: Establishment of international research collaborations and networks that can address different aspects of the existing and new nanotechnology applications in food sectors; Development of clear and consistent guidelines for risk assessment of Nano-food products; Establishment of a global body to ensure quality control and safety assessment of Nano-food products on a case-by-case basis. A harmonized regulatory system at the global level that ensures pre-market evaluation of Nano-food products, sets liabilities, and sets clear limits for any Nano-additives in food and related applications.

**Keywords:** Nano food, Concerns, Human health, The consumer

Health effects of probiotics and protective role in cancer of the digestive tract

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**Objectives:** The term probiotic describe substances produced by one microorganism, that stimulate the growth of another, thus meaning the opposite of antibiotics that contribute to intestinal balance. Cancer is a serious global public health problem. Cancer incidence and mortality have been rising throughout the past century in most places of the world. At least 35 % of all cancers and more than half of cancer of the gastrointestinal tract are associated with feeding. The acceptance and consumption of probiotic products in the world, especially Europe and the United States and Japan has spread considerably.

**Results:** There are several epidemiological evidences that support a protective role of probiotics against cancer. Lactic acid bacteria (LAB) such as *Lactobacillus* and *Bifidobacterium* are widely used. Prophylactic effects of probiotics in carcinogenesis process performed. This context show that normal intestinal flora can influence carcinogenesis by producing enzymes such as glycosidase, B-glucuronidase, azoreductase, and nitroreductase that transform precarcinogens into active carcinogens. LAB can reduce the levels of colon enzymes that convert pro-carcinogens to carcinogens. Incorporated with enhancing the host's immune response, reducing able to binding and degrading carcinogens, producing antimutagenic compounds, altering the physiochemical conditions in the colon, altering the metabolic activity of the intestinal microbiota, by preventing cytokine-induced apoptosis of colonic epithelial cells.

**Conclusion:** The Studies on the effect of probiotic consumption on prevention of human cancer appear promising. But more research is needed in this area.

**Keywords:** *Bifidobacterium*, *Lactobacillus*, Probiotics, Cancer

### **Food fortification with fish oil**

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**Objectives:** Fish oil is a predominant dietary source of long-chain polyunsaturated fatty acids of the omega-3 series. Beneficial health effects of fish oil intake are well demonstrated for prevention of cardiovascular diseases and cancer, as well as in the proper development and functioning of the brain. Oils rich in omega-3 fatty acids are incorporated into bakery products, pasta, and dairy products such as milk and yogurt, as well as in juice and nutrition bars.

**Materials and Methods:** In spite of so many health beneficial effects, fortification of these fatty acids to food products becomes a challenging task due to instability and susceptibility of omega-3 fatty acids to oxidation. Microencapsulation has been hypothesized to be an effective technique to mask the unpleasant taste of fish oil and, to delay lipid oxidation of polyunsaturated fatty acids, which increases the stability of omega-3 fatty acids.

**Results:** Polyunsaturated fatty acids are highly susceptible to oxidation. In addition, special conditions during production, packaging and storage must be applied to prevent the oxidation of omega-3 fatty acids. Otherwise enriched food products may easily become a source of hydroperoxides and other by-products of oxidation, e.g. free radicals promoting cancer and atherosclerosis development.

**Conclusion:** This study presents a review of the researches on food fortification with omega-3 polyunsaturated fatty acids using fish oil. The presented results of investigations suggest that the production of fish oil-enriched food is thus reasonable and justified.

**Keywords:** Food fortification, Omega-3, Fish oil.

### **Interaction Between Diet and The Human Gut Microbiome: Comparative in Modern and Traditional Diet**

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**Objectives:** Microbes in the distal gut contribute to host health through biosynthesis of vitamins and essential amino acids, as well as generation of important metabolic by products from dietary components left undigested by the small intestine. Recently, the importance of dietary effects and the impact of different foods on intestinal microbiota have been considered. The effects of diet on the gut microbiota were first described in 1977. With the advances of 16S rRNA sequencing, several studies have been able

to comprehensively investigate the impact of diet on gut microbial composition.

**Materials and Methods:** The literature related to the topic from database was reviewed. review Base on content of titles and abstracts of 20 articles during 2004 to 2016.

**Results:** By comparing the modern and traditional diet, and considering the difference between these two diets. The diet of people with traditional diet is low in fat and animal protein and rich in starch, fiber, and plant polysaccharides, and predominantly vegetarian. The gut microbiota of this individuals is rich in Bacteroidetes and lacking in the Firmicutes. It has also been observed that there is a large difference in the frequency of short chain fatty acids in the intestines of this peoples compared to individuals with modern diet. the Enterobacteriaceae were significantly underrepresented in the intestines of people with traditional diet than in people with modern diet. Western diet led to a marked decrease in numbers of total bacteria and beneficial Bifidobacterium and Eubacterium species. Gut microbiota coevolved with the polysaccharide-rich diet of people with traditional diet, allowing them to maximize energy intake from fibers while also protecting them from inflammations and noninfectious colonic diseases.

**Conclusion:** Human intestinal microbiota from people characterized by a modern diet and a rural diet, indicating the importance of preserving this treasure of microbial diversity from ancient rural communities worldwide.

**Keywords:** Diet, Gut Microbiota, Health, Modern diet, Traditional diet

### **Effects of luteolin and luteolin-morphine co-administration on acute and chronic pain and sciatic nerve ligated-induced neuropathy in mice**

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**Objectives:** Neuropathic pain (NP) is a common condition accompanied by nerve injury. To date, there is no definite treatment approved for this disorder. In addition, many drugs that are used for NP cause adverse reactions. Luteolin is a naturally occurring flavonoid with diverse pharmacological properties such as antiinflammatory, antioxidant and anticancer activities. We sought to investigate luteolin effects on chronic, acute and neuropathic pain as well as its potential to increase morphine anti-nociceptive effects in mice.

**Materials and Methods:** Albino mice (20–25 g) were randomly divided into 14 groups (n=7) including morphine 1 mg/kg body weight +luteolin (5 mg/kg body weight), morphine (9 mg/kg body weight, i.p.), luteolin (2.5, 5 and 10 mg/kg body weight), imipramine 40 mg/kg body weight and normal saline (NS) (0.9 %) as vehicle and subjected to hot plate test. Formalin test was done in the following groups: NS, diclofenac sodium (10 mg/kg body weight, i.p.), morphine (9 mg/kg body weight, i.p.) and luteolin (2.5, 5 and 10 mg/kg body weight).

**Results:** Administration of luteolin single dose (5 and 10 mg/kg body weight) significantly reduced neuropathic pain ( $p < 0.05$ ) in comparison to negative control. Anti-nociceptive effects of luteolin were comparable to imipramine as the standard positive control ( $p < 0.001$ ). Co-administration of luteolin and morphine potentiated morphine 1 mg/kg body weight painkilling effects ( $p < 0.001$ ).

**Conclusion:** Our results showed that luteolin alone reduces neuropathic pain. Furthermore, when coadministered with morphine 1 mg/kg body weight, luteolin potentiates morphine effects. Therefore, luteolin-morphine co-administration might be a valuable alternative for the conventional treatment.

**Keywords:** luteolin, morphine, neuropathic pain, sciatic nerve ligation

### The Effect of Biosensor in Food Science Especially Dairy Food

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**Objectives:** These days using biosensor is very popular in a different field like food science, chemical and dairy industry. Development of biosensors in the food science can increase automation of food industry and it could be improving quality and safety of foods. Therefore, needing a method to control the process and quality of food is increasing. Biosensor is very useful in some aspect, for example: monitoring the online process, Mastitis and penicillin detection (biosensor SIRE), as well as counting pathogen bacteria such as Coli-E bacteria.

**Materials and Methods:** Published and indexed papers and eBooks from 1998 to 2017 with keywords of biosensor,

Mastitis, food science, dairy science, online process, quality and safety food selected for preparing this narrative review. We used Google scholar and, science direct databases for search process.

**Results:** Mastitis is an inflammation of the mammary gland in cows which have created a huge challenge for dairy industry and causes decreasing, milk production efficiency and increasing production costs. To recognize Mastitis can be useful to faster pollution treatment and increasing production potential. In order to measure the penicillin and detection of E. coli in dairy industry, optical biosensor based on reaction between antibodies and antibiotics penicillin and biosensor with a wave converter / page based on gravimetric, respectively have used.

**Conclusion:** Development of biosensors in the food industry, particularly in the dairy industry can increase automation of food industry and improve the quality and food safety. Furthermore, using of 2 biosensors in the food industry could be useful approach, because of the authenticity, accuracy and high speed.

**Keywords:** Biosensor, food science, dairy science, quality and safety, Mastitis

### Effect of Fructose Consumption on Body Weight and Obesity: A Review of Contradictory Results of Recent Studies

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**Objectives:** Fructose consumption has recently received significant media attention, most of which has been negative. A re- assessment of published epidemiological data concerning the consumption of dietary fructose or mainly high



fructose corn syrup (HFCS) show that most of such studies have been cross-sectional or based on passive inaccurate supervision, especially in children and adolescents. Research records of the short or acute term satiating power or increasing food intake after fructose consumption as compared to that resulting from normal patterns of sugar consumption, such as sucrose, remains indeterminate. The results of longer-term interposition studies pertain mainly on the type of sugar used for comparison and no negative results are found when sucrose is substituted for control group.

**Materials and Methods:** The evidence of the action of dietary fructose, but not glucose, on increasing appetite and food intake in acuteterm studies has been derived mainly from experimental studies in animals especially rodent or human model. In rodents while excessively high fructose intake may increase appetite by different mechanisms, its' effect on body weight needs long term dietary periods.

**Results:** Negative conclusions have been drawn from studies in rodents or in humans try to clarify the mechanisms and biological pathways underlying fructose consumption by using insubstantially high fructose amounts. The issue of dietary fructose and health is linked to the amount of consumption, which is the same issue for any macro- or micro nutrients. It has been considered that balanced fructose consumption of  $\leq 50\text{g/day}$  or  $\sim 10\%$  of energy has no detrimental influence on lipid and glucose control and of  $\leq 100\text{g/day}$  does not affect body weight.

**Conclusion:** Certainly high fructose consumption can induce insulin resistance, impaired glucose tolerance, hyper-insulinemia, hypertriglyceridemia, and hypertension in animal models. No fully relevant data account for a direct link between moderate dietary fructose intake and health risk markers.

**Keywords:** Cardio-vascular disease, Fructose, High fructose corn syrup, Obesity.

### Development of advanced edible coatings in meat products

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**Objectives:** Nowadays consumers demand high quality food with an extended shelf life without chemical additives. Edible films and coatings (EFC) added with natural antimicrobials are a promising preservation technology for raw and processed meats because they provide good barrier against spoilage and pathogenic microorganisms.

**Materials and Methods:** Different types of ingredients such as starches were added to the formulations of meat breast retard staling of fried products. As a control, burgers formulated without any starch addition was used. Weight loss, firmness, volume index, specific gravity, soluble starch were used as the indicators of quality criteria.

**Results:** flours and starches satisfies all the principal aspects making it a promising raw material for edible coatings/films. Modified starch has grabbed much attention, both at the academic as well as at the industrial level, because these films exhibit dramatic improvement in filming properties without involving any significant increase in cost of production. In addition, the films gas barrier properties contribute to extended shelf life because physicochemical changes, such as color, texture, and moisture, may be significantly minimized.

**Conclusion:** The perspective of this technology includes tailoring of coating procedures to meet industry requirements and shelf life increase of meat and meat products to ensure quality and safety without changes in sensory characteristics.

**Keywords:** Biopolymers, Food packaging, Modified starch

### The effect of dietary fiber on physicochemical properties of meat

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**Objectives:** In recent decades, the use of dietary fiber in the food industry has increased to improve the health and safety of individuals against diseases. Therefore, increasing the fiber content plays an important role in health.

**Materials and Methods:** Wheat flour was partially replaced at 0, 5, 10 % (w/w) with Resistant Starch (RS), as a source of dietary fiber, and used in the production of meat.

**Results:** Obtained results indicated that batter consistency increased while its density reduced with an increase in the level of RS. Increasing the level of RS caused an increase in density but a decrease in volume. Samples became softer but their cohesiveness, springiness and chewiness reduced. The products also became whiter, less reddish and less yellowish.

**Conclusion:** Addition of less than 10% RS had no significant effect on the sensory attributes of the products. In total, it was concluded that a maximum level of RS in the recipe to produce an acceptable product amounted to 10%.

**Keywords:** Dietary fiber, Food, Safety, Resistant starch

#### **The effect of *Zataria multiflora* on day and exercise wheeze, FEV<sub>1</sub> and plasma levels of nitrite in asthmatic patients**

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**Objectives:** The preventive effect of *Zataria multiflora* in animal models of asthma has been reported. In the present study, its effect on wheezing, forced expiratory volume in 1 second, and plasma nitrite (NO<sub>2</sub><sup>-</sup>) in asthmatic patients was studied.

**Materials and Methods:** In this study, thirty asthmatic patients were randomly allocated in three groups (n= 10 for each group) including placebo group (P), and two treatment groups which received two doses of *Z. multiflora* (groups Z low and Z high that received 5 and 10 mg/kg/day, respectively). All patients were treated for two months in a double-blind way. At three time points (before starting the treatment (pretreatment), and one and two month after treatment), wheezing during day and exercise,

forced expiratory volume in 1 second and NO<sub>2</sub><sup>-</sup> were measured.

**Results:** Day wheeze and exercise wheeze were significantly reduced in treated groups with both doses of *Z. multiflora* compared to pretreatment (p<0.05 to p<0.01). Furthermore, FEV<sub>1</sub>% was significantly increased in treated groups with both doses of *Z. multiflora* (p<0.05 to p<0.001). Plasma level of NO<sub>2</sub><sup>-</sup> was also significantly decreased in Z high group after two months of treatment (p<0.01 to p<0.001). However, most of evaluated parameters in placebo group did not show significant changes during the study.

**Conclusion:** *Z. multiflora* improved FEV<sub>1</sub>% while reduced wheezing and plasma level of NO<sub>2</sub><sup>-</sup> in asthmatic patients. Therefore, a possible therapeutic potential for this plant could be suggested to be used against asthma.

**Keywords:** Asthma, *Zataria multiflora*, Forced expiratory volume in one second, Wheezing, Nitrite

#### **Rheological properties of functional bread fortified with bean flour and date kernel fiber**

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**Objectives:** Beans are one of the major sources of protein, especially for the massive low-income peoples in the world. They are good nutritional supplements for cereals in human nutrition due to containing a higher level of protein (18-50%) in comparison with cereals (10-15%) and being rich in the essential amino acid of lysine. Fiber is one of the most important products that are known as functional ingredients and their useful effects in preventing various diseases have been proven.

**Materials and Methods:** In this study, with the aim of producing healthy and functional bread, bean flour and date kernel fiber were used to fortify bread formulation and all rheological properties (farinograph, extensograph, and amylograph) of samples were compared to conventional wheat bread.

**Results:** According to the analysis of extensograph parameters after 135 min rest of dough, all parameters including Resistance to

extension (R50), Extensibility (E) and Maximum Resistance to extension (RM) were increased. In the other words, Dough strength increases with replacing bean flour and date kernel fiber in the formulation. Besides, it is clearly understood that bean flour and date kernel fiber significantly affected stability time, softening degree, water absorption ratio and dough development time. Farinograph quality number (FQN) of fortified flour was increased, that indicates the improvement of flour quality. The amylograph of fortified bread dough showed that beginning of gelatinization of fortified flour was decreased (57.45 min) in comparison with control (64.7 min). Maximum gelatinization of fortified flour was determined as 1555 AU.

**Keywords:** farinograph, date, bean, extensograph, amylograph

### The relationship of nutrition to health

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**Objectives:** Nutrition affects health in many ways. Lack of nutrients in the body, whether deficient or excessive, affects the health of the individual and disrupts the normal functioning of the body. Food plays a vital role in maintaining health and well-being. A nutritious food program is a foundation for promoting health and preventing disease

**Materials and Methods:** To be healthy, choosing healthy nutrition and observing health tips is important. Everyone can maintain and even increase their mental and physical health by choosing healthy nutrition and observing to achieve optimal nutrition, each person should consume a diverse diet that has enough carbohydrates, lipids, proteins, vitamins, minerals, water and dietary fiber and hygiene standards.

**Results:** Today, nutrition has become more important than ever in life because studies have shown that the cause of many deaths and various illnesses, including cardiovascular diseases, cancers, diabetes, etc., is rooted in individual nutrition. Given that technology and the life of the machine are on the rise, physical activity is less, the result of it is obesity, and overweight, which itself is the source of many physical problems. Therefore, following a healthy diet, you can achieve the essential body of your body.

**Conclusion:** Nutrition that is based on scientific principles and taking into account all body needs, ensures the health of the human being and, if not otherwise, disrupts the function of the entire body of the body, causing the loss of physical and

mental health. Will be psychic in man. A good and balanced diet can increase the longevity of a person and affect the well-being of the individual.

**Keywords:** Nutrition-Health-Nutrition-Healthy-Diet-Diet Program

### Curcumin based Chemical Sensors for Ion Detection

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**Objectives:** Curcumin is a poly phenolic compound and the basic ingredient of turmeric plant with IUPAC name of 1,7-bis(4-hydroxy-3-methoxyphenyl)- 1,6-heptadiene-3,5-dione. It has poor bioavailability as it is water-insoluble. It bears 1,3-diketons with keto-enol isomerization and can readily chelate with heavy metal ions to form complexes and scavenge them from human body and environment. It has three reactive functional groups which can give a few potential binding sites for some of the anions and cations. The strong chelating ability of diketones has been widely investigated towards a great number of metal ions; therefore, curcumin could be of great importance in the chelating treatment of metal intoxication and overload.

**Materials and Methods:** The searches in this study was based on the **keywords:** chemical sensor, ion selective electrode, curcumin, ionophore, complex formation and ion detection followed by Scopus, Google scholar, Google, PubMed and Web of Science.

**Results:** Because of the structure of curcumin, it can be used as an ionophore or recognition element in the fabrication of Ion Selective Electrodes (ISEs) for ion detection. To achieve the efficiency of the sensors, we have compared ISEs to each other based on their working range, limit of detection (LOD), selectivity and sensitivity toward cations and anions.

**Conclusion:** Curcumin is a polyphenolic compound which has remarkable affinity for some of the cations and anions, because of its structure. According to the results obtained, the applicability of curcumin as a key element in the composition of membrane sensors for detecting of ions has been shown.

**Keywords:** Curcumin; Ion selective electrodes; Key element; Ionophore; Ion detection.



### **The role of Vitamin D in Age-related Cataract; review of the current shreds of evidence**

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**Objectives:** Cataract is one of the most important visual disabilities worldwide which affects 46 million people. In Iran, 3 1.7% of blindness cases and 47.5% of severe and chronic visual diseases are due to this disease. Age related cataract (ARC) is a multifactorial disease with a relatively high prevalence which can cause visual impairment. Both genetic and also environmental factors influence the pathogenesis of ARC. Oxidative destruction of the lens is one of the influential events involved in the pathogenesis of the disease. Basic evidence suggests that dietary antioxidants (by preventing oxidation of proteins or lipids within the lens) might decrease the incidence of cataract. In this study, we reviewed the current literature to find out the correlation between vitamin D level and Age-related Cataract.

**Materials and Methods:** Searching for related articles were done using keywords including "nutrition, cataract, vitamin D and Age related cataract" in PubMed, Google Scholar, Scopus and Web of Science databases.

**Results:** The age-related cataract was associated with age, hypertension, blood pressure, diabetes, fasting glucose levels and HbA 1c. The incidence of age-related cataract increases with the elevated level of vitamin D in serum. However, this finding has been observed in women, not in men. Vitamin D level is directly related to age and on the other hand, is inversely related to the risk of cataract in males but not females probably due to environmental factors and gender related differences in the metabolism of this vitamin.

**Conclusion:** More research is needed to improve our knowledge and confirm the relation of vitamin D with Age-related cataract in different

populations as most of the published results are derived from studies conducted in far Eastern countries.

**Keywords:** Age-related cataract, Vitamin D, Nutrition.

### **Relationship between eating restraint and overweight and obesity among secondary school children in Mashhad, Iran**

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**Objectives:** Globally, the high prevalence of overweight and obesity has been explained as a pandemic in several countries. Eating Restraint (ER) plays a causal role in the increasing the obesity. The main objective of this research is to determine the relationship between ER and overweight/obesity among secondary school children in Mashhad, Iran.

**Materials and Methods:** This cross-sectional study was conducted in Mashhad, the center of Khorasan Razavi province to determine the prevalence of overweight /obesity and identifying associated factors such as eating patterns including ER among adolescents. The 7 administrations of Education and Training of Mashhad was divided based on the socioeconomic status; North (as low) and South (as high) socio-economic districts. 10 Schools were selected through a stratified multistage random sampling, finally, 1 19 1 students (58 1 male and 6 10 females) were selected measurement. ER was determined using a Three-Factor-Eating Questionnaire Revised 18-Item (TFEQ-R 18). A Persian version of the TFEQ-R 18 was applied.

**Results:** The overall prevalence of overweight/obesity in the sample was 17.2% and 1 1.9%, respectively. Among males, four items of Cognitive Restraints (CR) was significantly related to BMI. While, among females, 5 items of CR was significantly related to BMI. the item "On a scale of restraint, what number will you give yourself?" the results showed higher scores of eating restraint among males than females. About Uncontrolled Eating (UE), the item "Being with someone who is eating makes me hungry to eat also" was significantly related to BMI among males



( $P=0.001$ ) and females ( $P=0.001$ ). Considering Emotional Eating (EE), item "When I feel lonely, I console myself by eating" was significantly related to BMI among males ( $P=0.03$ ).

**Conclusion:** Childhood obesity is a serious health problem in Mashhad. In modern societies characterized by easily accessible foods, restrained eating may become an adaptive behavior to limit weight gain

**Keywords:** Eating restraint, overweight, obesity, secondary school children

### The Evaluation of Albumin Utilization in University Hospitals of Mashhad, Iran; a Comparison with Updated Guidelines

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**Objectives:** Albumin is an expensive protein colloidal solution with several indications, especially in critically ill patients. The vast use of albumin in health care centers and the existence of more economical alternatives of equal efficacy evidence the importance of taking a drug-use evaluation. The aim of this study was to evaluate the utilization of albumin in university hospitals in Mashhad and compare it with the relevant updated guidelines.

**Materials and Methods:** This study is a cross sectional research evaluating drug utilization that was conducted in January 2017 for one week. Albumin administration was evaluated in 130 patients from different wards in 5 university hospitals (Imam Reza, Ghaem, Hashemi Nejad, Dr Sheikh and Shahid Kamyab) in Mashhad, Iran. According to the ASHP guidelines, if the serum albumin level is  $< 2.5$ , it is appropriate to prescribe albumin. In addition, if it is  $\geq 2.5$ , it is inappropriate.

**Results:** Among the 130 albumin prescription orders, only 46.2% were during concordance with ASHP guidelines. Among the 7 reasons for albumin prescription, the most appropriate albumin prescription was in nephrotic syndrome (62.5% of prescriptions). The inappropriate use of albumin occurred most frequently for plasma apheresis, nutrition support, surgery, hypoalbuminemia, severe burns, ascites and nephrotic syndrome, which represented two (100%), 1 (100%), 17 (65.4%), 38 (50.7%), 7 (50%), 2 (50%) and 3 (37.5%) patients, respectively, who received albumin for incorrect reasons. The total amount of albumin prescribed for 130 patients was 687 vials in one week, from

which 379 vials (55.3%) costing 13265\$ was administered for inappropriate indications.

**Conclusion:** The findings of this study, revealed the high prevalence of inappropriate use of albumin in university hospitals of Mashhad. Despite many concrete guidelines regarding the administration of albumin, albumin administration is still greatly done in different hospital wards inappropriately, Therefore it is recommended that a national comprehensive guideline to harmonize the use of albumin and be given more training in this issue.

**Keywords:** Albumin, ASHP Guidelines, University Hospitals

### Correlation between dietary intake of micronutrients and clinical symptoms in women with knee osteoarthritis

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**Objectives:** Osteoarthritis (OA) is a progressive rheumatic disease whose incidence is growing continuously with the aging population. The aim of this study was to assess the correlation between dietary intake of micronutrients and clinical symptoms in women with knee osteoarthritis in Tabriz.

**Materials and Methods:** A total of 70 knee OA women (mean age:  $52.05 \pm 6.13$  years) were recruited from the rheumatology clinic of Tabriz University of Medical Sciences. Dietary intake was evaluated using a 24-hour recall method for 3 days (including 2 working days and 1 weekend). Clinical symptoms were assessed using the WOMAC Osteoarthritis Index. Correlations between variables were analyzed by Pearson correlation analysis.

**Results:** The mean  $\pm$  SD WOMAC pain, stiffness, physical function and total score were  $9.86 \pm 4.34$ ,  $2.85 \pm 1.48$ ,  $31.53 \pm 10.25$  and  $44.26 \pm 14.41$ , respectively. Dietary calcium intake correlated significantly with WOMAC pain ( $r = -0.290$ ,  $P = 0.016$ ) and total score ( $r = -0.233$ ,  $P = 0.04$ ). Furthermore, there were significant correlations between dietary magnesium ( $r = -0.238$ ,  $P = 0.040$ ;  $r = -0.263$ ,  $P = 0.029$ ;  $r = -0.276$ ,  $P = 0.021$ ) and selenium intake ( $r = -0.253$ ,  $P = 0.036$ ;  $r = -0.261$ ,  $P = 0.030$ ;  $r = -0.275$ ,  $P = 0.022$ ) with WOMAC pain, function and total score. No significant correlation was found between dietary zinc,

phosphorous, manganese and vitamin intake with clinical symptoms.

**Conclusion:** The findings of this cross-sectional study indicate that calcium, magnesium, and selenium intake are inversely correlated with knee OA. It supports potential role of these micronutrients in the prevention of knee OA.

**Keywords:** dietary micronutrients, clinical symptoms, women, knee osteoarthritis.

### Toxicology Effects of *Glycyrrhiza Glabra* (Licorice)

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**Objectives:** Licorice (*Glycyrrhiza glabra*) has been considered as an herbal drug since ancient time. Nowadays, it is a well-known spice possessing pharmacological effects. By considering the great wishes in using herbal medicine, it is important to show adverse/toxic effects of herbal medicine in health.

**Materials and Methods:** A comprehensive literature search was performed using relevant key words including *G. glabra*, liquorice, licorice, glycyrrhizin, acute toxicity, sub-acute toxicity, sub-chronic toxicity, chronic toxicity, mutagenic, developmental, miscarriage, cancer, and clinical trial in the following databases: PubMed, Scopus, Google Scholar and Web of Sciences.

**Results:** By considering the LD<sub>50</sub> values, *G. glabra* is moderately toxic. The use of licorice during pregnancy is accompanied with reduction of gestational age, preterm delivery, and some change in hypothalamic-pituitary-adrenocortical axis function and cognitive dysfunction in delivered children. It needs to be used with warning in woman with familial history of pre-eclampsia. *G. glabra* and glycyrrhizin salts are not a major teratogen and possess weak mutagenicity, genotoxicity, carcinogenicity and developmental toxicity effects. The selective cytotoxic effects of licorice and its main constituents on cancerous cells could engage them as a valuable adjuvant treatment in cancer therapy.

The most important side effects by administration of licorice and glycyrrhizin are hypertension and hypokalemic induced secondary disorders. The susceptibility to licorice and glycyrrhizin is increased by hypokalaemia, prolonged gastrointestinal transient time, decreased 1  $\beta$ HSDH type-2

activity, hypertension, anorexia nervosa, old age, and female sex. The kinetic behavior of various drugs is uncertain by combination therapy with licorice due its effect on the activity of some important metabolizing enzymes.

**Conclusion:** At present, there are misunderstandings towards the safety of herbal medicines. Herein, we showed the safety range of licorice and glycyrrhizin.

**Keywords:** *Glycyrrhiza glabra*, glycyrrhizin, acute toxicity, developmental toxicity, cancer cell

### Aflatoxin M 1 contamination in commercial pasteurized milk from local markets in Fariman, Iran

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**Objectives:** Aflatoxins are secondary toxic metabolites produced in food by toxigenic fungi such as *Aspergillus flavus*, *Aspergillus parasiticus* and *Aspergillus numius*. Fungal spores in the environment and inadequate storage of foodstuffs provide favorable conditions for the growth of fungi. The aim of this study was to investigate the presence of AFM 1 in pasteurized milk samples in Fariman, located in the province of Khorasan Razavi, Iran, by enzyme-linked immunosorbent assay (ELISA).

**Materials and Methods:** Forty-five samples of pasteurized milk from different supermarkets were collected during 3 months in summer. AFM 1 contamination was detected in all of milk samples.

**Results:** The mean concentration of aflatoxin M 1 was 27.2 ng/l. The range of AFM 1 content was 8.8– 64 ng/l. Thirteen (28.8 %) of the samples had AFM 1 levels exceeding the maximum levels (50 ng/l) accepted by the European Union.

**Conclusion:** Because the milk is used by all the age groups including infants and children in Fariman city, it is necessary to minimize the health risk from AFM 1 contamination in milk. For this reason, the level of its precursor, aflatoxin B 1 (AFB 1), in dairy feeds must be reduced, requiring constant aflatoxin monitoring of relevant agricultural commodities.

**Keywords:** Aflatoxin M 1, Pasteurized milk, ELISA, Fariman, Iran

### **Berberine attenuates convulsing behavior and extracellular glutamate and aspartate changes in 4-aminopyridine treated rats**

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**Objectives:** K<sup>+</sup> channel blocker 4-aminopyridine (4-AP) stimulates the release of glutamate from nerve terminals and induces seizures. Berberine as a potential herbal drug exerts several pharmacological actions on the central nervous system including anxiolytic, anticonvulsant, and neuroprotective properties. The present study aimed to investigate the effect of berberine on seizure onset and time course of the extracellular levels of excitatory amino acids (EAA), glutamate and aspartate, changes produced by 4-AP in rat hippocampus.

**Materials and Methods:** The rats were given either saline or berberine (50, 100 and 200 mg/kg, IP) 40 min before administration of 4-AP (15 mg/kg, IP) and the onset of seizure was recorded. A group of rats also received diazepam (DZP, 15 mg/kg, IP) 20 min prior to 4-AP administration. Hippocampal extracellular levels of EAA were also measured using microdialysis assay. Analysis of the dialysate samples was performed by reversed-phase high performance liquid chromatography (HPLC) with precolumn derivatization with o-phthalaldehyde and fluorescence detection.

**Results:** Our findings suggest that berberine significantly delayed the seizure onset following 4-AP injection. There was a considerable increase in the extracellular glutamate and

aspartate levels in 4-AP treated rats and 4-AP-evoked release of EAA was sharply reduced (about 4-5 fold especially at 20 min after 4-AP administration) in berberine treatment groups.

**Conclusion:** The results of present study show that berberine attenuates 4-AP induced seizures by decreasing hippocampal aspartate and glutamate release in rats.

**Keywords:** Barberry, Berberine, Berberis vulgaris, Excitatory amino acids, Seizure

### **The role of high-dose biotin in MS treatment**

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**Objectives:** Multiple sclerosis (MS), an inflammatory demyelinating disease of the central nervous system (CNS), is the leading cause of non-traumatic neurological disability in young adults worldwide. Considering the clinical course, the disease can be classified into relapsing and progressive phases. Disability worsening in progressive MS is mainly due to chronic demyelination and mitochondrial dysfunction, both of which result in virtual hypoxia leading to axonal degeneration. Available immunosuppressive or immunomodulatory therapies for MS, while effective during the relapsing phase, have little benefit for progressive MS with no evidence of inflammation. Recently, high-dose biotin has emerged as a therapy for progressive MS patients. The purpose of this review is to investigate the efficacy of high-dose biotin in MS treatment.

**Materials and Methods:** Firstly, searches were performed using the keywords multiple sclerosis therapy and high-dose biotin separately to get a broad image of the subject and then PubMed was searched based on the following search strategy: (vitamin B7 OR biotin) AND (multiple sclerosis). There was no date restriction for the selection of the articles. The most relevant articles were extracted in the first place based on their title and abstract, and then according to their full text. The reference lists of the included articles were also searched to reduce the possibility of missing any relevant articles.

**Results:** Based on final search results, the majority of articles investigated the beneficial effect of high-dose biotin with a good safety profile. Biotin manifests high bioavailability with

rapid absorption and excretion. It is able to cross the blood brain barrier by a specific transport system. A high oral dose of biotin seems generally well tolerated and could simultaneously target the main metabolic processes related to progressive MS by (1) activating the Krebs cycle in demyelinated axons to increase energy production; (2) activating the Krebs cycle in oligodendrocytes to increase the production of citrate required for lipid synthesis and (3) activating the rate limiting carboxylases in the synthesis of long chain fatty acids required for myelin synthesis.

**Conclusion:** These data suggest that targeting neuron or oligodendrocyte metabolism with high-dose biotin may represent an effective and safe treatment for patients with progressive MS.

**Keywords:** multiple sclerosis, high-dose biotin, remyelination, energy metabolism.

### **Predisposing Effects of Bisphenol-A in Metabolic Syndrome: Resveratrol Protective Role**

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**Objectives:** Human are exposed to Bisphenol-A (BPA), chemical used in polycarbonate plastics, via water bottles, dental sealants and dermal exposure. It possesses an important role in oxidative stress, obesity, diabetes and cardiovascular diseases. Resveratrol, a natural antioxidant, has anti-inflammatory, anticancer and anti-aging properties too. In male Wistar rats on normal diet, we evaluated the role of BPA in metabolic syndrome and protective effects of resveratrol on it.

**Materials and Methods:** Male Wistar rats were randomly divided into 6 groups (n=6) and treated once daily for 2 months with resveratrol (0, 25, 50 and 100 mg/kg, IP) and BPA (0 and 35 mg/kg, gavage). At the end, non-invasive blood pressure (BP) was measured by tail cuff and the serum concentration of total cholesterol (TC), LDL-cholesterol (LDL-C), triglycerides (TG), fasting blood glucose (FBS) as well as hepatic malonyldehydroaldehyde (MDA) level were examined.

**Results:** In comparison with the control group, BPA treatment increased BP (p<0.01), MDA (p<0.001), TC (p<0.01), LDL-C (p<0.001) and FBS (p<0.05) without significant effects on the TG level. Resveratrol administration with BPA decreased the level of BP (p<0.05), MDA (p<0.001), TC (p<0.01) and LDL-C (p<0.001).

Furthermore, FBS concentration was alleviated by co-administration of resveratrol with BPA (p<0.01).

**Conclusion:** Metabolic syndrome which is the main predisposing factor of type 2 diabetes mellitus and cardiovascular diseases is characterized with high blood glucose, dyslipidemia, hypertension, and obesity. Herein, we showed BPA consumption with normal diet put the animals at risk of metabolic syndrome and resveratrol co-treatment reversed BPA effects. The protective role of resveratrol by diminishing BPA-induced metabolic syndrome should be evaluated in relation to its antioxidant and probable endocrine effects.

**Keywords:** Bisphenol-A, Resveratrol, Metabolic syndrome, Dyslipidemia

### **Diet, Chromosome 9p21 Locus and CVD: Review of the evidence**

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**Objectives:** Cardiovascular disease (CVD) is known to be the leading cause of morbidity and mortality around the world. In addition to the conventional risk factors such as hypertension, T2DM, hypercholesterolemia, smoking and alimentation, also there is a strong genetic basis for CVD risk. Recent studies have shown that there may be an association between genetic markers with important risk factor for CVD such as obesity and dyslipidemia as well as dietary factors. The aim of this investigation was a comprehensive overview of studies on the relationship between diet and Ch9p21 as an important marker for CVD risk in several genome-wide association studies (GWAS).

**Materials and Methods:** We searched several databases, including PubMed, Google Scholar, Google Advance, Scopus, Cochrane and up to date from 2005 to 2017 for all publications based on combination of **keywords:** "chromosome 9p21", "CVD", "CAD", "dietary factors", "gene-diet interactions", "diet", "genetic"

**Results:** A prospective study on 814 individuals from 5 ethnicities had shown that risk of MI and CVD conferred by ch9p21 SNPs to be modified by prudent diet high in raw vegetables and fruits. Also a cross-sectional study on patient with CVD in Mashhad had found a



significant association between ch9p2 1 SNPs and dyslipidemia as well as high energy diet and sedentary life style. Moreover, several studies had shown that unhealthy dietary habit such as a higher intake of sugar sweetened beverages could exacerbate the effects of Ch9p2 1 variants on CVD, while high intakes of vegetables and low consumption of alcohol could interact with Ch9p2 1 SNPs and consequently affect the incidence of CVD.

**Conclusion:** there is a significant interaction between Ch9p2 1 variant and diet, accordingly unhealthy dietary pattern can exacerbate genetic risk. Also there is an important interplay of genes and diet in the etiology of CVD.

**Keywords:** Chromosome 9p2 1, Diet, CVD, gene-diet interactions

### **Therapeutic potential of curcumin in treatment of colorectal cancer: current status and future perspectives**

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**Objectives:** Colorectal cancer (CRC) is the third cause of cancer related death. The high number of colorectal cancer recurrence proves the idea of lack of efficient therapeutic methods. There is amount of data on the therapeutic potential of curcumin in different malignancies.

**Materials and Methods:** Consistently, the available evidence has elucidated its considerable effect on different signaling pathways (PI3K/Akt, ERK/MAP, NF-kB, Wnt/b-catenin pathways) which revealed its antitumor activity and have been highlighted the efficacy of curcumin and its analogs in targeting colorectal cancer cells. A recent trial showed in a phase I dose escalation study that curcumin is safe and tolerable adjunct to FOLFOX chemotherapy in patient-derived colorectal liver metastases up to 2 grams daily. Another trial revealed the effect of combining curcumin with FOLFOX (5-fluorouracil, folinic acid and oxaliplatin) in patients with inoperable colorectal cancer.

**Results:** These findings provide a proof of concept of utilizing curcumin in treatment of CRC.

**Conclusion:** Further investigations are needed still to increase the bioavailability of this compound which is the major challenge of its clinical application.

**Keywords:** Colorectal cancer, FOLFOX, curcumin, combination therapy.

### **Are there an interaction between sodium acetate and bovine serum albumin as a model of main protein of blood?**

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**Objectives:** Interactions of ligands with proteins imply changes in the properties of the macromolecules that may deeply modify their biological activities and conformations. The possible effect of sodium acetate (SA) as a food-grade preservative on the interaction to bovine serum albumin (BSA) should be taken into consideration. Therefore, for the first time, we have been investigated the interactions of SA to BSA.

**Materials and Methods:** Interaction between sodium acetate and bovine serum albumin was assessed by using fluorescence spectroscopy, UV-Vis and molecular docking under simulated physiological conditions.

**Results:** Stern-Volmer fluorescence quenching analysis suggested an increase in the fluorescence intensity of BSA upon increasing the amounts of SA. The high affinity of SA to BSA was demonstrated by a binding constant value ( $1.09 \times 10^3$  at 3 10°K). The thermodynamic parameters showed that hydrophobic binding plays a main role in the interaction of SA to BSA. Moreover, the results of UV-vis spectra confirmed the binding of this food additive to BSA. Furthermore, molecular docking study demonstrated that A binding sites play the main role in binding of acetate sodium to blood plasma BSA.

**Conclusion:** According to our results the binding of SA to BSA are concern and shows as the

properties of both compounds can be remarkable modified after the complex formation.

**Keywords:** Sodium Acetate, Bovine Serum Albumin, Molecular Docking

### Therapeutic potential of curcumin via targeting Wnt/ $\beta$ -catenin pathway in treatment of colorectal cancer

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**Objectives:** Colorectal cancer (CRC), with over 1.2 million new patients' incidence and 600,000 mortalities per year, is among the most commonly diagnosed and the third leading cause of cancer death. There is increasing evidence showing the potential link between Wnt/ $\beta$ -catenin pathway and colorectal cancer. Wnt/ $\beta$ -catenin pathway is associated with cell proliferation and tumor cells resistance to chemotherapy treatment. Against this background, several studies have been shown the therapeutic potential of curcumin in CRC. Also, some clinical trials have investigated its activity in CRC patients, including a recent trial which administered 5FU plus curcumin and shows that curcumin improve overall survival in compare with 5FU alone. The aim of current study was to explore the anti-proliferative activity of curcumin in two- and three-dimensional models of CRC cells.

**Materials and Methods:** The cytotoxic activity of curcumin was investigated in CT26 by MTT assay (3-[4,5-dimethylthiazol-2-yl]2,5-diphenyltetrazolium bromide assay). The anti-proliferative activity of 3 different forms of curcumin was assessed in spheroid models. The expression level of CyclinD 1 was studied before and after treatment.

**Results:** Curcumin suppressed cell growth in CT26 cells via modulation of Wnt pathway. Moreover, curcumin treatment led to tumor shrinkage.

**Conclusion:** We demonstrated the antitumor activity of curcumin in CRC cells, supporting further investigations on the role of this novel anticancer agent in in vivo studies.

**Keywords:** colorectal cancer, curcumin, Wnt signaling pathway.

### Atherogenic Effects of Bisphenol-A On HUVECs: Resveratrol Protective Role

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**Objectives:** Bisphenol-A (BPA) is the most chemicals used in polycarbonate plastics. Human are exposed to it via water bottles, dental sealants and dermal exposure. There is a direct relation among BPA exposure and risk of diabetes, cardiovascular diseases, altered liver enzymes and obesity. Several studies proved that BPA induces oxidative stress in vital organs. Resveratrol, a natural antioxidant, possesses anti-inflammatory, anticancer and anti-aging properties. Here in, we evaluated the atherogenic effects of BPA in primary human umbilical vein endothelial cells (HUVECs) by evaluating the level of cell adhesion molecules and apoptotic pathway and protective role of resveratrol on them

**Materials and Methods:** BPA and resveratrol IC<sub>50</sub> values were calculated in HUVECs by MTT assay after 24 and 48 hrs, respectively. For the first day, HUVECs were pretreated with resveratrol (0, 3, 6 and 12  $\mu$ M) and for the second day, they were exposed to both BPA (IC<sub>50</sub> value) and resveratrol (0, 3, 6 and 12  $\mu$ M). At the end, the viability of cells was evaluated by MTT assay. The levels of E-selectin, ICAM, VCAM and caspase 3 were examined by western blotting. The results gathered from 3 independent repeats.

**Results:** The IC<sub>50</sub> value for BPA was 220  $\mu$ M and resveratrol had no cytotoxicity in concentration up to 50  $\mu$ M. Pretreatment with resveratrol (6 and 12  $\mu$ M) decreased BPA (220  $\mu$ M) cytotoxicity ( $p < 0.05$ ). BPA increased the protein levels of VCAM ( $p < 0.05$ ) and cleaved caspase 3 ( $p < 0.001$ ). It had no significant effects on the level of E-selectin (increasing trend) and ICAM. Pretreatment with resveratrol decreased the effects of BPA on the level of VCAM (6 and 12  $\mu$ M,  $p < 0.01$  and  $0.001$ , respectively), cleaved caspase3 (6  $\mu$ M,  $p < 0.001$ ) and E-selectin (6 and 12  $\mu$ M,  $p < 0.05$  and  $0.01$ , respectively). Resveratrol alone had no effects on the level of these proteins.

**Conclusion:** Atherosclerosis is a chronic inflammatory disorder. Inflammatory signals are accelerated by leukocyte activation and accumulation in apoptotic region. ROS formation up regulates the amount of adhesion molecules that have a key role in endothelial-leukocyte interactions. Herein we showed the effect of BPA in activation of atherosclerosis pathway and protective role of resveratrol which could be attributed to its antioxidant properties.

**Keywords:** Bisphenol-A, Resveratrol, Atherosclerosis, ICAM, VCAM

### Antioxidant Vitamins Status In Children And Young Adults Undergoing Dialysis

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**Objectives:** Vitamin E and C are well-known antioxidant vitamins. Oxidative stress is common in chronic kidney diseases. We evaluated 43 dialysis subjects prospectively in a cross-sectional survey.

**Materials and Methods:** Serum vitamin E concentration was checked in all subjects; 37 cases underwent blood sampling for measurement of serum vitamin C. The enrolled subjects consisted of 12 (27.9%) peritoneal dialysis (PD) and 25 (58.1%) hemodialysis (HD) patients. Six (13.9%) patients were switched from PD to HD or vice versa.

**Results:** Serum concentration of vitamin E was normal, low and high in 9 (20.9%), 31 (72%) and 3 (7.1%) patients, respectively. There were no significant differences regarding age, gender, modality and duration of dialysis, and characteristics of dialysis sessions, mean serum blood urea nitrogen, and albumin levels between vitamin E deficient cases with those with normal serum vitamin E concentration ( $P > 0.05$  for all). The serum vitamin C levels were low in 5 (13.5%) and normal in 32 (86.5%) patients. Vitamin C deficiency was more prevalent in HD versus continuous ambulatory peritoneal

dialysis patients ( $P = 0.128$ ). Mean serum vitamin C concentration was higher in patients who were supplemented by vitamin C compared with those who didn't receive the vitamin supplement ( $P = 0.043$ ).

**Conclusion:** Vitamin E deficiency was a prevalent finding and supplementary vitamin C in doses 30-60 mg/day was sufficient to prevent its deficiency. Regular assessments of serum vitamin E level may be needed in dialysis centers.

**Keywords:** Continuous ambulatory peritoneal dialysis, hemodialysis, Vitamin C, Vitamin E

### Dietary nutrient intake in patients with cardiovascular disease and healthy controls in Iran

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**Objectives:** Cardiovascular diseases (CVD) are the cause of 31% deaths worldwide. There is a high prevalence of CVD in Iran, which is the main cause of mortality and disability. Lifestyle, especially diet is effective on CVD occurrence. The primary objective of the present study was to compare the dietary intake of healthy individuals with patients in risk of cardiovascular disease. Another purpose of this study was to compare the dietary intake of patients before and after cardiovascular events.

**Materials and Methods:** 625 individuals who claimed to have cardiovascular disease were derived from MASHAD cohort study and were followed up from January 2015 to April 2016. The cardiovascular diseases of these patients ( $n = 240$ ) were confirmed by cardiologist. Healthy, non-symptomatic individuals ( $n = 385$ ) were considered as the control group. Demographic data and risk factors were determined by taking a history, physical examination and laboratory tests. Dietary intake was estimated by a 24-h dietary recall and dietary analysis was performed using Diet Plan 6 software.

**Results:** The mean dietary intake of fat, total sugar, fructose, sucrose, monounsaturated fatty acids and vitamin B6 were higher in the control group compared with CVD patients. But after adjusting for total energy intake the mean intake of fructose and sucrose was higher while the mean intake of starch, sodium, calcium, phosphorus, chloride, thiamin, tryptophan was

lower in the control group. In addition, after adjusting for total energy intake, the mean intake of all macronutrients except saturated fatty acids and the mean intake of all micronutrients except copper, zinc, selenium and retinol were higher before CVD incidence in patients.

**Conclusion:** Although mean intake of micronutrients were higher before CVD incidence compared with after, high intake of energy and other macronutrients for a long period of time leads to cardiovascular disease due to increasing weight and other anthropometric measurements. Further research on the relationship between CVD and nutrient intake is needed.

**Keywords:** Cardiovascular disease, Risk factors, Macronutrients, Micronutrients

### **Studies on the anthropometric, biochemical, enzymatic and nutritional indices in Cardiovascular (C.V.D) Patients referring to Emam Ali Hospital in Zahedan of Iran, 1392**

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**Objectives:** Cardiovascular diseases (CVDs) have known the main cause of death worldwide. Several studies refer to different factors which improve CVDs complications. The aim of this study was to determine anthropometric, biochemical, enzymatic and nutritional indices in CVD patients referring to Emam Ali Hospital in Zahedan of Iran.

**Materials and Methods:** In a descriptive-analytical study 350 patients (56.7± 11.1 years) clinically diagnosed for CVD were selected. Demographic characteristics included age, sex, waist circumference, and body mass index (BMI). Enzymatic indices such as, CK, CK-MB, LDH, SGOT, SGPT and also lipid profiles, including; triglyceride, total cholesterol, LDL-C and HDL-C concentrations were determined by routine laboratory methods. Troponin was

measured by commercial kit and Elisa method. Statistical analysis was done by SPSS software.

**Results:** The result showed, 46.3% and 53.7% of patients were male and female respectively. According to BMI, 27.7% and 17.6% of them were overweight and obese. It was also observed, 26.9% men and 90% women were central obesity. The mean of lipid profile, including; cholesterol 164.3±43.7 mg/dl, triglyceride 125±98.7 mg/dl, LDL 80±25 mg/dl, and HDL 43.3±30.38 mg/dl were respectively. It was also observed, based on troponin 83.6% of men and 84.2% of women were positive. The levels of enzymatic indices, including; CK 332±736.6 U/L, CK-MB 53.4± 108 U/L, LDH 713.9±483.6 U/L, SGOT 66.7± 15.6 U/L, and SGPT 45.5± 106 U/L were respectively. There was no significant correlation between troponin with lipid profile. But, it was observed significant correlation between troponin with CK (p=0.0001), CK-MB (p=0.0001), LDH (p=0.0001) and SGOT (p=0.0001). According to the food guide pyramid, there was significant difference only based on dairy product consumption among men and women. (P< 0.03).

**Conclusion:** It seems, the patients were at risk, according to a variety of biochemical and enzymatic indices. With respect to the significant difference of anthropometric and nutritional factors in comparison with standards as well as the relationship between the different indices, these patients predispose to the development of the cardiovascular disease.

**Keywords:** Anthropometric, Biochemical, Enzymatic indices, Nutritional status, CVD

### **Lipid oxidation and oxidant status in the cardiovascular Disease (CVD) patients**

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**Objectives:** Reactive oxygen species (ROS) are produced during normal cellular function and their activity leads to oxidation of lipids. Emerging evidence indicates that ROS is an important risk factor in the pathogenesis of CVD, if antioxidant system is impaired. The aim of the present study was to investigate the relationship between lipid peroxidation and total antioxidant capacity in CVD patients.



**Materials and Methods:** In a descriptive-analytical study 71 patients ( $56.7 \pm 1.1$  years) who were clinically diagnosed for CVD and 63 healthy persons in the control group ( $56.4 \pm 1.3$  years) were selected. Demographic characteristics included age, sex, blood pressure and body mass index (BMI). Lipid profiles; triglyceride, total cholesterol, LDL-C and HDL-C concentrations were determined by routine laboratory methods. Plasma malondialdehyde (MDA) and ferric reducing antioxidant power (FRAP) were measured by spectrophotometer method. Statistical analysis was done by SPSS software.

**Results:** On the basis of BMI there was no significant difference between case and control groups ( $p > 0.05$ ), while the blood pressure was found to be significantly increased in CVD patients ( $p < 0.0001$ ). There was an increase in the level of serum triglyceride, total cholesterol and LDL-C in patients ( $p < 0.0001$ ), whereas HDL-C decreased ( $p < 0.0001$ ). Similarly plasma MDA in patients was higher, but FRAP value was lower than control group ( $p < 0.0001$ ). There was a positive significant correlation between FRAP and HDL-C ( $r = 0.24$ ,  $p = 0.04$ ), whereas this correlation between MDA and FRAP was negative and significant ( $r = -0.32$ ,  $p = 0.007$ ).

**Conclusion:** The results confirm that increased lipid oxidation products and decreased total antioxidant capacity contribute to increased oxidative stress, which in turn is related to the development of the cardiovascular disease.

**Keywords:** Oxidant, Antioxidant status, CVD

**Effect of *Gundelia tournefortii* L. extract on lipid profile and TAC in Patients with Coronary Artery Disease: A double-blind randomized placebo controlled clinical trial**  
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**Objectives:** *Gundelia tournefortii* (GT) locally known as "Kangar" in Iran has been known to possess hypolipidemic and antioxidant activities.

**Objectives:** This study was carried out to evaluate the effects of GT on total antioxidant capacity (TAC) and lipid profile in patients with coronary artery disease (CAD).

**Materials and Methods:** A total of 38 angiographically confirmed CAD patients were enrolled in this randomized, double-blind, clinical trial. The intervention was consuming

*G. tournefortii* extract (GTE) or placebo for 8 consecutive weeks. Serum total cholesterol, triglyceride, high density lipoprotein-cholesterol (HDL-c), low density lipoprotein cholesterol (LDL-c) and TAC were determined by conventional methods. In addition, dietary intake was recorded using 24-h recall method and converted into nutrients with software Nut4 version 1.

**Results:** At the end of the study, the GTE group had recorded a significantly lower energy intake compared to the placebo group ( $p = 0.04$ ). The BMI also significantly decreased in the GTE group by 3% (from  $26.5 \pm 3.6$  kg/m<sup>2</sup> at baseline to  $25.9 \pm 3.6$  kg/m<sup>2</sup> at the end of the trial). There was a significant reduction in total cholesterol level in the GTE group ( $151 \pm 23.8$  mg/dl at baseline to  $131.1 \pm 25.9$  mg/dl at the end of the trial), however, its level increased slightly in the placebo group ( $133.5 \pm 22$  mg/dl at baseline to  $141.4 \pm 22.4$  mg/dl at the end of the trial). The mean value of LDL-c level notably decreased in the GTE group from  $86 \pm 26$  to  $60.58 \pm 29.9$  mg/dl ( $p = 0.001$ ). No significant differences were observed in the groups for HDL-c or triglyceride levels; however, TAC significantly changed in the two groups after the intervention.

**Conclusion:** The intervention resulted in a statistically significant difference in total cholesterol, LDL-c and BMI suggesting that GTE may be an appropriate adjunctive medicinal plant to help reduce the major risk factors of CAD.

**Keywords:** total antioxidant capacity, cholesterol, body mass index, adjunctive medicinal plant

**Lower Red Cell Distribution Width is associated with Type 2 Diabetes Mellitus**

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**Objectives:** A growing body of evidence indicates that elevated levels of red-cell-distribution-width (RDW) are linked to inflammation, a key feature of insulin resistance and subsequent type 2 diabetes mellitus (T2DM). These findings prompted us to hypothesize that an elevated RDW is associated with increased risk of T2DM,

presumably due to higher inflammatory state in type 2 diabetic patients.

**Materials and Methods:** A total of 9,562 subjects aged 35-65 years were recruited from the Mashhad stroke and heart atherosclerotic disorder (MASHAD) cohort, and were assessed in relation to demographic characteristics, biochemical factors and hematological parameters, including RDW.

**Results:** The highest prevalence of subjects with T2DM was in the 1<sup>st</sup> quartile of RDW ( 17.8% among men and 2 1.7% among women), whilst the lowest was in the last quartile (9.2% among men and 9.5% among women). In our multivariate analysis, T2DM was the strongest determinant for quartiles of the RDW. In the 4<sup>th</sup> quartile a history of T2DM gave an OR of 0.40 for both men and women, compared to the reference group.

**Conclusion:** Low RDW values are associated with T2DM, which can partly be explained by the impact of chronic hyperglycemia on RBCs survival and creating a more homogenous population of cells.

**Keywords:** Red Cell Distribution Width, Type 2 Diabetes Mellitus.

#### Associated Risk Factors of Isolated Hypertriglyceridemia by Applying a Decision Tree Model

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**Objectives:** It has been reported that isolated hypertriglyceridemia may lead to a chronic inflammatory state, and may be related to an increased risk of cardiovascular disease (CVD). The aim of this study is to evaluate and detect the risk factors associated with isolated

hypertriglyceridemia by using a decision tree model.

**Materials and Methods:** A total of 9783 subjects were included in the analysis using fasting serum triglycerides  $\geq 150$  mg/dl, and serum cholesterol levels  $< 200$  mg/dl, as a definition of isolated hypertriglyceridemia. All the variables that were significantly different between individuals with and without isolated hypertriglyceridemia were considered as valid input variables. Of the 9783 subjects, 70% (6840 subjects), were selected as a "training" dataset and 30% (2943 cases), and were used as the testing dataset to evaluate the performance of decision-tree. In the model, age, gender, body mass index, marital status, level of education, occupational status, presence of depression and anxiety, physical activity level, smoking status, systolic and diastolic blood pressure, serum LDL-C, FBG, serum Uric acid and hs-CRP, were considered as input variables in this model. The validation of the model was assessed by constructing a receiver operating characteristic (ROC) curve.

**Results:** The sensitivity, specificity, accuracy and the area under the Roc curve (AUC) values for the model were 72.4%, 83.2%, 79.4% and 0.84, respectively.

**Conclusion:** According to decision tree model, BMI, sex, FBG, diastolic blood pressure, Hs-CRP, anxiety and depression were the associated risk factors of Isolated Hypertriglyceridemia in an Iranian population.

**Keywords:** Data mining, Decision tree, Isolated hypertriglyceridemia

#### Food Consumption and Risk of Cardiovascular Disease: Ravansar Non-Communicable Disease cohort

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**Objectives:** Many constituents of fruits and vegetables may reduce the risk for Cardiovascular Disease (CVD), but data on the relationship between fruit and vegetable consumption and risk for CVD are sparse. The aim if this study is evaluate the association of fruit and vegetable consumption with CVD risk.

**Materials and Methods:** Cross-sectional population study conducted in the Ravansar Non-Communicable Disease cohort (RaNCD)

study, a total of 10086 subjects, aged between 35 and 65, and were studied. CVD is detected base on history of medical record. The measurement of dietary intakes is considered with food frequency questionnaire (FFQ). Multiple logistic regression analysis was used to evaluate the detection of risk factor of CVD.

**Results:** Prevalence of CVD 5.4% (men 4.7%; women 5.8%), With the increase in the consumption of fruits and vegetables, the chances of getting CVD 0.08 decreased. After adjustment for standard CVD risk factors, persons in the highest quintile of fruit and vegetable intake had a odds ratio for coronary heart disease of 0.68 (95% CI, 0.54 to 0.74) compared with those in the lowest quintile of intake. Odds of CVD in person with type 2 diabetes 1.45 (95% CI, 1.04 to 1.76) greater than no diabetes.

**Conclusion:** higher intake of fruit and vegetables may be a protective solution against CVD and support current dietary guidelines to increase fruit and vegetable intake.

**Keywords:** diet, food consumption, low and middle income countries, food system, cardiovascular disease, climate change

#### The Inhibitory Effects of Methanolic Extract of Bee Pollen on the Angiogenesis and Vascular Endothelial Growth Factor (VEGF) in the Air-Pouch Model of Inflammation

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**Objectives:** Bee pollen comes from the pollen that collects on the bodies of bees. Bee pollens are rich in flavonoid and phenolic compounds and has been consumed as a perfect food in the most of countries because it is nutritionally well balanced. Unregulated angiogenic response is involved in chronic inflammatory conditions such as rheumatoid arthritis. The aim of present study was to investigate the effects of methanolic extract of bee pollen on the angiogenesis and VEGF in a rat model for rheumatoid arthritis, namely air pouch model of inflammation.

**Materials and Methods:** To induce an air pouch model, sterile air (20ml and 10ml) was injected subcutaneously on the back of anesthetized rats on day 1 and day 3 respectively. On day 6, inflammation was induced by carrageenan injection into pouches. Methanolic extract of bee

pollen (50, 100 and 200 mg) were administered intra pouch at the same time as the carrageenan and then for 2 consecutive days. Three days after inflammation induction, pouches were opened; exudates were collected in order to determine VEGF level. The granulation tissues formed were dissected, washed in PBS and cut into small pieces before being homogenized in Drabkin reagent. The tissue homogenates were centrifuged and the supernatants were filtered through a 0.22 $\mu$ m filter. The hemoglobin concentration in the supernatant was then determined spectrophotometrically using a hemoglobin assay kit.

**Results:** There was a significant reduction in the angiogenesis in extract-treated rats by all three doses. In addition extract (200 mg/rat) showed inhibitory activity against VEGF concentration.

**Conclusion:** The study confirms that the methanol extract of bee pollen has an anti-angiogenesis effect in the air pouch model of inflammation which may be mediated through modulation of VEGF production.

**Keywords:** Bee Pollen, Angiogenesis, Air Pouch, Carrageenan, VEGF.

#### The relationship between serum high sensitive C reactive protein with dietary intake in diabetic patients with and without concurrent hypertension and healthy subjects

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**Objectives:** Serum high-sensitivity CRP (hs-CRP) is a marker of inflammation and an independent predictor of several chronic diseases such as obesity, hypertension, diabetes mellitus, metabolic syndrome and cardiovascular disease. However, the impact of dietary constituents on serum hs-CRP concentrations in diabetic patients has received limited attention. We aimed to investigate the association between specific dietary components and serum hs-CRP concentrations among diabetic patients with and

without hypertension and healthy subjects in a large sample of adult population.

**Materials and Methods:** Diabetics with (n=325) and without hypertension (n=599) and healthy individuals (n= 1220) were recruited through a stratified cluster random sampling from Mashhad city, Iran. Dietary intake was assessed by 24-hours recall. Several biochemical parameters including serum hs-CRP were measured using standard protocols. Stepwise multiple regression analysis was used to predict whether serum hs-CRP concentrations were associated with dietary constituents. All data were analyzed through SPSS version 16 at a significant level of <0.05.

**Results:** Serum hs-CRP, low density lipoprotein cholesterol (LDL-C), fasting plasma glucose (FPG), total cholesterol, and triglyceride were significantly higher among diabetic hypertensive and non-hypertensive patients in comparison to control subjects (P-value <0.05). In addition, body mass index, waist circumference, systolic blood pressure and diastolic blood pressure were significantly higher among diabetic hypertensive, and diabetic non-hypertensive patients compared with the control individuals (P-value <0.01). Dietary intake of zinc (P-value=0.001, +6.4%) and calcium (P-value=0.02, -3.4%) and BMI values (P-value=0.01, +3.9%) explained approximately 13.7% of the variation in serum hs-CRP among diabetic hypertensive patients. Approximately, +9.7% of the variation in serum hs-CRP in diabetic non-hypertensive patients could be explained by BMI (P-value=0.009, +3.1%), and the intake of sodium (P-value=0.005, +2.9%), iron (P-value=0.025, +2.1%) and cholesterol (P-value=0.047, +1.6%). In the healthy subjects about +4.4% of the total variation in serum hs-CRP concentration could be explained by cholesterol consumption (P-value=0.002, +2.2%) and waist circumferences (P-value=0.002, +2.2%).

**Conclusion:** Serum hs-CRP concentrations were found to be a significant predictor for hypertensive and non-hypertensive diabetes. In addition, dietary zinc, iron, sodium and cholesterol were significant predictors of elevated serum hs-CRP whilst dietary calcium may be associated with reduced levels of serum hs-CRP in diabetic hypertensive patients.

**Keywords:** Hs-CRP; Inflammation; Diabetic-hypertensive; Diabetic-non-hypertensive; Dietary-intake.

**Depression and aggression scores are associated with prevalence of Irritable Bowel Syndrome in adolescent girls**

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**Objectives:** Irritable bowel syndrome (IBS) is one of the major complications in adolescents, which might have a high spread of complications such as depression and anxiety, emotional disorders, musculoskeletal pain. The aim of current study was to explore the association of depression and aggression in patients with Irritable Bowel Syndrome.

**Materials and Methods:** 580 girls aged between 12 to 18 years were recruited. The Rome III questionnaire was used to assess Functional gastrointestinal disorders, while the Beck Depression Inventory and Buss-Perry questionnaires were used for the assessment of depression and aggression, respectively.

**Results:** There was an association between quartiles of depression score and the prevalence of irritable bowel syndrome with increased odds ratio of 2.98 (95% confidence interval [CI] = 1.58-5.6 and P< 0.001), which remained statistically significant after adjustment. This results repeated for aggression and the prevalence of irritable bowel syndrome with



increased odds ratio of 2.8 1 (95% confidence interval [CI] = 1.48-5.5 and P= 0.00 1).

**Conclusion:** The significant association between depression and aggression and IBS, supports the need for identification of subjects with Irritable bowel syndrome.

**Keywords:** Irritable bowel syndrome; depression; aggression; adolescent.

### Factors affecting the prevention and Incidence of metabolic syndrome

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**Objectives:** Metabolic syndrome is a collection of metabolic risk factors including hypertension, glucose metabolic disorder, dyslipidemia, central obesity, low HDL. Since in recent years the prevalence of metabolic syndrome has increased in most countries, so that in Iran, 30% of adults and 10% of adolescents suffer from it. The purpose of this study was to determine the factors affecting the prevention and Incidence of metabolic syndrome.

**Materials and Methods:** The review of the scientific sites google scholar, sid, Elmnet, pubmed with keywords, Metabolic syndrome, Incidence, Prevalence, prevention, 60 paper during 1988-2017 found that after the elimination of the articles repetitive and non-related to the topic of the number of 35 papers investigated. In this study, descriptive and analytical articles have been used.

**Results:** The results of various studies indicate that the most important factors affecting are genetic history (race), body mass index (BMI), weight, especially abdominal obesity, lifestyle, insulin resistance, sedentary, high age, mental illness (schizophrenia), Tobacco, stress. A review of various articles showed that various diets, regular consumption of fruits and vegetables, avocado, supplementation of vanadium and chromium supplementation, moderate replacement of dietary carbohydrates with unsaturated fats, consumption of semolina, diets with low glycemic index. It can greatly reduce the risk of developing metabolic syndrome; While increasing the consumption of red meat,

increasing the density of dietary energy, food insecurity, smoking, increasing the number of deliveries in women, increasing levels of endogenous sex hormones in women, chronic obstructive kidney disease, high education and high birth rates in men, increase the risk of infection Gets. On the other hand, despite the various studies in this field, there are still controversial findings on the relationship between the use of olive oil, the Mediterranean diet, increased calcium and vitamin D intake, and the occurrence or absence of metabolic syndrome.

**Conclusion:** According to the results, the main ways to prevent metabolic syndrome are optimal diet, regular physical activity, weight control. Also, given the controversy of the results of some studies in impact, clinical trials and more extensive and varied clinical trials are suggested.

**Keywords:** Metabolic syndrome, Incidence, Prevalence, prevention

### The Effect Of Calorie-Carbohydrate Controlled Diet On Glucose Metabolism Biomarkers And B-Cells Function In Obese Women With Type II Diabetes; A Randomized Clinical Controlled Trial

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**Objectives:** Obesity is the main cause of insulin resistance,  $\beta$ -cell dysfunction and type 2 diabetes mellitus (T2DM). Diet therapy is the corner stone in the management of T2DM. We evaluated the effects of calorie restricted diet therapy on the circulating biomarkers of glucose metabolism and  $\beta$ -cell's function in obese women with T2DM.

**Materials and Methods:** This randomized clinical controlled trial studied 30 obese women with T2DM distributed to the control (n= 15) and diet therapy (n= 15) groups. The treatment group received personalized standard calorie-carbohydrate restricted diet considering patients physical activity levels for 10 weeks. Control group continued their common diets along the study. Demographic, nutritional, anthropometric and laboratory data obtained before and after the study. Data were analyzed by SPSS and nutritionist IV.



**Results:** Diet therapy significantly improved weight (- 1.73 kg,  $P=0.018$ , MD; -3.3 to -0.33) waist circumference (-7.31 cm,  $P=0.001$ , - 10.70 to -3.93), hip circumference (-4.36 cm,  $P=0.006$ , - 7.35 to - 1.37), percent of visceral adipose tissue (- 1.13 cm,  $P=0.001$ , - 1.70 to -0.57), fasting blood sugar (FBS) (-37.47 mg/dL,  $P=0.024$ , - 69.37 to -5.57 mg/dL), two hour postprandial blood sugar (2h PPBS) (-72.86 mg/dL,  $P=0.007$ , - 123.34 to -22.3 mg/dL) and increased Homeostatic model assessment of B-cell function (HOMA-IR) (7.62,  $P=0.034$ , 2.00 to 16.84).

**Conclusion:** In addition to the effect on insulin resistance, visceral adipose tissue and body weight, diet therapy can significantly improve  $\beta$  cell function in the obese patients with T2DM.

**Keywords:** Calorie-restricted diet, microRNA, T2DM, Obesity

### Food Security Survey of Households in Kermanshah, 2016

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**Objectives:** Food security and access to adequate and safe food is one of the basic needs of humans. Food insecurity can cause serious health and nutrition problems so it is essential to monitor food security and the factors associated with it in any society. The purpose of this study was to determine food security in households in Kermanshah, one of the western provinces of Iran.

**Materials and Methods:** This cross-sectional study was conducted in 1185 households in Kermanshah with a population of about 3500 people selected by cluster sampling from 8 areas of the city. Data collection tool in this study was Household Food Insecurity Access Scale questionnaire version 3. Data were analyzed by SPSS 16.

**Results:** Overall, food security was 30.5%, and 69.5% of households had some degree of food insecurity. By improving the income situation, food insecurity had diminished. In both Crude OR and Adjusted OR, the household size (OR = 1.50,  $P = 0.007$ ), unemployed head of household (OR = 3.30,  $P = 0.001$ ) was identified as a risk factor for food insecurity. As the level of education

increased, the chances of food insecurity were lower ( $P > 0.05$ ).

**Conclusion:** The results of this study indicated a high prevalence of food insecurity in Kermanshah households and the economic and social situation played a significant role in food insecurity. The design and implementation of interventions by the responsible organizations to better access and improving the quality and quantity of household food consumption is necessary.

**Keywords:** Food Security, Households, Kermanshah

### Curcumin inhibits cell growth of cervical cancer cells

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**Objectives:** There is a growing body of evidence showing the antitumor activity of curcumin in different tumor types. The aim of current study was to investigate the molecular mechanism underlying the antitumor effect of curcumin in cervical cancer in monolayer cell cultures and spheroids models of Caski cell line.

**Materials and Methods:** The cytotoxic activity of curcumin was investigated in Caski cell line by MTT assay (3-[4,5-dimethylthiazol-2-yl]2,5-diphenyltetrazolium bromide assay). The anti-proliferative activity of curcumin was assessed in spheroid models. The expression level of CyclinD1, was studied by real time RT-PCR.

**Results:** Curcumin inhibited cell growth of Caski cells, as detected by MTT assay. Tumor shrinkage was detected in the cells treated with curcumin



at 5xIC50 values. Additionally, curcumin inhibited Wnt pathway via modulation of CyclinD 1.

**Conclusion:** we demonstrate the therapeutic potential of curcumin in cervical cancer, supporting further investigation on this novel agent in in vivo models.

**Keywords:** cervical cancer, curcumin, cell signaling pathways.

### **A review of the effects of parenteral nutrition on surgery recovery**

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**Objectives:** One of the risk factors for postoperative morbidity & mortality is malnutrition. so we should use ANS (Artificial Nutrition Support) to enhance the rate of recovery. However, some studies show that if we use PN (parenteral nutrition) in specific cases, some complications may occur.

**Materials and Methods:** Postoperative stress response & extensive wound healing put patients in a catabolic state after surgery, so the main aim of perioperative nutrition is to provide the full range of vitamins & trace elements & decrease negative protein balance to avoiding starvation; consequently maintain muscles, immune and increase postoperative recovery rate. In cases that PN is used, there were different kinds of methodology and quality according to patients' condition. Usually, it's intravenous & with a high fat to glucose ratio to maintain a high capacity to metabolize fats; also there is a formula for amounts of them of 25 Kcal/Kg ideal body weight. The usual time of ANS is 5-7 days after surgery but it's dependent on the situation.

**Results:** We reviewed several of hot topic articles consisting guidelines, randomized trials and metal analyses by using two databases (PubMed & Google scholar).

PN is not recommended as first treatment but as an associated one in cases that there is malabsorption or as a situated one in cases that EN(enteral nutrition) & ON (oral nutrition) are not possible, safe or successful; because in unnecessary cases not only it has no beneficial effects but also in some cases it causes complications; for example, it doesn't reduce hospital stay, and also caused infectious complications (related to Catheters), hypoglycemia, bone demineralization and increase costs. In cases that we use PN, we should monitor overfeeding and bone metabolism and inject glutamine as an assessment. In one case it

didn't have any effects on mortality and it can be used in older patients.

**Conclusion:** We should use ANS to avoid malnutrition and its complications. PN must be used in cases that other ways are not possible and it should be done according to age, sex, electrolytes and other conditions of the patient.

**Keywords:** Parenteral nutrition, Malnutrition, Artificial nutrition support, Postoperative recovery

### **Association between dietary inflammatory index with obesity in Women who referred to health centers affiliated to Tehran University of Medical Sciences**

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**Objectives:** Obesity is one of the most important public health problems around the world and is considered as a chronic inflammation. So that the body mass index and abdominal obesity, is associated with increased inflammation. Diet plays a major role in regulating chronic inflammation. The aim of this study was to investigate the relationship between dietary Inflammatory index(DII) and obesity in Tehranian women.

**Materials and Methods:** This descriptive-analytic cross-sectional study was performed on 198 women referred to health centers of Tehran University of Medical Sciences by cluster sampling. Food intake was measured by food frequency questionnaire and the inflammatory diet index was calculated. Anthropometric measurements in women included measurement of weight, height, and circumference. Disturbing factors were adjusted in last analysis and P<0.05 was considered statistically significant.

**Results:** The mean age of the subjects was 33.4 years and the mean BMI was 25. 1. The distribution of individuals in terms of weight, body mass index and waist circumference was significant on tertile of DII. The odds ratio for central obesity in the lowest Tertile of the DII after adjustment for confounding light compared to the highest tertile was OR=0. 10 that there was a statistically significant. But the odds ratio for general obesity was not significant, according to Tertile of the DII p=0.2.

**Conclusion:** Overall, this study suggests that with increased DII, the odds ratio of central obesity is increased. But has no effect on the risk of developing general obesity. Further studies are required to clarify this relationship.

**Keywords:** dietary inflammatory index, obesity, waist circumference, abdominal obesity

### Is there an association between the stress oxidative markers levels and the consumption frequency of vegetables and fruit in children with Down syndrome?

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**Objectives:** Down syndrome (DS) is caused by the triplication of chromosome 21. Increasing evidence has shown that DS individuals are under unusual increased oxidative stress, which may be involved in the higher prevalence and severity of a number of pathologies associated with the syndrome. The evidences suggest that consumption of diets with a high content of fruits and vegetables results in a significant reduction in markers of oxidative stress. The aim of study was the assessment of the association between the stress oxidative markers levels and the consumption frequency of vegetables and fruit in children with Down syndrome.

**Materials and Methods:** consumption frequency of fruit and vegetables by children with DS were recorded

by interview with the children's parents. Serum malondialdehyde (MDA) and urinary 8-hydroxy-2'-deoxyguanosine (8-OHdG) were also measured as biomarkers of oxidative stress. Data analyzed using ANOVA and Student's t-tests.

**Results:** Mean consumption of vegetables and fruits was 0.74 and 4.6 servings per week, respectively. No significant association were found between consumption of fruits and vegetables with markers of oxidative stress. Based on our findings, the 51% of children consumed fruit less than a Servings per day, the 65.9% of the children did not eat any vegetables and the rest of the children consumed less than one serving per day. There was a significant correlation between the frequency of fruits and vegetable consumption ( $r=0.212$ ;  $p<0.04$ ).

**Conclusion:** There wasn't any significant association between fruits and vegetables consumption and indicators of oxidative stress in children with DS. This lack of correlation could be due to low consumption of fruits and vegetables in children with DS.

**Keywords:** Stress oxidative markers, vegetables, fruit, Down syndrome

### Effect of dietary supplements on blood biomarkers among elderly home residents: A controlled randomized trial

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**Objectives:** The interaction between nutrition and health has a significant role in the aging process. Nutrition directly affects the physiological and biological processes in older adults as well as the progression of acute and chronic diseases. The present study examined the effect of dietary supplements on blood biomarkers among elderly home residents in Kermanshah, Iran.

**Materials and Methods:** The present controlled, randomized trial recruited 64 residents of a 24-hour elderly home in Kermanshah, aged above 65 years. The subjects were selected using convenience sampling and randomly allocated to experimental and control groups. The experimental group took one dietary-supplement capsule (Gerinton, R. P. Scherer, Germany) per day for 3 months. No intervention was provided for the control group. Ten mL of blood was taken before and after the intervention for biochemical assays of homocysteine, blood glucose, lipid profile, calcium, and vitamin D. Data were analyzed in SPSS 16 using paired-samples t-test and Mann-Whitney U test.

**Results:** Mean HDL was significantly reduced in experimental ( $p=0.011$ ) and control ( $p=0.010$ ) groups, but the inter-group variation was not significant for this indicator ( $p>0.05$ ). Comparing the intragroup variation of homocysteine showed the significant reduction of this indicator in the experimental group ( $p<0.001$ ), while no change was observed in the control group ( $p=0.432$ ). Inter-group variation was statistically significant ( $p=0.007$ ). Results of linear regression indicated that the serum level of vitamin D increased in the experimental group after three months, and there was a significant difference in the mean variance of serum levels of vitamin D between the experimental and control groups ( $p<0.001$ ).

**Conclusion:** We can improve the level of blood biomarkers in elderly by dietary supplements. In this study, the serum levels of vitamin D and homocysteine respectively increased and decreased in the elderly following the consumption of supplements. Therefore, we recommend dietary supplements for improving the health of the elderly.





**Keywords:** Elderly; blood biomarkers; dietary supplements

### **Metabolic syndrome in patients with non-alcoholic fatty liver disease: A case-control study**

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**Objectives:** Non-alcoholic fatty liver disease (NAFLD) has numerous metabolic consequences. The present study aimed to determine the risk factors of metabolic syndrome and nutritional status of patients with NAFLD in Kermanshah, Iran.

**Materials and Methods:** This case-control study examined 250 patients (125 per group). Patients with NAFLD were selected from among those with positive ultrasound results using convenience sampling, while the control group was selected from those with negative ultrasound results using simple random sampling. Data collection instruments included a demographic questionnaire and a food frequency questionnaire. We used the NCEP/ATPIII criterion to define metabolic syndrome. Data were analyzed using chi-squared test, t-test, and logistic regression in Stata 11.

**Results:** The level of triglyceride was significantly higher in patients with NAFLD than in the healthy group (33.33% compared to 14.41%,  $p=0.001$ ). Moreover, WHR was significantly lower in the control group (43.69% compared to 21.01%,  $p<0.001$ ). The prevalence of metabolic syndrome was 25.5% in patients with NAFLD and 6.8% in the control group ( $p<0.001$ ).

**Conclusion:** The present study showed the high prevalence of metabolic syndrome among patients with NAFLD compared to the healthy group. Furthermore, NAFLD was remarkably correlated with the incidence of metabolic syndrome. The timely diagnosis of NAFLD helps postpone consequences such as metabolic syndrome.

**Keywords:** Non-alcoholic fatty liver; metabolic syndrome; nutrition; triglyceride

### **Combatting obesity with low cost strategies; A prospective study in Kermanshah, Iran, 2016**

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**Objectives:** Overweight and obesity are the most common human metabolic disorders and a major risk factor for various diseases. The present study attempted to determine the effect of appreciation tokens on weight loss and lipid profile improvement among obese women in Kermanshah, Iran.

**Materials and Methods:** In this quasi-experimental before-after population biased study, 108 women with the BMI>30, randomly selected from the suburbs in Kermanshah. The participants were followed and their BMI and lipid profile (LDL, HDL, TG, and TC) were measured for a year within three month intervals. At the beginning of the study, nutritional and exercise guidelines were provided. In the case of weight loss, the participants have received appreciation token at a pre-determined time. BMI was measured using a Body Analyzer (Avis333). Data were analyzed in STAT 14 using linear regression.

**Results:** by adjusting for age, the participants' weight and BMI were significantly decreased by 0.974 kg ( $p<0.001$ ) and 0.421 kg/m<sup>2</sup> ( $p<0.001$ ), respectively, in each stage (each phase compared to the next phase). Moreover, percent of body fat (PBF) and waist-hip ratio (WHR) were reduced by 0.485 kg ( $p<0.001$ ) and 0.006 ( $p<0.001$ ), respectively. Furthermore, the level of LDL, TG, TC, and HDL were decreased by 3.006, 16.208, 18.970 and 4.301 mg/dL ( $p<0.001$ ), respectively after the study.

**Conclusion:** Results showed that reward in the form of gifts and cash has a significant effect on weight loss, and lipid profile improvement. Therefore, creating motivation for losing weight by giving rewards can decrease weight and the burden of obesity-related diseases and may lead to lower public health service cost.

**Keywords:** Obesity, BMI, Lipid profile, Incentives

### **Insulin resistance, blood bio-markers and health indices in obese women in Kermanshah**

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**Objectives:** Factors that affect obesity can directly or indirectly affect insulin resistance. The aim of this study was to comparison of blood markers in obese women with complete and relative insulin resistance.

**Materials and Methods:** In this descriptive-analytic study, 70 women over 30 years of age with a body mass index of 30 or more in Kermanshah were selected using the available sampling method. Dietary intake was measured by Food Frequency Questionnaire (FFQ) and analyzed by Nutrition 4 soft wear. The body composition was measured using the Body Analyzer Aviss333 model. 5 ml of blood was taken from participants for measuring blood biomarkers, including lipid profiles, thyroid hormones, fasting blood glucose, and insulin. By SPSS Data were analyzed using Chi-square, independent T-test and Mann-Whitney U test.

**Results:** The average daily protein intake was 70.5 (60)g, fat 76.5(62.5) g, carbohydrate 234 (20 1) g, vitamin A 685 (772) µg, and vitamin E 7(8) mg. The daily intake of fiber, calcium and folate was 75%, 17.65%, 67.65%, respectively, of the recommended RDA. Among the biochemical parameters between two groups with complete and relative resistance to insulin, there was a significant difference between T4 and HDL variables (P <0.0). T4 in the group with relative resistance and HDL in the complete resistance group were more.

**Conclusion:** The results showed that individuals with complete insulin resistance HDL and anthropometric indices were more; T4 and vitamin A were less. So more attention to increasing the nutritional awareness of the community, especially those are at risk of insulin resistance is a necessity.

**Keywords:** Body composition, insulin resistance, obesity, women

### Toxicological study of hydro-ethanolic extract of *Achillea Wilhelmsii* on Wistar rats

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**Objectives:** The investigation of possible toxic effects of *Achillea Wilhelmsii* is could be

important due to its widespread herbal nutritional and herbal applications. The major objective of this study is to understand the possible toxic effects of hydro-ethanolic extract of this plant during acute and sub-chronic study periods.

**Materials and Methods:** The hydro-ethanolic extract of *Achillea Wilhelmsii* was prepared. The acute toxicity study was conducted using a single dose of 5000 mg/kg body weight and sub-chronic study was done at three doses (250, 500, and 1000 mg/kg body weight/day).

**Results:** The results of acute study revealed that this extract caused no toxic effect and abnormality at doses up to 5000 mg/kg body weight. This exhibited that LD<sub>50</sub> value of the hydro-ethanolic extract of *Achillea Wilhelmsii* exceeded 5000 mg/kg body weight. The long-term sub-chronic confirmed the non-toxic nature of this plant and indicated that no abnormal alteration and toxic effect was induced by the extract in the male and female Wistar rats. The biochemical and hematological parameters were also unaltered and no serious dose-dependent change was observed. The histopathological study revealed hyperemia and slight degeneration of myocardia, pneumonia of the lung, and hyperemia of kidney, but these alterations were not dose- and sex-dependent and could be considered incidental. These results supported the results of biochemical and hematological studies and affirmed the safety of this extract.

**Conclusion:** The acute and sub-chronic toxic studies suggested that this plant could be a proper candidate to be used as a pharmaceutical herb in traditional medicine.

**Keywords:** *Achillea Wilhelmsii*; Acute Toxicity; Sub-chronic Toxicity; Medicinal Herb.

### Antibiotic residues in aquaculture

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**Objectives:** Antibiotics as a type of pharmaceutical compounds are widely used in modern medicine and veterinary industries. Antibiotics residues in animal derived food products are a great concern for public health. The prolonged use of antibiotics in aquaculture increases the selective pressure on bacterial Populations. Due to antibiotics being relatively stable and non-biodegradable, residual antibiotics can remain in commercialised fish and shellfish for consumption. Aim of the present

study is review of past studies about about the Residual Antibiotic Function in Aquaculture.

**Materials and Methods:** The present study is a review of the literature related to the topic from internal and foreign database such as Google Scholar, SID, Civilica, Iranmedex, Irandoc, Scopus, Science Direct, with keywords of residue antibiotic, aquaculture, fish, and review during 1995 to 2016. Base on content of titles and abstracts, 41 articles were selected and analyzed.

**Results:** Results of the studies showed that Antibiotics used to control such infection may emerge the development and spread of antimicrobial resistant bacteria and resistance genes and occurrence of antimicrobial residues.

**Conclusion:** The results of this study showed that the amount of antibiotic residues in aquaculture is controversial and that appropriate strategies should be considered for elimination and control. Also, authorities should monitor the reduction of antibiotic use in the industry.

**Keywords:** Antibiotic residues, Aquaculture, Review articles, Fish.

### The importance of vitamin D in reducing cervical cancer risk and progression

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**Objectives:** Cervical cancer is among the most common cause of death in women. This cancer is associated with inflammation, which is involved in the development and progression of cervical cancer. Inflammation is known to intercede different phase of tumorigenesis including cellular transformation, proliferation, survival, angiogenesis, and metastasis. Many studies have been conducted on the relationship between cervical cancer and inflammation. One of the factors which can influence is HPV infection, which is the major risk factor of cervical cancer. Against this background, the deficiency of vitamin D and its metabolites may be a potential cause of HPV persistence. The aim of current review is to investigate the association of Vitamin D deficiency and cervical cancer.

**Materials and Methods:** A literature search in different databases, including PubMed, and

Scopus was done for evaluating the correlation of Vitamin D deficiency, inflammation process with respect to the progression of cervical cancer

**Results:** There is growing body of evidence showing a link between TNF- $\alpha$  and progression of Cervical cancer. It has shown that TNF modulation may contribute to regulation of cell inflammation, and the subsequent development of malignant disease. In particular it has been shown that higher level of TNF- $\alpha$  was related with poor prognosis in patients with stage I and II disease. Against this information, several studies have reported anti-inflammatory role of Vitamin D, and its deficiencies with HPV DNA persistence and cervical intraepithelial neoplasia. Also 50,000 IU vitamin D supplement every 2 weeks for 6 months in women with CIN 1 could lead to its regression and ameliorate glucose homeostasis parameters in infected women with HPV.

**Conclusion:** These finding provide a proof of concept about association between Vitamin D deficiency and risk of developing/progression of cervical cancer and potential application of vitamin D supplementation.

**Keywords:** cervical cancer, vitamin D, TNF- $\alpha$ .

### Assessment of central obesity among apparently healthy women attending the nutrition clinic

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**Objectives:** The health risk associated with central obesity has been reported to be greater than general obesity as measured by body mass index. Waist circumference, waist to hip ratio and waist to height ratio have been proposed as easily measurable anthropometric indices of central obesity. Thus, the objective of the present study was to assess these indices among women attending the nutrition clinic in Ardabil city.

**Materials and Methods:** The participants were 150 apparently healthy, non-pregnant, non-lactating and non-menopausal obese women, aged 18-45 years and body mass index ranged from 25 to 40 kg/m<sup>2</sup>. Height, weight, waist circumference and hip circumference were measured using a standard protocol. Body mass index [weight (kg)/height<sup>2</sup> (m<sup>2</sup>)], waist to hip ratio (WHR) [waist circumference (cm)/ hip circumference (cm)] and waist to height ratio (WHtR) [waist circumference (cm)/ height (cm)] were calculated.

**Results:** Regarding BMI, most individuals (about 60.2%) were classified as being of grade I obese, approximately 26.3% as grade II obese, and

13.5% as overweight. The mean values for the adiposity indices were  $32.78 \pm 2.85$  kg/m<sup>2</sup> for BMI,  $101.39 \pm 9.37$  for waist circumference,  $0.90 \pm 0.06$  for WHR, and  $0.68 \pm 0.05$  for WHtR. The results showed that, according to the waist circumference ( $\geq 88$  cm), WHR ( $>0.85$ ) and WHtR ( $\geq 0.50$ ), 97.6%, 84.8% and 100% of women studied had central obesity, respectively.

**Conclusion:** It seems that the above-mentioned observations have important public health implications. Using of indices of central obesity provide a better estimate of the overall risk among apparently healthy women attending the nutrition clinic.

**Keywords:** Apparently healthy women, waist circumference, waist to hip ratio, waist to height ratio

### The factors associated with nutritional behaviors in diabetic people: an Explorative study

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**Objectives:** One of the most important aspects of treatment in chronic diseases is nutritional behaviors. Therefore, the accurate identification of variables affecting on nutritional behaviors in the existing context is of high importance. So, this study aims to explore the factors associated with nutritional behaviors in diabetic was done.

**Materials and Methods:** This study was an Explorative case study (Qualitative). The samples (18 diabetic) were selected from Khorasgan health centers and based on the criteria of researcher. Then, the researcher began to obtain the informed consent of the subjects and select an appropriate place for conduction of interviews. During the study, validity and reliability were still considered. Finally, the information was analyzed by using the software of MAXQ 10 and Coding process.

**Results:** Based on the Qualitative findings, the main core of the study was self-management. Also, the main Categories included self-regulation, self-control, environmental factors and self-efficacy. Accordingly, the patients fear of the occurrence of the complications of diabetes but due to the knowledge of various sources and experience, personal needs and this belief that it can partly carry out the activities of self-management, to some extent they can control blood glucose and prevent the complications of the disease.

**Conclusion:** This study showed that it is necessary to have a thorough understanding of the factors associated with self-care in patients infected with diabetes in each mentioned categories. Therefore, this situation should be taken into consideration by decision-makers in the field of health.

**Keywords:** self-management, nutritional behaviors, diabetic

### Survey of knowledge and attitude of Zabol University of medical sciences students towards foodborne illness, 2017

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**Objectives:** Diseases caused by contaminated food or drink are still one of the leading causes of morbidity in several countries and under certain circumstances, they can lead to serious consequences.

**Materials and Methods:** The purpose of this study was to survey of knowledge and attitude of Zabol University of medical sciences students towards foodborne illness. The questionnaire included demographic variables, questions related to knowledge, attitude. Data analysis was conducted using T-Test, ANOVA, and  $2\chi$  at 0.05 level with SPSS version 20.

**Results:** The results showed that 64 percent of students had good knowledge and 52 percent had good attitude towards about foodborne illness. There was a significance difference among students of different schools of knowledge ( $P=0.002$ ). But no statistically significant difference was observed between age groups.

**Conclusion:** Results strongly emphasize the need for educational programs for improving knowledge and control foodborne illness.

**Keywords:** Attitude, Foodborne illness, Knowledge, Student

### Development and validation of the stage of change questionnaire for nutritional habits, food management skills and food security based on the Trans-theoretical model

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**Objectives:** Effective modification of food security and dietary patterns depends on an understanding of the factors governing food production, marketing, delivery and food choice and health is only one of many considerations relevant to food choice. On the other hand the stages of change model is an increasingly popular one that attempts to explain the dynamics of intentional behavioral change and has been widely used in interventional programs aimed at changing health behavior and health outcomes. We hypothesized that several distinct factors associated with food choice and food security and assessment of different factors within the same measure allows direct comparisons to be made about the relative importance of dimensions such as health, price, sensory appeal and convenience. The aim of this study was to develop and evaluate an instrument for measuring stage of change for nutritional habits, food management skills and food security, based on the trans-theoretical model.

**Materials and Methods:** This study has two-phase. First, we conducted a qualitative study to generate an item pool. Next, content and face validity were performed to provide a pre-final version of the questionnaire. Then, a quantitative approach was used to evaluate the questionnaire. In the quantitative phase, reliability (internal consistency and test-retest analysis) and validity were performed to assess the instrument.

**Results:** A 30-item questionnaire was developed through the qualitative phase. It was reduced to a 17-item after content validity. In conclusion 2 items were removed and the pre-final version of the questionnaire consisting of 15-items was provided for the main study. The Cronbach's alpha coefficient showed excellent internal consistency ( $\alpha = 0.73$ ),

**Conclusion:** The stage of change questionnaire for nutritional habits, food management skills and food security is a reliable and valid ttm-based measurement and now can be used in clinical practice and nutritional studies.

**Keywords:** nutritional habits, food management skills, food security, trans-theoretical model

## Diet and Psoriasis: A Long Road to Achieve Success

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**Objectives:** Psoriasis is a common, chronic, non-communicable skin disease, with no clear cause or cure. It affects people of all ages, and in all countries. The reported prevalence of psoriasis in countries ranges between 0.09% and 1.43%, making psoriasis a serious global problem with at least 100 million individuals affected worldwide. Despite all the medical effort to combat of this disease, no certain cure has been found. Likewise, many other diseases, patients believe in the role of diet on this issue. However, data are lacking to describe dietary interventions among psoriasis patients and associated outcomes. This study aims to identify common dietary habits, interventions and perceptions among patients with psoriasis.

**Materials and Methods:** This study was a library-based by using the published articles in scientific databases like PubMed, Google Scholar and SID from 2000 to 2017 as the period of time on the effect of food and diet on psoriasis.

**Results:** Based on our finding, some cohort studies have stated that most patients reporting skin improvement was greatest after reducing alcohol, gluten, nightshades, and by adding fish oil/omega-3, vegetables, and oral vitamin D. Vitamin D, exhibits antiproliferative and immunoregulatory effects via the vitamin D receptor, and thus is successfully used in the topical treatment of psoriasis. Specific diets with the most patients reporting a favorable skin response were Pagano, vegan, and Paleolithic. Moreover, obesity promotes systemic inflammation, is an independent risk factor for the development of psoriasis, and is associated with psoriasis severity. Case reports suggest that psoriasis may improve with weight loss as evidenced by patients undergoing bariatric surgery. Specific vegetables that might have inflammation-fighting properties include carrots, squash, sweet potatoes, spinach, kale, and broccoli.

**Conclusion:** As a conclusion, despite possible hope of using food and diets in controlling psoriasis, lack of enough large-scale studies avoids tangible conclusion. Antioxidants and omega 3 along with vitamin D therapy might be the 1<sup>st</sup> advice so far.

**Keywords:** Psoriasis, Antioxidants, Omega 3, Vitamin D

### Metabolism of cholesterol in breast cancer

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**Objectives:** Breast cancer is leading cause of death all over the world especially in developed countries. Population studies examining migration of individuals with low risk of breast cancer to regions with high prevalence of disease show a robust effect of environmental factors on development and accelerate tumor progression. Among environmental conditions, many studies have suggested diet and obesity are two risk factors that affect development of breast cancer. The evaluation of cholesterol metabolism and breast cancer indicated the correlation between concentration of estrogen and HDL-cholesterol. Indeed, increased risk for tumor development and progression is usually along with accelerating estrogen concentration.

**Materials and Methods:** A literature search in different databases, including PubMed, and Scopus was performed in order of illustrating the correlation of breast cancer, cholesterol with respect to the Metabolism of cholesterol in breast cancer.

**Results:** Cholesterol production in cells, absorbance of cholesterol by food and cholesterol transport in circulation are all dependent together and as a result of this balance lost, malignant cells are encountered with high levels of cholesterol accumulation, providing tumor growth and migration. Moreover, tumor cells can escape from apoptosis process via exert changes in distribution of cholesterol content of cell membrane. Cancer cell development and metastasis are influenced by cholesterol membrane dispensation through signaling pathways modulating growth, expansion, adherence and immigration. Steroid hormones, branched from cholesterol, are able to control differentiation and proliferation of cells, thus play a key role in the pathogenesis of breast cancer. Concisely, irregularities in level or function of lipoproteins may interfere with controlling pathways relevant to apoptosis, proliferation, and immigration, hence

carcinogenesis will be occurred. Oxidative stress, glycation and inflammation conditions are also promote dysfunctional HDL, clarifying correlation between lipoprotein abnormalities and breast cancer.

**Conclusion:** Multiple mechanisms by cancer itself supposed to affect circulating cholesterol level including enhancement of cholesterol catabolism, increased usage of cholesterol in case of newly synthesized membranes, and increase storage of cholesterol in tumor cells.

**Keywords:** cholesterol, Breast cancer, Metabolism, Steroid hormones

### High-fructose corn syrup, energy intake, and appetite regulation

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**Objectives:** Some researches introduce high fructose corn syrup (HFCS) as the cause of weight gain in some societies. With respect to structural similarity of this syrup with sucrose, it is thought that consumption of these sweeteners will result in similar hormonal and metabolism responses. The main objective of this review was to examine collective data on associations between consumption of HFCS and energy balance, with particular focus on energy intake and its regulation.

**Materials and Methods:** In different studies, high fructose corn syrup, sucrose, pure glucose and pure fructose were used in short-term diets for healthy and diabetic men and women and appetite regulation, energy consumption and hormonal response to these sweeteners was investigated.

**Results:** Compared with pure glucose, fructose is thought to be associated with insufficient secretion of insulin and leptin and suppression of ghrelin. However, when HFCS is compared with sucrose, the more commonly consumed sweetener, such differences are not apparent, and appetite and energy intake do not differ in the short-term.

**Conclusion:** The similarity in the metabolic and hormonal response to high fructose corn syrup and sucrose can be explained by the similarity of the sugar structure of these two sweeteners. Because both these sweeteners are composed of relatively similar amounts of glucose and fructose sugars. But longer-term studies on connections between HFCS, potential mechanisms, and body weight have not been conducted.

**Keywords:** High-fructose corn syrup, energy intake, appetite regulation

### **The therapeutic potential and molecular mechanisms of novel formulated forms of curcumin in Breast Cancer**

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**Objectives:** Breast cancer is the most prevalent cancer and the second leading cause of death due to cancer among women. Thus there is a need for novel agents for targeting key signaling pathways to either improve the efficacy of the current therapy, or reduce toxicity. Recently curcumin which is an active derivative of turmeric has reported to have anticancer properties in different tumor types. The aim of current study was to elucidate the therapeutic potential of curcumin in breast cancer.

**Materials and Methods:** Searching for related publications has been done using keywords including "Curcumin" AND "Breast cancer" AND "Molecular mechanisms" AND "Pharmacological action" AND "Formulations" in PubMed, Google Scholar, Scopus and Web of Science databases. We also have searched these keywords in Persian in order to evaluate Persian articles.

**Results:** There is some evidence that curcumin may have antitumor activity in breast cancer. Several clinical trials have investigated its activity in patients with breast cancer, including a recent trial in breast cancer patients receiving radiotherapy, in whom it was shown that curcumin reduced the severity of radiation dermatitis, although it is associated with low bioavailability. Several approaches have been developed to increase its absorption rate (e.g., nano crystals, liposomes, polymers, and micelles) and co-delivery of curcumin with adjuvants as

well as different conjugation to enhance its bioavailability. In particular, micro-emulsions is an option for transdermal curcumin delivery, which has been reported to increase its absorption. Lipid-based nano-micelles is another approach to enhance curcumin absorption via gastrointestinal tract, while polymer-based nano-formulations (e.g., poly D, L-lactic-co-glycolic [PLGA]) allows the release of curcumin at a sustained level.

**Conclusion:** The current data support the therapeutic potential of novel formulations of curcumin in the treatment of breast cancer, although further studies are warranted to validate this approach.

**Keywords:** Curcumin, Breast Cancer, Therapeutic effects, Formulations.

### **ATP-Binding Cassette A- 1 (ABCA 1) and breast cancer**

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**Objectives:** Cardiovascular complication is a major concern for cancer patients. The ATP-Binding Cassette A- 1 (ABCA 1) protein promote the move of cellular cholesterol to apolipoprotein A-I among the plasma membrane. Based on previous studies reports, loss of function mutations in the ABCA 1 gene lead to familial hypoalphalipoproteinemia and Tangier disease, both cardio-vascular state determine by abnormally heighten cholesterol in macrophages, decrease levels of serum cholesterol and further organization of vascular plaque.

**Materials and Methods:** A literature search in different databases, including PubMed, and Scopus was done in case of examining the correlation of ATP-Binding Cassette A- 1 (ABCA 1) and its involvement in breast cancer.

**Results:** Enhanced levels of intra-cellular cholesterol are as well mostly found in breast cancer cells. Recent studies illustrate anti-cancer function of ABCA 1 efflux activity, which is after following cancer-particular ABCA 1 loss of function mutations or prohibition of ABCA 1 gene expression by oncogenic mutations. Due to increase cholesterol synthesis observed in breast cancer cells. Decreased ABCA 1 transporter cause elevates mitochondrial cholesterol, barricade release of mitochondrial cell death-promoting

molecules and so, help breast cancer cells live, in addition increase in mitochondrial cholesterol is necessary to the breast cancer phenotype.

**Conclusion:** Studies have shown that ABCA 1 expression in breast cancer was related to the positive lymph nodes, but not specifically correlated with breast cancer survival or tumor recurrence. ABCA 1 is forcefully expressed in normal mammary gland epithelium.

**Keywords:** ATP-Binding Cassette, breast cancer, ABCA 1 gene

### Relationship of fasting and birth weight in pregnant women

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**Objectives:** Fasting during pregnancy is a complex and controversial issue with regard to the above advantages found in texts of the day, every individual Muslim to fulfill this obligation; including pregnant women have a high tendency. The problem faced by many women and gynecologists concerned pregnant women about the possible consequences of fasting on fetal health. This study aimed to evaluate the relationship between maternal fasting during Ramadan on birth weight was administered.

**Materials and Methods:** The study was performed on pregnant women attending maternity hospital in Kashan in 2009 that exposure to Ramadan fasting during pregnancy was conducted in two groups according to fasting status and none fasting were compared. Multiple pregnancies and gestational age less than 37 weeks were exclusion criteria. In both groups, age, parity, gestational age, BMI, mother's job, receiving prenatal care and intended pregnancy were similar. Data were analyzed using descriptive and inferential statistical tests were performed using SPSS.

**Results:** The two groups in terms of mean age, gestational age, parity and weight gain during pregnancy was no significant difference. Mean birth weight was 3338 g ( $\pm 498$  g) in fasting and non-fasting group was 3343 g ( $\pm 339$  g). The results showed that the mean fasting and non-fasting mothers and birth weight were not significantly different ( $p = .931$ ).

**Conclusion:** The results of this study indicate that there is no significant relationship between the baby's weight at birth and maternal fasting during pregnancy. It seems to be fasting for pregnant women who receive prenatal care as long as they have no effect on birth weight. But other health effects that we have not seen in this study can occur.

**Keywords:** Fasting, pregnancy, birth weight, low birth weight infants

### The Relationship of Micronutrients Intake and Anthropometric Indexes with High-Sensitivity C - Reactive Protein (hs-CRP) in the Elderly Living in Nursing Home, Sabzevar, Iran

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**Objectives:** High-Sensitivity C-reactive protein (hs-CRP) is the most reliable means of diagnosing and controlling hidden inflammation and infection in the body. Poor nutrition in the elderly is associated with the increased CRP serum levels and accordingly systematic inflammation. This article aims to study the relationship of Micronutrients intake and Anthropometric indexes with hs-CRP serum in the elderly living in nursing home in Sabzevar, Iran.

**Materials and Methods:** A cross-sectional-analytical study with a sample size of 105 elderlies living in nursing homes in Sabzevar, Iran was conducted using stratified sampling method. Anthropometric indexes (BMI and WHR) were calculated. Nutrient intake per person was determined using N4. Blood samples were collected to measure the hs-CRP serum. Data were analyzed using SPSS, descriptive statistics, correlation coefficient, and regression.

**Results:** B 1, B2, E, C proteins, magnesium, and selenium have a reverse, significant correlation with hs-CRP. Among Anthropometric indexes, hs-CRP has a statistically direct, significant relationship with BMI.

**Conclusion:** According to the results, it seems that diets which are rich in antioxidant vitamins such as vitamins C and E, magnesium, and selenium are effective in reducing the systemic inflammation in the elderly.

**Keywords:** Micronutrients, Anthropometric Indexes, hs-CRP Serum, Elderly.



### High dose vitamin D supplementation is related to an improvement in cognitive abilities, insomnia and day time sleepiness in adolescent girls

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**Objectives:** Vitamin D may be related to the modulation of signaling pathway in the central nervous system. There are growing body of evidence for an association between vitamin D status and some neurological disorders. We aimed to evaluate the effect of high dose vitamin D supplementation on cognitive abilities, insomnia, and daytime sleepiness in female adolescents.

**Materials and Methods:** We studied the effects of 9 weeks of high dose vitamin D supplementation on cognitive abilities and sleep disorders in 940 girls aged 12- 18 years who were resident in northeastern Iran, between January to April 20 15. They received 50000 IU of vitamin D3 (cholecalciferol) per week. Cognitive status, severity of insomnia and day time sleepiness were measured using standard questionnaires.

**Results:** Our findings showed that oral vitamin D supplementation improved cognitive abilities tasks including memory, inhibitory control and selective attention, decision making, planning, sustained attention and cognitive flexibility in healthy adolescent girls ( $p < 0.001$ ). The prevalence of subjects with insomnia after intervention fell from 15.0% to 11.3%. Similar results were also found for prevalence of subjects with sleepiness (15.6% reduced to 14.7%), or having cases with both insomnia and sleepiness (8.0% reduced 6.1%) ( $P < 0.05$ ).

**Conclusion:** We found that high dose vitamin D improved cognitive abilities and ameliorated insomnia and daytime sleepiness in adolescent girls. Further investigations are required on a different population group (age and gender) and to determine the sustainability of these effects. The value of vitamin D therapy in other neurological disorders would also be of interest.

**Keywords:** Vitamin D; Cognitive abilities; Adolescents; Sleepiness; Insomnia

### Anemia is associated with cognitive impairment in adolescent girls

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**Objectives:** Anemia is associated with impairment in oxygen transport, affecting an individual's wellbeing, physical activity and work performance. The aim of this study was to examine the prevalence of anemia and its possible association with cognitive function, measures of emotion and sleep patterns in adolescent girls.

**Materials and Methods:** A total of 940 adolescent girls were assessed to evaluate neuropsychological parameters and its association with hemoglobin level.

**Results:** Among the total of 940 participants, 99 girls (10.5%) were anemic [hemoglobin < 12(g/dl)]. A significantly higher proportion of the girls who were anemic had entered menarche compared with those who were not anemic ( $p$  value= 0.049). There was no significant difference in depression, aggression, insomnia, daytime sleepiness and sleep apnea score between anemic and non-anemic groups. However, the total cognitive ability score was significantly lower in the anemic girls ( $76.8 \pm 2.1$  versus  $85.7 \pm 2.5$ ,  $p = 0.002$ ). Hemoglobin concentrations were significantly related to memory, inhibitory control, selective attention, decision making, planning, and total cognitive ability. Logistic regression analysis show that anemic girls were 1.73 times more likely than non-anemic girls to have cognitive impairments (95% confidence interval [CI] = 1.07-2.78;  $P = 0.025$ ).

**Conclusion:** Anemia is a prevalent condition among Iranian adolescent girls. Anemia adversely affects cognitive ability and was an independent risk factor for cognitive impairment.

**Keywords:** Anemia; hemoglobin; adolescents; cognitive ability; depression; sleep disorder

### Effect of green tea on plasma adiponectin levels: A systematic review and meta-analysis of randomized controlled clinical trials

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**Objectives:** Our objective was to perform a systematic review and meta-analysis on Randomized Controlled Trials (RCTs) assessing the effect of green tea on serum adiponectin concentration.

**Materials and Methods:** We searched PubMed, ISI Web of Science, Scopus, and the Google Scholar databases up to November 2016. RCTs conducted among human adults studied the effects of green tea and green tea extract on serum adiponectin concentrations as an outcome variable was included. The Weighted Mean Differences (WMD) and the standard deviations of change in the serum adiponectin levels were calculated. The random effects model was used for deriving a summary of mean estimates with their corresponding SDs. The protocol was registered with PROSPERO (No. CRD42017057716).

**Results:** Fourteen RCTs were eligible to be included in the systematic review and the meta-analysis. Our analysis showed that green tea did not significantly affect adiponectin concentrations in comparison with placebo (WMD:  $-0.02 \mu\text{g/ml}$  95% CI:  $-0.41, 0.38$ ;  $P = 0.936$ ). There was a substantial heterogeneity between studies ( $I^2 = 91.7\%$ ;  $P < 0.0001$ ). Subgroup analyses based on sex, type of intervention, continent, and BMI could not explain the sources of heterogeneity. Meta-regression analyses revealed that the dose and duration of green tea ingestion did not have any effect on adiponectin concentrations.

**Conclusion:** Green tea could not change the circulatory adiponectin levels. The dose and duration of green tea could not change the result. RCTs with longer follow-up periods and higher doses are needed to replicate our results.

Authors performed the design, analysis, writing, and interpretation of the study findings independently of funding source.

**Keywords:** Adiponectin, Green tea, Green tea extract, Meta-analysis

### The study of prevalence of stunting in the rural kindergarten in East Azerbaijan province

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**Objectives:** Stunting reflects chronic malnutrition and the incidence at any point about "irreparable. The cross-section to provide a suitable height for age, is up to 6 years. Any delay will leave irreparable damages the health of children. Therefore, this study aimed to identify the percentage of stunting in rural kindergarten in East Azerbaijan province.

**Materials and Methods:** In this cross-sectional study was conducted, height and weight of children 36 to 72 months of day care center was measured Province. Then a hot meal every week during the 270 days given to all children in rural kindergarten. In this study used data from 7,100 children in the rural kindergarten. To determine the prevalence of stunting children's height for age 2007 World Health Organization using software and Anthro Plus was used.

**Results:** The findings of this study, children Baseline 1. 19% of stunting intense, 4.82% stunted, 93.02% of height natural and 0.97% taller and after 0.97% of stunting severe, 4.90% short, 93.38% of normal height and 0.74% were tall.

**Conclusion:** The result show that the prevalence of malnutrition is stunting seen to a lesser extent And given that the improvement over time is stunting requires proper nutrition, These results highlight the importance of educating parents, especially mothers and provide appropriate dietary pattern and lifestyle are emphasized.

**Keywords:** Stunting, Rural kindergarten, East Azerbaijan

### The role of casein free diet in autism treatment

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**Objectives:** Autism or ASD (autism spectrum disorder) refers to a neurodevelopmental heterogeneous group of disorders characterized by challenges with social skills, repetitive behaviors, and speech communication, as a common disorder among children and a negative factor in their normal activities, must be controlled and cure. Autism can have psychological and nutritional treatment; KGD (ketogenic diet) or GFCF (gluten free casein free diet) (as one of its subsets) is one of the suggestions that can be used for curing and reducing symptoms in autism. KGD is, in reality, a kind of regime that include high fat, low protein, and low sugar and it was previously used for controlling resistant epilepsy in children, can reduce symptoms and control the autism level in animal models and some cases in human.

**Material and Methods:** We reviewed several of most topic articles from 2009 to 2017 by using two data base providers (PubMed & google scholar).

**Results:** KGD reduces autistic symptoms by preventing carnitine biosynthesis, producing more NADH and FADH<sub>2</sub> than glucose, increasing the production of ROS in mitochondria and glucose conversion to GABA. GFCF especially by using medium-chain triglycerides is a highly ketogenic diet reducing fatness by decreasing available calories for consumption.

KGD in mouse reduces anti-social and repetitive behaviors. Although in human cases it's hard to assessment of the impression of diet only, in many cases caused reduction in seizure susceptibility (as a common comorbidity), improvement in encephalography, change of severe autism to non-social, normalizing the intelligence quotient and decreasing bone cortical thickness. However; it had also some side effects in some cases like lack of weight, growth retardation in kids, risk of systemic ketosis and coma especially in type 1 diabetes, more need to supplements such as vitamin D and calcium, hypoglycemia, metabolic acidosis and pneumonia.

**Conclusion:** As the evidence indicates KGD or GFCF can be used as a treatment for autism, but we should careful about applying KGD because it has some side effects.

**Keywords:** Autism, casein-free diet, ketogenic diet, treatment

### Investigation of Aflatoxin M 1 Contamination in Raw Milk Produced in Kerman Province and Seasons Effects on its Changes

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**Objectives:** When AFB<sub>1</sub> is consumed by the livestock, it converts it into its hydroxyl form, aflatoxin M<sub>1</sub>, which is shown in milk. Aflatoxin is resistant to heat treatments such as pasteurization, autoclave, and other process-reducing processes are unlikely to be effective, as milk remains pasteurized and powdered. The International Center for Cancer Research initially initiated the AFM<sub>1</sub> because its toxicological was introduced. Information was limited to The title of a carcinogenic potential for humans in Group b based on other research results and its toxicity, the center changed the aflatoxin M<sub>1</sub> from But later on, to carcinogenic group 1 for humans. Group b. Aflatoxins are poisons produced by three species of *Aspergillus flavus*, *Aspergillus parasiticus* and *Aspergillus numius*. These toxins, which cause aflatoxicosis in domestic and human animals, are one of the major causes of embryonic and carcinogenic abnormalities affecting suppressor genes, P53, and the interaction of DNA and RNA with the production of proteins and lipids and structural changes in the nucleus. The study was conducted to measure the level of aflatoxin M<sub>1</sub> in food products of animal origin and season effects on its changes.

**Materials and Methods:** In the years 1394 to 1395 in the field of livestock milk in terms of presence and determination of aflatoxin values using different methods such as HPLC has been reported. The aflatoxin concentration of the sample analysis was calculated using the analyte level and the line equation obtained from the calibration curve and after the dilution factor was applied.

**Results:** 100 samples out of 150 samples equivalent to 66% of the amounts of aflatoxins M<sub>1</sub> in the range of 0.007 to 0.2 micrograms per liter, and 6 samples contaminated more than the standard limit of 23 samples contains Aflatoxin M<sub>1</sub> more than the standard Alimentarius and Europe standard. Comparison of the results of this study and other comprehensive studies will

provide a better understanding of the situation. Results indicate the occurrence of aflatoxin M 1 in milk is a serious problem in health Iranian public and many countries of Asia.

**Conclusion:** Milk is a valuable food, is used almost daily in all age groups, especially children. In addition, due to its nutritional value, it is recommended to increase its consumption, so that today, per capita consumption as one of the indicators of developing countries in It is considered to be the primary source for the production of other dairy products, so milk contamination with Aflatoxin M 1 should be monitored continuously so that the increase in milk consumption and dairy products due to its nutritional value does not pose a threat to the health of its consumers.

**Keywords:** Aspergillus, Aflatoxin M 1, Food contamination, HPLC.

### **Food Security Survey in Households in Kermanshah, 20 16**

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**Objectives:** Food security and access to adequate and safe food is one of the basic needs of humans. Food insecurity can cause serious health and nutrition problems so it is essential to monitor food security and the factors associated with it in any society. The purpose of this study was to determine food security in households in Kermanshah, one of the western provinces of Iran.

**Materials and Methods:** This cross-sectional study was conducted on 1 185 households in Kermanshah with a population of about 3500 people selected by cluster sampling from 8 areas of the city. Data collection tool in this study was Household Food Insecurity Access Scale questionnaire version 3 .data were analyzed by SPSS 16.

**Results:** Overall, food security was 30.5%, and 69.5% of households had some degree of food insecurity. By improving the income situation, food insecurity had diminished. In both Crude OR and Adjusted OR, the household size (OR = 1.50, P = 0.007), unemployed head of household (OR = 3.30, P = 0.00 1) were identified as a risk factor for food insecurity. As the level of education

increased, the chances of food insecurity were lower (P> 0.05).

**Conclusion:** The results of this study indicated a high prevalence of food insecurity in Kermanshah households and the economic and social situation played a significant role in food insecurity. The design and implementation of interventions by the responsible organizations for better access and improving the quality and quantity of household food consumption is necessary.

**Keywords:** Food Security, Households, Kermanshah

### **School based nutrition education intervention using social cognitive theory to improve nutritional knowledge, attitudes and practice of overweight and obese adolescent girls: a randomized controlled trial**

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**Objectives:** Nowadays childhood obesity has become to one the most challenging issues and a principle public health problem all around the world. Incorrect dietary habits such as skipping breakfast is one of the most important causes of childhood obesity. Social cognitive theory (SCT) is a well-known theory used to improve nutritional knowledge, attitudes and behaviors among obese individuals. Thus, this school-based nutrition education intervention study was conducted using SCT to improve knowledge, attitude and behaviors of overweight and obese adolescent girls.

**Materials and Methods:** A total of 172 overweight and obese Iranian girl students selected through a cluster random sampling (87 in the intervention and 85 in the control group). A seven months intervention based on SCT for students, and their parents was conducted. At baseline and end of the study, nutritional regarding SCT constructs (self-efficacy, social support, outcome expectations and outcome expectancies) and meal frequency were collected



through valid and reliable questionnaires. Nutritional knowledge and attitude of students and their parents and dietary intakes of students were obtained as well. Data were analyzed through SPSS version 18 at significant level of  $<0.05$ .

**Results:** After seven months, in the intervention group the mean of nutritional knowledge and attitude scores of students and their parents increased significantly in comparison to the control group ( $p$ -value  $<0.001$ ). In addition, in this group, the mean of nutritional self-efficacy, social support and intention increased significantly compared to the control group ( $p$ -value  $<0.001$ ). However, there were no significant differences between nutritional outcome expectations and outcome expectancies between groups at the end of the study. Moreover, the mean of days of breakfast consumption among intervened participants increased from  $3.8 \pm 3.0$  to  $5.1 \pm 2.7$ , but in control subjects did not change (before and after  $4.2 \pm 3.0$ ), in which the differences between groups were statistically significant, ( $F_{(1,151)} = 3.9$ ;  $p < 0.001$ ).

**Conclusion:** Theory based nutrition education intervention increased nutritional knowledge, self-efficacy, social support and intention and improved nutritional attitudes of overweight and obese girl students. Furthermore, our results indicated that school based intervention program using SCT could increase breakfast consumption among overweight and obese adolescents.

**Keywords:** Obesity; Breakfast; Adolescent; Social-Cognitive-Theory

#### **Association of a genetic variant in AKT gene, involved in AKT/PI3K/mTOR pathway, which is related to cell growth and metabolism with metabolic syndrome**

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**Objectives:** The metabolic syndrome (MetS) is associated with increased risk developing different disorder, such as type 2 diabetes (T2DM) and cardiovascular disease (CVD). This syndrome is more common in populations which have excessive nutrient intake or physical inactivity. MetS is involved in the interaction of both lifestyle factors (diet and physical activity)

and genetic factors. Against this background, AKT pathway plays a central role in different range of cellular processes such as metabolism, proliferation and survival, and dysregulation of this pathway is associated with several human diseases including cancer, diabetes, and cardiovascular diseases. Thus, the current study was carried out to investigate the association between a genetic variation of AKT-rs 1 130233 with MetS.

**Materials and Methods:** Individuals were recruited from "MASHAD study" cohort. DNA was extracted followed by genotyping using Taqman assay. Demographic information, anthropometrics and biochemical measures were collected. Dietary assessment was conducted by 24h dietary recall. Data were analysed using SPSS 21 software.  $P$ -value of  $\leq 0.05$  was considered as statistically significant.

**Results:** Individuals carrying G allele for rs 1 130233 had a lower risk for MetS, although carriers of the A allele was higher in total population.

**Conclusion:** We have found a significant association between AKT-rs 1 130233 with MetS.

**Keywords:** AKT, polymorphism, metabolic syndrome

#### **Relationship between changes in insulin indexes (insulin concentration, fasting blood sugar (FBS) and insulin resistance) with VO<sub>2</sub>max according to a resistance training period along with received calorie restriction in overweight young girls**

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**Objectives:** The aim of this study was to investigate the relationship between changes in insulin indexes (insulin concentration, fasting blood sugar (FBS) and insulin resistance) with VO<sub>2</sub>max according to a resistance training period in young overweighted girls while receiving restricted calorie.

**Materials and Methods:** In this semi-experimental trial which was conducted field-laboratory, 40 overweighted young girls who were able to attend regular training protocol were randomly selected for simple sampling of the population and were randomly assigned to four groups: 1- Resistance training group with received calorie restriction ( $n = 10$ ), 2. Resistance training group ( $n = 10$ ), 3. Received

calories restriction (n = 10) and 4. A control group (n = 10). All the somatometry profile, body composition, cardiovascular and respiratory fitness and leptin of the subjects were recorded and measured in two stages (pre-test and post-test) under identical conditions using field tools and valid laboratory methods. The exercise protocol was performed 3 times a week for 12 weeks. Shapiro-Wilk, Levin, ANOVA (One-Way Analysis of Variance) statistical tests with repeated measures was used to test the research hypotheses in a meaningful level of  $p < 0.05$ .

**Results:** The results showed that there was no significant relationship between changes in maximal oxygen uptake with changes in insulin concentration, fasting blood sugar, insulin resistance index ( $p > 0.05$ ), separated by the groups. However, there was a significant relationship between the changes in insulin concentration, changes in insulin resistance index and maximal oxygen uptake and from pre-test to post-test ( $p < 0.05$ ), separated by the groups.

**Conclusion:** Based on the results we can state that 12-week resistance training while receiving restricted calorie and 12-week resistance training singly is associated with appropriate changes in the activity of insulin, insulin resistance index and maximal oxygen uptake in overweighted girls. Therefore, the implementation of such a protocol is recommended for them.

**Keywords:** Resistance exercise, Received calorie restriction, VO<sub>2</sub>max, Insulin resistance index

### Association between alternate Mediterranean diet (aMED) and metabolic syndrome in Iranian elderly

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**Objectives:** Some food patterns and lifestyles have beneficial effects on diminution of metabolic syndrome (MetS) components. Alternate Mediterranean Diet (aMED) because of its contents may have potential protective impacts against the risk of developing the metabolic syndrome in elderly people. We assessed the association between alternate Mediterranean Diet (aMED) and metabolic syndrome components in Iranian elderly.

**Materials and Methods:** 226 healthy elderly people (65 men and 161 women) with a mean age of 67.04 years participated in this cross-sectional study in five districts of Tehran, the capital of Iran during the period 2004-2015. MetS was defined based on the National Cholesterol Education Program Adult Treatment Panel III criteria. Dietary intakes were assessed using a validated food frequency questionnaire (FFQ) that included 147 items. The Alternate Mediterranean dietary score was calculated by Fung et al. Method. Logistic and linear regression models were used to derive beta estimates and odds ratios (ORs).

**Results.** Subjects in the top tertile of Alternate Mediterranean diet had 56% lower chance of metabolic syndrome compared with subjects in the bottom tertile (OR 0.46; 95% CI 0.23, 0.94;  $P$  trend=0.033). After adjustment for potential confounders such as age, energy intake, physical activity, marital status, smoking, education, income this association was strengthened (OR 0.34; 95% CI 0.14, 0.82;  $P$  trend=0.017). Also it was observed that people in the highest tertile of the Alternate Mediterranean diet score had 68% lower odds of high triglycerides compared with those in the lowest tertile (OR 0.42; 95% CI 0.20, 0.91;  $P$  trend=0.033).

**Conclusion:** Our study showed a higher adherence to the alternate Mediterranean diet reduced the risk of the metabolic syndrome in the elderly subjects.

**Keywords:** alternate Mediterranean diet, metabolic syndrome, elderly

### The effectiveness of continuous care model implementation on body mass index and lifestyle of middle aged obese

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**Objectives:** The increasing trend of obesity in the world and in Iran has made this factor one of the greatest health challenges in the world.



Regarding the chronic nature of obesity, a continuous care pattern is needed to improve the lifestyle of obese individuals. The aim of this study was to determine the effect of continuous care model application on body mass index (BMI) and lifestyle of obese middle-aged.

**Materials and Methods:** This quasi-experimental study was conducted in Gonabad, Iran, during 2014 and 2015. One hundred and five obese middle-aged were selected and were assigned randomly to two groups of experimental (53) and control (52). The data were collected using meter, scale, and Walker health promotion lifestyle questionnaire (HPLP II). The questionnaire was completed by the participants before the intervention as well as one, two, and three months after the intervention. The results were analyzed using SPSS (version 20) and running descriptive statistics as well as chi-square, paired t-test, and independent t-test.  $P < 0.05$  was set as significant.

**Results:** There was no significant difference between the experimental and control groups before the intervention considering all of the studied variables. However, a significant difference was observed between groups after the intervention in terms of lifestyle dimensions and obesity control performance ( $p < 0.05$ ). Regarding BMI, no significant difference was observed even after the intervention.

**Conclusion:** Considering the results of current study, the continuous care model can be effective for improving lifestyle and health of obese middle aged. Therefore, this model is recommended as a framework for overweight and obesity prevention plan.

**Keywords:** Continuous care model, Body mass index, Lifestyle, Obesity

### Survey and comparison on Microbial contamination of Turmeric (bulky and packaging forms) supplied in Zabol, 2017

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**Objectives:** Spice and dried herbs are natural products that give a tasty and color to many food. Consumption of Spices to prevent and treat diseases and cancers region of the stomach, intestines and digestive system. Due to the production of these products carry out in the traditional way in our country, it may have a wide range of bacterial infections (form vegetative and

spore forms), yeasts and molds. This study aimed to Survey and compare the microbial turmeric bulky and packaging forms supplied in Zabol city.

**Materials and Methods:** 27 samples of Turmeric (6 samples Packaging and 21 samples pile) were selected from of the centers of Supplier spice in zabol city randomly. Then, the survey of experiments were conducted following bellow: total count of Microorganisms from National Standard No. 5272, the contamination of samples to coliforms from Standard No. 9263, the survey of E. coli based on Standard No. 2946, the count of Bacillus cereus based on Standard No. 2324, Clostridium perfringens based on Standard No. 2197 and The search of mold according to the National Standard No. 10899-2.

**Results:** The results showed that 88.89% of samples from total count of microorganisms, 62.97% from count of coliforms, 59.25% about count of Bacillus cereus, 55.56% from count of Clostridium perfringens and 44.44% from count of molds are higher than from the limited defined by National Standard Organization of Iran. Also, the contamination to E.coli was found in 9 samples (33.34% of samples).

**Conclusion:** The Spices are used extensively on a daily and in a wide range in our country, and Turmeric is the most common among them. Due to its high infection rate in this study, attention to principles of Sanitary is essential in its production process, transmission, storage and supply.

**Keywords:** Spices, Bacillus cereus, Clostridium perfringens, E. coli, mold

### The study of prevalence of obesity and overweight status in the village day care center in East Azerbaijan province

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**Objectives:** Obesity and overweight in children and adolescents is the most common health problem in developed countries. Access to high-calorie foods, inactivity is the cause of obesity. Modernizing rapidly developing countries such as Iran's pattern of behavior is very fast, the increase in chronic diseases in the community of

the results of these changes. The present study was to evaluate the prevalence of overweight and obesity in Rustamhds East Azerbaijan province was conducted.

**Materials and Methods:** In this cross-sectional study was conducted, height and weight of children 36 to 72 months. After an entire day care center in measuring it during a hot meal to all children in kindergarten was 270 days every week. The study used data from 7, 100 children in Rustamhds. To assess obesity in children, BMI-Z Score Index 2007, World Health Organization using software Anthro and Anthro Plus was used.

**Results:** Based on the children before the intervention, 5/22% lean, 75/48% were normal weight, 13/93 At risk of overweight, 4/ 13% overweight and 1/07% fat and after 3/99% lean, 72/63% were normal weight, 16/74% weight At risk of overweight, 5/28% overweight and 1/36% were obese.

**Conclusion:** The results show that additional good condition Rustamhds Azerbaijan and provide a meal increased caloric intake and the prevalence of overweight and obesity in children. And nutrition education intervention is required to prevent this issue.

**Keywords:** Rustamhd, obesity, overweight, East Azerbaijan

### **Studying Antianxiety Effect Of Chamomile, fennel And Saffron, Herbal Compound In Mail Rats**

Nikoo Saeedi<sup>1</sup>, Hassan Abbasian<sup>1</sup>

1. Department of Neuroscience, Medical Faculty, Mashhad University of Medical Science, Mashhad, Iran

**Objectives:** Some plants have beneficial effects on diseases. In ancient times they were be used as a drug. According to our herbal medicine history we combined chamomile which decrease the pain and healing scares, with fennel, a plant as a antiinflammator and saffron, a plant which is using for treating insomnia and as a antidepressor.

**Materials and Methods:** First we choosed 15 matured, healthy and male rats that they weigh 200 grams approximately. Then we devide them into three groups. The control group which didn't get any injection, the control positive group which we injected them as regular as the experiment group but its content was just water and the experiment group that were injected regularly and with specific dose. We continued these injections for one week. After one week we tested their rate of anxiety by elevated plus

maze (EPM). After that we processed our datas by SPSS software.

**Results:** After comparing the datas with each other, we observed that there was significant reduction in the anxiety of our experiment group.

**Conclusion:** It seems that, these reduction is because of regular injecting and specific dose in each time.

**Keywords:** Anxiety, Fennel, Chamomile, Saffron

### **Studying Antialgesic Effect Of Chamomile, fennel And Saffron, Herbal Compound In Mail Rats**

Nikoo Saeedi<sup>1</sup>, Hassan Abbasian<sup>1</sup>

1. Department of Neuroscience, Medical Faculty, Mashhad University of Medical Science, Mashhad, Iran

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**Materials and Methods:** First we choosed 15 matured, healthy and male rats that they weigh 200 grams approximately. Then we divided them into three groups. The control group which didn't get any injection, the control positive group which we injected them as regular as the experiment group but its content was just water and the experiment group that were injected regularly and with specific dose. We continued these injections for one week. After one week we tested their toleration for pain by hot plate. After that we processed our datas by SPSS software.

**Results:** After comparing the datas with each other, we observed that there was significant increscent in their pain tolerance in our experiment group.

**Conclusion:** It seems that, these increascent is because of regular injecting and specific dose in each time.

**Keywords:** Algesia, Fennel, Chammile, Saffron

### **The effect of silicon treatment on shikonin content**

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**Objectives:** Shikonin and its derivatives are the naphthoquinone red pigments accumulated in



the roots of the Boraginaceae plants. This secondary metabolite has many medical applications such as the anti-cancer, the anti-obesity effects and wound healing property. The anti-obesity property of shikonin is related to its effect on the glucose uptake and metabolism. Silicon is the second most abundant element in the soil. Studies have demonstrated that silicon increased the root growth. Therefore, it is possible that silicon lead to more accumulation of the secondary metabolites in the root.

**Materials and Methods:** Plants were treated for 30 days at four different levels of silicon: control, 0/25, 0/5, 0/75 mM. The fresh weight of the roots was measured. Shikonin was extracted as described by Hussain and its absorbance was read at 620 nm. The activity of PAL (phenylalanine ammonia lyase) enzyme was determined according to the method Whetten and at 290 nm. Data analyzed by Excel and SAS softwares. The statistical significance of differences between mean data was assessed by the Anova and Duncan test.

**Results:** Silicon application in the culture media increased fresh weight of the roots. The highest weight was measured at concentration of 0/5 mM. Shikonin content of the roots had no significant difference in the different concentrations of silicon. Also silicon was ineffective on the PAL activity in the roots. This enzyme is one of the important enzymes in the shikonin synthesis pathway.

**Conclusion:** 30-day silicon treatment improved the root growth, but this increase in growth did not result in more accumulation of Shikonin in the root.

**Keywords:** Shikonin, silicon, PAL enzyme.

### In-vitro hypoglycemic, anti-bacterial and antioxidant effects of *Dracocephalum kotschy*

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**Objectives:** The *Dracocephalum kotschy* belongs to the Labiatae family. It is an Iranian endemic plant and a traditional medicine used for joint pain relief, inflammation, rheumatoid arthritis, as well as stomach and liver disorders. It is also known traditionally due to its effect as blood cholesterol lowering agent. It has been found that the main components of its essential oils are flavonoid, rosmarinic acid, geranial, limonene, caffeic acid, luteolin, apigenin, etc. The aim of this study was to investigate the anti amylase,

antibacterial and anti-oxidant activities of its leaf and flower extracts.

**Materials and Methods:** the plant extracts were prepared using aqueous acetone solution (70% V/V). Anti amylase activity of the extracts was measured by DNS method according to Bernfeld. Antibacterial activities were examined against two Gram-positive (*Staphylococcus aureus*, *Micrococcus luteus*) and two gram-negative (*Escherichia coli*, *Pseudomonas aeruginosa*) bacteria using MIC (Minimum Inhibitory Concentration), MBC (Minimum Bactericidal Concentration) and disc diffusion methods. The antioxidant capacity of *D. kotschy* acetone extracts were measured by various methods, including DPPH, FRAP (ferric reducing antioxidant power), total phenols (TPC), total flavonoid (TFC) and total anthocyanin content (TAC) using spectrophotometric methods.

**Results:** The results showed that leaf and flower extracts of *D. kotschy* strongly inhibited  $\alpha$ -amylase activity (with  $IC_{50}$ =0.338 and 1.7 1 mg/ml, respectively). The highest antibacterial property was observed by flower extract against *Staphylococcus aureus*. However, both leaf and flower extracts showed antibacterial activity against other investigated bacterial species. TPC content was found to be  $2.43\pm 0.5$  1 and  $1.34\pm 0.3$  mgGAE/gDW for leaf and flower extracts respectively. TFC was also estimated  $0.99\pm 0.06$  and  $0.43\pm 0.02$  mgQE/gDW for leaf and flower extracts, respectively. TAC of leaf and flower was  $0.02\pm 0.0$  1 and  $0.029\pm 0.003$  mg. FRAP values were obtained  $0.64\pm 0.07$  and  $0.47\pm 0.0$  1 mMFe(II)/gDW for leaf and flower extracts, respectively.

**Conclusion:** Here, we found that leaf and flower extracts of the plant possess anti-amylase, anti-oxidant and antibacterial activities. High anti-amylase potency of *D. kotschy* may suggest its use as a hypoglycemic agent. Although further analyses are required to investigate whether the plant can be used as anti-diabetic agent. Moreover, both flower and leaf extracts indicated satisfactory antibacterial and antioxidant potential.

**Keywords:** *Dracocephalum kotschy*, Anti  $\alpha$ -Amylase, Antibacterial, Antioxidant

### Hyperlipidemia and cardiovascular disease in follow up of MASHAD population: a cohort study

Fatemeh Sadabadi, Majid Ghayour, Mohsen Moohebat, Alireza Heidari, Zahra Asadi, Farzaneh Mohammadi, Fatemeh Sadatjafari

**Objectives:** Cardiovascular diseases (CVDs) are the first cause of global death. More than three quarters of CVD deaths occur in low and middle

income countries. Risk factors for developing heart disease include: age, sex, family history, smoking, poor diet, high blood pressure, high blood cholesterol levels, diabetes, obesity, stress, poor hygiene. Hyperlipidemia refers to increased levels of lipids (fats) in the blood, including cholesterol and triglycerides. Although hyperlipidemia does not cause symptoms, elevated levels of blood lipids are well documented risk factors for cardiovascular disease including disease of blood vessels supplying, coronary artery disease, cerebrovascular disease and peripheral vascular disease. The aim of this study was evaluation of lipid profile changes in prospective MASHAD cohort study patients before and after CVDs.

**Materials and Methods:** In this study we followed up all of 9847 individuals participated in MASHAD cohort study after 5 years for CVDs. We measured lipid profile levels in patients with CVDs and compared these values with their baseline at the first of study and also with healthy subjects. Dyslipidemia were defined as having TC  $\geq 200$ mg/dl (5.18 mmol/l), LDL-C  $\geq 130$  mg/dl (3.36 mmol/l), TG  $\geq 150$  mg/dl (1.69 mmol/l) and HDL-C  $< 40$  mg/dl (1.03 mmol/l) for male and HDL-C  $< 50$  mg/dl (1.30 mmol/l) for female. Data analysis including parametric, nonparametric test and multivariate analysis was undertaken using the SPSS 16 software. A P value  $< 0.05$  was regarded as statistically significant.

**Results:** A total of 240 CVDs confirmed, 112 were men and 128 were women. TC, LDL-C and TG significantly higher in patients compared to healthy subjects ( $P=0.003$ ,  $P=0.022$ ,  $P<0.001$  respectively) and HDL-C significantly lower ( $P<0.001$ ). There was no difference in TC, LDL-C, TG and HDL-C in patients before and after CVDs.

**Conclusion:** Hyperlipidemia is a more significant risk factor for CVDs. Also statins are effective in decreasing lipids levels.

**Keywords:** Hyperlipidemia, Cardiovascular diseases, MASHAD study

### The effect of melatonin supplement on sleep quality and delirium in the critically ill patients

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**Objectives:** Intensive care sleepiness and delirium is a challengeable problem in critically ill patients. Delirium is a dependent to high mortality, increased mechanical ventilation,

nosocomial infections and length of stay (LOS) in the intensive care unit (ICU). Many investigations indicated that critically ill patients have abnormal levels melatonin, and sleep disturbance. Melatonin has a major sleep regulator and another impact on neuroprotection, and oxidant activity. There has been interest in the utilization of exogenous melatonin as a step to improve sleep. However, there are not consensus about melatonin supplementation in ICU patients. To determine the effects melatonin supplement on the Delirium and duration of sleep in critically ill patient.

**Materials and Methods:** An integrative approach was used for this literature review in order to explore the available evidence on this issue, which has yet to be fully investigated. PubMed, MEDLINE, google scholar and Scopus databases were searched for studies conducted about melatonin supplement on the Delirium and duration of sleep in critically ill patient. All searches were then filtered for articles

Using English language and critical ill populations (18 yr. Age) using either descriptive or experimental study designs. Then, Data related to this topic were extracted, evaluated and summarized.

**Results:** Total sleep period is not significantly reduced, but snooze sleep is prolonged and Delirium is reduced. A balance melatonin level as well as improving neurotransmitters production may contribute to the decrease of Delirium. Environmental factors affecting the outcomes are high sound levels, frequent visits, and medications. Considerable heterogeneity in data exists between patients and studies affecting generalizability.

**Conclusion:** There is evidence to indicate that melatonin supplement is significantly improved sleep disruption and delirium in the ICU patient. Alternative methods of effect melatonin supplementation on delirium and sleepless for intensive care patients may be needed. Therefore, further clinical trial studies using more physiologic actions of melatonin and improving variables are required.

**Keywords:** Melatonin, Sleep disruption, delirium

### Ultrasonic is a green novel technology in the food industry

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**Objectives:** Recently the use of ultrasound is a non-thermal technology that is gaining ground in the food industry for microorganisms inactivation and microbial reduction. Also it is used for many purposes such as modification and control of crystallization processes, degassing of liquid foods, enzyme inactivation, the induction of oxidation reactions. The advantages of ultrasound over the heat treatment include; less energy-intensive, more cost-efficient, minimization of flavor loss, a minimal effect on the quality and sensory acceptance of food and it is an environmentally friendly technology without creating the remnant of himself, with reducing chemical and physical hazards.

The article's goal is to create better motivation along with optimized use of this technology.

**Materials and Methods:** Methods of ultrasound applications can be divided into three: 1) Direct application to the product, 2) Coupling with the device, 3) Submergence in an ultrasonic bath. Also, ultrasonic applications in the food industry are divided into two distinct categories according to the energy generated by sound field. These are low and high energy ultrasounds. Low energy ultrasound applications are performed at frequencies higher than 100 kHz. High energy ultrasonic applications are performed generally at frequencies between 18 and 100 kHz. Microbial inactivation mechanisms of ultrasound is simply explained by cavitation phenomena that caused by the changes in pressure.

**Results:** Microbial reduction by ultrasound is very important from the standpoint of decontamination and the hurdle concept of inhibition and elimination methods for food preservation technologies in fruits, vegetables and other foods.

Ultrasound application reduce approx 0.6– 1.5 log 10 cfu/g mL in general experimental conditions.

**Conclusion:** Ultrasound is important to use a green novel technology that has a role in the environment sustainability. It is a good alternative method for the food preservation and processing and also no adverse effect on human health has been proven. Although there are many studies relating ultrasonic application in laboratory scale, its application in the food industry is not sufficiently common. Future studies should be focused on scale-up and standardization of treatment processes.

**Keywords:** ultrasonic, green novel technology, environmentally friendly, microbial reduction

## Association between pro-oxidant anti-oxidant balance and dietary intake in the 76 1 Male Employees

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**Objectives:** The impact of diet on human health has long been a central issue for research due to its role in diseases such as diabetes and heart disease. Nutrition plays a crucial role in regulating oxidative stress in the human body, even in normal physiological conditions. A postprandial disturbance in the prooxidant-antioxidant balance (PAB) as a result of excess or insufficient supply of nutrients is defined as nutritional or dietary oxidative stress. Although extensive research has been carried out on the association between nutrition and oxidative stress, the particular pathophysiological roles of oxidative stress and nutrition remain puzzling. A number of studies have postulated that vitamins A, C, D and E, selenium and beta-carotene possess essential antioxidant properties and they all attenuate oxidative stress. Furthermore, short-term caloric restriction suppresses mitochondrial and NADPH oxidase-dependent superoxide production which reduces oxidative injury. Thus this study set out to investigate the possible associations between pro-oxidant-antioxidant balance (PAB) and caloric and vitamin D intake in an unselected Iranian population.

**Materials and Methods:** A population of 76 1 male subjects aged 20-69 years were recruited from the staff of Shahid Hasheminezhad Gas Processing Company (S.G.P.C), Sarakhs, Iran. Food frequency questionnaire (FFQ) and 24 hours food records were filled by all participants and Dietary analysis was done with "diet plan 6.0" software. PAB values were measured.

**Results:** The PAB value correlated significantly to daily intake of calories ( $r = 0.116$ ,  $P < 0.01$ ), phosphorus ( $r = 0.103$ ,  $P < 0.01$ ), and vitamin D ( $r = 0.093$ ,  $P < 0.05$ ). However, a multiple backward linear regression analysis showed that

only daily intake of calories ( $r = 0.119$ ,  $P < 0.01$ ) and vitamin D ( $r = 0.092$ ,  $P < 0.05$ ) significantly influenced the PAB value.

**Conclusion:** In conclusion, the high levels of PAB is significantly associated with calorie intake and vitamin D consumption in our population.

**Keywords:** pro-oxidant, anti-oxidant, oxidative stress, dietary intake, calorie intake

### The Association Between Prooxidant-antioxidant Balance And National Cholesterol Education Program Adult Treatment Panel III

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**Objectives:** Oxidative stress leads to the increase in reactive oxygen species (ROS) and it probably causes atherosclerosis. Cardiovascular disease (CVD) is a major complication of atherosclerosis worldwide. The prooxidant-antioxidant balance (PAB) can be used to assay oxidative stress. This study was designed to determine the prevalence of CVD in Sarakhs population, we applied the United State national cholesterol education program adult treatment panel III (NCEP ATP III) guidelines.

**Materials and Methods:** A population of 744 male subjects aged 20-69 years were recruited from the staff of Shahid Hasheminezhad Gas Processing Company (S.G.P.C), Sarakhs, Iran. The Framingham Risk Score was calculated based on the ATP-III criteria. PAB values were measured.

**Results:** The PAB value was significantly correlated to Framingham Risk Score (ATP-III) ( $r=0.104$ ,  $p=0.004$ ).

**Conclusion:** The PAB value was significantly correlated to Framingham Risk Score (ATP-III). Therefore, the PAB value may be a risk factor of CVD.

**Keywords:** prooxidant-antioxidant balance; national cholesterol education program adult treatment panel III; cardiovascular disease

### Comparison of urinary level beta-2 microglobulin, cystatin C, and microalbumin

### in children with acute pyelonephritis with and without urinary reflux

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**Objectives:** Acute pyelonephritis is one of the most important and common bacterial infections in infants and children. Using non-invasive urinary biomarkers with the aim of early diagnosis of kidney injury provide a rapid and secure tool for the physician. Therefore in this study we are aimed to evaluate and compare micro-albuminuria and urinary levels of cystatin C, beta 2 microglobulin, blood urea nitrogen (BUN) and creatinine in children with pyelonephritis with and without urinary reflux.

**Materials and Methods:** In this investigation, 61 children aged 2 months to 14 years with acute pyelonephritis who admitted in hospital were studied. Urine samples were evaluated by ELISA immunoassay method and urinary biomarkers including micro-albuminuria, cystatin C, beta 2 microglobulin, BUN and creatinine were measured. In order to detect vesicoureteral reflux (VUR), after a negative urinary culture, cessation of fever and stabilizing patient vital signs and if patients were indicated, VUCG imaging was done. **Results:** In present study it was observed that there is no significant relationship between patient's gender and VUR ( $P>0.05$ ). Although the mean level of micro-albuminuria in patients with VUR was obviously higher than patients without VUR ( $109.58 \pm 146.97$  vs.  $86.23 \pm 23$ ), its difference was not significant ( $p=0.058$ ). Also between two groups with and without reflux, no significant difference was seen in the cases of urinary levels of creatinine and BUN ( $p=0.915$  and  $p=0.171$ , respectively). However, the mean level of cystatin C in patients with reflux was significantly higher than patients without reflux ( $239.22 \pm 196.15$  vs.  $66.92 \pm 102.71$ ;  $p<0.001$ ). Similarly, it was observed that the mean level of beta 2 microglobulin in patients with reflux was significantly higher than patients without reflux ( $4.95 \pm 3.48$  vs.  $2.53 \pm 2.71$   $\mu\text{g/L}$ ;  $p=0.016$ ).

**Conclusion:** Finally, in the present study it was observed urinary levels of cystatin C and beta 2



microglobulin was significantly different in two groups of with and without VUR. Therefore, these two variables could be used as two appropriate markers in order to predict disease progress into reflux.

**Keywords:** Vesicoureteral reflux, cystatin C, beta 2 microglobulin, micro-albuminuria, pyelonephritis

### **Evaluation of food contact surfaces contaminated with E.coli and E.coli O 157:H7 in hospitals' kitchens of Shiraz University of Medical Sciences**

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**Objectives:** Consumption of healthy food is an essential need of human beings. Assessment of food contact surfaces has an important role in this issue, so the objective of this research was evaluation of food contact surfaces contaminated with E.coli and E.coli O 157:H7 in hospitals' kitchens of Shiraz University of Medical Sciences.

**Materials and Methods:** One hundred ten food contact surfaces were collected according to ISO 18593:2004(E). The microbial analysis for enumeration of E.coli was carried out according to ISO 16649-2. Samples were inoculated in to modify TSB (with novobiocin) and incubation was done at 37 °C for 18 h then a loopful of enriched broth was streaked on to Sorbitol MacConkey agar.

**Results:** 95.5 % of samples showed acceptable contamination with regard to enumeration of E.coli. E.coli O 157:H7 were detected in 2 samples.

**Conclusion:** Periodic monitoring gives sufficient information about the current status and can help identify the weak points. Also staff training

about hygienic issues can promote better condition.

**Keywords:** E.coli, E.coli O 157:H7, Food contact surfaces, Hospital

### **Association between QT-interval Duration and Dietary Intake**

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**Objectives:** Cardiovascular disease (CVD) accounts for one-third of deaths worldwide, and developing countries will bear the brunt of the increasing burden of CVD. Increased fat, cholesterol and calorie intake are risk factors for coronary heart disease (CHD), however, the role of animal protein intake in CVD is still controversial. Despite the existence of multiple methods for identification of cardiovascular abnormalities, electrocardiogram (ECG) still remains as a simple, low cost and widely available method to explore the changes. Alteration in QT interval is an established risk factor for sudden Death and CVD mortality. This survey was conducted due to examine the association between micro/macronutrients dietary intake and duration of QT- interval.

**Materials and Methods:** Subjects (n=746) were recruited from among employees of The Shahid-Hasheminejad Gas-Processing Company, Sarakhs, Iran. Biochemical marker including Fasting Blood Sugar, lipid profile, and uric acid was measured. dietary intake was also assessed using Twenty-four-hours recall questionnaire, and analyzed with Dietplan6 software.

**Results:** A significant correlation between duration of QT-interval and dietary intake of potassium( $r=-0.076$ ,  $P<0.05$ ) and Vitamin B6( $r=-0.080$ ,  $P<0.05$ ) was observed. The stepwise regression showed that starch intake ( $\beta=-0.036$ ,  $P=0.011$ ,  $R^2=2.2$ ) and vitamin A (retinol) intake ( $\beta=0.128$ ,  $P<0.001$ ,  $R^2=1.6$ ) were significant determinants of serum QT-interval prolongation.

**Conclusion:** ECG is a low cost, widely used, and safe method in examining cardiovascular condition. Finding the possible relationship

between the dietary intake of macro/micronutrient and early ECG abnormalities can be promising for setting future predictive measures in CVD by changing the dietary patterns.

**Keywords:** Electrocardiogram, dietary intake, cardiovascular diseases

### **The inhibitory effects of black and green teas (Camellia Sinensis) on growth of Escherichia coli**

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**Objectives:** The antimicrobial and anti-oxidant effects of green tea have been shown in many studies. Also, there are not research in the inhibitory effects of black tea. This cross-sectional study was determined to show the antibacterial effects of black teas against the pathogenic *Escherichia coli*.

**Materials and Methods:** black tea (*Camellia sinensis*) was selected for extraction were made using the percolation method. Viability of *E. Coli* was assessed by exposing the bacteria to different concentrations of the black tea extracts in aqueous media transferring the culture onto the solid media, and counting the colonies at different times. This was followed by determining the interactions between black or green tea extracts with some of the antibiotics routinely used against Gram negative infections using the disc diffusion method.

**Results:** Both Black tea extracts showed synergistic and antagonistic effects with the antibiotics in a selective dose-dependent manner, total antioxidant capacity (TAC) of the black tea extract was significantly high in studied *E.coli* samples ( $p < 0/002$ ).

**Conclusion:** It is concluded that the antimicrobial effects of tea are likely to be dependent on its TAC. Moreover, it seems that under certain conditions tea polyphenols act as pro-oxidants and exert their cytotoxic effects in this way.

**Keywords:** Black tea, *Escherichia coli*, antioxidant effect.

### **Inhibitory effects of black tea (Camellia sinensis) extracts on Streptococcus pyogenes in vitro**

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**Objectives:** Although there are reports in the literature on the antimicrobial effects of green tea, the effect of black tea, the most common beverage in Iran, on growth of bacteria, like *Streptococcus pyogenes*, has not been studied extensively. This cross-sectional study was undertaken to determine the inhibitory effect of black tea on the growth of *Streptococcus pyogenes* in vitro.

**Materials and Methods:** Extracts from both green and black teas were prepared using the percolation method and dried. This was followed by assessment of the total anti-oxidant capacity (TAOC) of solutions of the dried extracts with different concentrations. Viability of the bacteria was determined by exposing them to different concentrations of the tea extracts in an aqueous medium.

**Results:** The data showed that the antioxidant capacity of black tea extract is significantly high ( $p < 0.001$ ). Conjugation of the standard antibiotics disk with 1.25 mg green tea extract had a synergistic effect.

**Conclusion:** It seems that the inhibitory effects of tea on bacterial growth is directly related to its TAOC. Our findings indicate the possibility of using proper amounts of tea or polyphenols as nutritional supplements as an adjunct nutritional therapy in certain infections.

**Keywords:** Black tea, *Streptococcus pyogenes*, Inhibitory effect, Antioxidant capacity

### **Identification of mecA gen in Methicillin resistance Staphylococcus aureus strains Isolated from meat and vegetables foods**

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**Objectives:** *Staphylococcus aureus* is an important food poisoning in the world that is created by consumption of contaminated food. Resistance to different antibiotics is important reason for increasing resistance strains. *Staphylococcus aureus* including *mecA* gene heat many proteolytic enzymes are stable and can remain active for a long time in meat and vegetables foods.

**Materials and Methods:** The purpose of this cross-sectional was conducted in methicillin resistance *Staphylococcus aureus* strains and identify *mecA* gene, and antibiotic resistance pattern in food samples by multiplex PCR in Isfahan meat and vegetables foods. In the study 100 samples of various meat and vegetables

foods selected. 49 cases (49%) were positive for *Staphylococcus aureus* and also resistance to methicillin was 38% by phenotypic method, which selected for molecular characterization. Antibiotic susceptibility pattern also was conducted by disk diffusion method.

**Results:** antibiotic susceptibility pattern showed no resistance to Vancomycin, and methicillin resistance was the highest rate in detected isolates. 49 case were positive for *S.aureus* and 38% were resistance to methicillin. Prevalence of *mecA* gene was 29%. Also *16srRNA* gene in all samples was identified.

**Conclusion:** *Staphylococcus aureus* including *mecA* gene heat many proteolytic enzymes are stable and can remain active for a long time in meat and vegetables foods.

**Keywords:** *Staphylococcus aureus*, Methicillin, *mecA* gen, PCR

#### Characterization of toxic shock syndrome toxin- 1 genes of *Staphylococcus aureus* isolated from local cheese in Isfahan city

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**Objectives:** *Staphylococcus aureus* is one of the important food poisoning producing bacteria. Toxic shock syndrome toxin- 1 are virulence factors, as pyrogenic toxin, and super antigens have important effects on patients. The aim of this this cross-sectional study was conducted to presence of toxic shock syndrome gene (*tst*) of *S. aureus* isolated from cheese of cattle. The result of the study is useful in healthy proceedings and epidemiological aspects of food origin disease.

**Materials and Methods:** in this study, 60 isolates included isolates of bovine milk (35), buffalo's milk ( 15) and traditional cheese ( 10) selected and were studies in *tst* gene.

**Results:** DNA extraction, PCR reactions were carried out by reference strain as positive control by PCR. Among mentioned isolates 7( 1 1.6%) isolates were positive for the *tst* genes in studied cheese.

**Conclusion:** Results of this research show low prevalence of *tsst- 1* producing gene on local cheese. In addition, spread of these isolates in humans, animals, foods and environment has hazardous effect for general public health.

**Keywords:** *Staphylococcus aureus*, TSST- 1, local cheese.

#### Detection of unauthorized tissues in cooked sausage by Immunohistochemistry

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**Objectives:** meat products such as sausages are the most common and popular meat products over the world. The quality and quantity of components of these products should be in parallel with standard and food hygiene regulations. Addition of unpermitted animal tissues such as udders, lung, spleen, etc into these products which is sometimes used by producers can be detected by histological and immunohistochemical method.

**Materials and Methods:** After making experimental samples of sausages, fixation in 10% formalin solution and common histologic technical stages were done. Then the sausages sections which were stained with hematoxylin-eosin and immunohistochemistry (by using specific antibodies), and were observed under light microscope.

**Results:** The presence of unauthorized tissues in samples that were stained by hematoxylin –Eosin was not detectable while in immunohistochemical technique, the specific immunoreactions were observed easily.

**Conclusion:** Among the method used, immunohistochemical staining proved to be more useful than histological staining in detection of unauthorized tissues in the heated sausages.

**Keywords:** Sausage, immunohistochemistry, unauthorized tissues

#### Characterization of Pantone Valentine leukocidin (PVL) gen in Methicillin resistance *Staphylococcus aureus* strains Isolated from dairy foods

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**Objectives:** *Staphylococcus aureus* is an important food poisoning in the world that is created by consumption of contaminated food. Resistance to different antibiotics is important reason for increasing resistance strains. *Staphylococcus aureus* including *PVL* and *mecA* gene heat many proteolytic enzymes are stable and can remain active for a long time in food samples.

**Materials and Methods:** The purpose of this research was conducted to methicillin resistance *Staphylococcus aureus* strains and identify *PVL* as virulence gene, and antibiotic resistance pattern in food samples by multiplex PCR in Isfahan dairy food samples. The study included 98 samples of various dairy foods. 65 cases (66%) were positive for *Staphylococcus aureus* and also resistance to methicillin, which selected for molecular characterization. Antibiotic susceptibility pattern was conducted by disk diffusion method.

**Results:** antibiotic susceptibility pattern showed no resistance to Vancomycin, and methicillin resistance was the highest rate in detected isolates. Resistance to linezolid, azithromycin and methicillin respectively, 35%, 45% and 66% more than other antibiotics was tested. Prevalence of *PVL* gene was 28.2%. Also *16srRNA* gene in all samples was identified.

**Conclusion:** Different distribution of methicillin resistance and *PVL* gene in this study with other studies showing the potential risk of methicillin resistant *Staphylococcus aureus* to increasing the *PVL* gen as an important toxic factor in the world.

**Keywords:** *Staphylococcus aureus*, Methicillin, *PVL* gen, PCR

### Potentially Iranian traditional medicinal plants for management of chronic heart failure

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**Objectives:** Herbals enabled scientists to make many contributions to commercial drug preparations manufactured today. Although, herbals possess general acceptance from the people in most of the regions of the world, a few of them are proven to be beneficial in well-designed scientific studies. The burden of chronic diseases among which cardiovascular disease

(CVD) is named is increasing rapidly worldwide. Chronic heart failure (CHF) is a public health problem worldwide and an important topic in clinical cardiology. Out of a representative sample of 38,926 hospital admissions in Iran, 0.3% were identified as having heart failure as the primary cause of admission. According to the guidelines for CHF treatment, a complex of diuretics, angiotensin-converting enzyme inhibitors or angiotensin receptor blockers, beta-blockers, aldosterone receptor antagonists, digitalis, and vasodilator agents should be used as standard treatments for heart failure. In this review we here reviewed top Iranian medicinal plants, according to traditional medicine to experimental studies and their potency for treatment of chronic heart failure based on the evidences of their functions.

**Materials and Methods:** In this review we evaluated all articles from 1990 to 2017 in written or electronic resources including Iranian traditional medicine reference books (herbal medicine of Zargari, Dr.Amin common traditional drugs of Iran, Tohfe Hakim Momen, Ghanoon Avicenna, Alhavi Razi and ... beside electronic databases including Pubmed, Scopus, google scholar, Cochrane and others to identify the best Iranian traditional medicine which have more therapeutic goals of CHF (ACE inhibitor, diuretic, calcium channel modulator, inotropic, beta blocker, anti-hypertensive, vasodilator).

**Results:** After performing this review and listing medicinal plants finally eight herbs were selected as the best: *Allium sativum*, *Berberis integerrima*, *Apium graveolens*, *Peganum harmala*, *Citrus aurantium*, *Berberis vulgaris*, *citrus aurantifolia*, *Cerasus avium*.

**Conclusion:** These herbs have different therapeutic goals for CHF which can be used for development of new drugs to adjuvant therapy beside routine treatments.

**Keywords:** Herbal Medicine, Iranian traditional medicine, chronic heart failure, medicinal plants

### Evaluation of amylase inhibitory property, anti-bacterial and anti-oxidant activity of two honey samples

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**Objectives:** As a wonderful nutrient, honey possesses a wide range of health benefits that offers its use as a traditional medicine in remedy of disease from ancient times. In this research the honey samples from different origin were





examined for antioxidant, antibacterial and amylase activity.

**Materials and Methods:** *In-vitro* alpha amylase inhibitory potential of honey samples, i.e. forest 20 16 and country honey, was measured by DNS method according to Bernfeld. Anti-bacterial property was also examined using disc diffusion method. Anti-oxidant activity of honey samples was assessed by total phenolic and FRAPS assays.

**Results:** The comparative study of the effect of honey samples on alpha amylase revealed that the samples have considerable, but different effects on enzyme activity. Forest 20 16 sample inhibited  $\alpha$ -amylase activity by 63% at 10mg/ml concentration, while country honey sample activated the enzyme by 45% at the same concentration. Total phenolic contents of forest 20 16 and country honey samples were  $14.17 \pm 26.07$  &  $210.6 \pm 56.09$   $\mu\text{g GAE/g}$  honey, respectively. Their total antioxidant activity, evaluated by FRAP assay, was estimated  $0.37 \pm 0.011$  &  $0.26 \pm 0.005$  mM Fe (II)/g honey. Both samples at concentration 300  $\mu\text{g/disk}$  exerted higher antibacterial activity on *Staphylococcus aureus* (inhibition zone of 20mm) when compared to the *Pseudomonas aeruginosa* (inhibition zone of 10mm).

**Conclusion:** It was concluded that honey samples contain beneficial phenolic compounds that possess antioxidant activity. The samples showed considerable inhibitory (forest 20 16) and activatory (country honey) effect on alpha amylase, suggesting forest honey as a hypoglycemic and anti-diabetic agent. Moreover, investigation of the antibacterial potential of the samples showed that they have significant inhibitory effect as compared with common antibiotics.

**Keywords:** Honey, nutrient, antioxidant, antibacterial, alpha amylase.

### The effect of Islamic fasting on anxiety of nurses

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**Objectives:** Nurses are important members of healthcare system which are always encounter with several stressful conditions. Nowadays, anxiety is a serious disease or status and prevalence of anxiety disorders is very high worldwide and can lead to depression. Islamic fasting has an important role in health and has different emotional and psychological positive consequences. The aim of this investigation was to evaluate the effect of Islamic fasting on anxiety of nurses in Amirmomenin Hospital, Rasht, Iran.

**Materials and Methods:** This was a cross sectional study which was performed in Ramadan month, 20 13 in Amirmomenin Hospital, Rasht, Iran. Standardized valid Hamilton's anxiety questionnaire plus demographic checklist were obtained from nurses in the wards and one month later it was re-evaluated. Nurses with history of at least 2 years, who do Islamic fasting in Ramadan and employing in Hospital were entered in the study. Nurses with history of psychological disorders like generalized anxiety disorder, depression and other, nurses with history of consumption of psychological drugs were excluded. The comparison of level of anxiety was determined during and after Ramdan. Data were analyzed by Paired-T-Test in SPSS version 18.0 software.

**Results:** 158 nurses were enrolled in the study. The mean age of them was  $34.26 \pm 1.30$  years old. Ninety-six percent of them were female and 80% were married. Sixty-eight percent of the participants had at least satisfaction of their job. After one month the score of anxiety in Ramdan was significantly better than anxiety after Ramdan ( $P < 0.05$ ).

**Conclusion:** The findings of our study showed that Islamic fasting can decrease the level of anxiety significantly and had no effect on the responsibility of nurses in their work.

**Keywords:** Islamic fasting, anxiety, stress, nurse

### Nutrition condition of Phenylketonuric patients in Khorasan Razavi province

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**Objectives:** Phenylketonuria is a hereditary metabolic disease which happens by lack of Phenylalanine hydroxylase enzyme. Since receiving proteins from food -because of increasing in getting Phenylalanine - is harmful

to patients and also the major amount of the protein is supplied from a special formula, having other natural low-protein food (cereals, fruits, and vegetables) is accompanied with some problems in children. The objective of this study is to analyze the nutrition condition in these patients by using weight and height indications.

**Materials and Methods:** This is an analytical descriptive study on 28 patients of 1-20 years of age suffering from Phenylketonuria who referred to Mashhad Imam Reza Hospital. The patients' weight and height were measured in 2 stages before and after the diet. Then the indications of height for age and indications of weight for age were defined. Then by using Epi-info and SPSS the data were analyzed.

**Results:** The findings show that the z-score averages of height for age before and after the diet are respectively equal to  $1/88 \pm 0/55$  and  $1/58 \pm 0/6$ . Also, the z-score averages of weight for age before and after the diet are respectively  $1/65 \pm 0/42$  and  $1/71 \pm 0/43$ . There was not any significant difference between the children's weight and height before and after the diet. In spite of decreasing in Phenylalanine amount in blood after the diet, there is no significant difference in growth indices of children. Therefore, using low-Phenylalanine foods alongside with vitamin complements is advised.

**Conclusion:** Using low-Phenylalanine foods alongside with vitamin complements is advised.

**Keywords:** Phenylketonuria, weight, height, growth

### Bioactive Peptides as Functional Foods: A review

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**Objectives:** Physiologically active constituents in foods or dietary supplements derived from both animal and plant sources, including those needed to meet basic human nutrition needs, that have been demonstrated to have a role in health and to be safe for human consumption in intended food and dietary supplement uses, to include: Synthetically derived compounds possessing physiochemical or biological equivalency of a naturally occurring bioactive food component, any processed naturally occurring bioactive food component, extracted, concentrated, or modified for the purposes of fortifying foods or other dietary supplements.

**Materials and Methods:** Bioactive peptides, are inactive components within the structure of the

protein and when they are released by enzymatic hydrolysis, show different physiological functions. Pharmacological Properties and Health Benefits Currently, the relationship between chemical structure and activity of a peptide cannot be predicted. The activity of a peptide depends on its structure, i.e. the amino acid composition, the type of N- and C-terminal amino acid, the length of the peptide chain, charge character of the amino acids forming the peptide, the hydrophobic/hydrophilic characteristics of the amino acid chain, among others.

**Results:** To be considered bioactive, a dietary component should impart a measurable biological effect at a physiologically level. This bioactivity must have the potential to affect health in a beneficial way, which excludes potentially damaging effects such as toxicity, allergenicity, and mutagenicity.

**Conclusion:** The present review highlights the recent findings on the identification, bioassays, and use of BP, as well as their potential use as food additives and in the development of functional products.

**Keywords:** peptides, bioactivity, functional food

### Pro-oxidant-antioxidant balance is elevated in patients with more severe depression and anxiety symptoms

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**Objectives:** Depression and anxiety are two of the most common mental disorders substantially associated with systemic inflammation upregulation as well as cardiovascular diseases (CVD) and mortality. Oxidative stress, a serious disturbance in the prooxidant-antioxidant balance, also plays role in a variety of pathological conditions such as CVD. Therefore, oxidative stress may partially explain the relationship between depression/anxiety and CVD. The primary objective of this study was to

examine the association between depression/anxiety symptoms and prooxidant-antioxidant balance (PAB) in a large population-based study.

**Materials and Methods:** Serum PAB values were measured in 7,516 subjects (38% males and 62% females) aged 35–65 years, enrolled in a population-based cohort (MASHAD) study in northeastern Iran. Symptoms of depression and anxiety were also evaluated with Beck Depression and Anxiety Inventories. According to the scores of depression and anxiety, individuals were categorized into four groups of no or minimal, low, moderate and severe categories. Serum PAB was logarithmically transformed ( $\log_{10}$ ) before the analysis to give a normal distribution.

**Results:** Among men, PAB values were increased significantly from  $1.55 \pm 0.47$  to  $1.59 \pm 0.47$ ,  $1.69 \pm 0.38$ , and  $1.68 \pm 0.38$  in the no or minimal, mild, moderate and severe depression groups, respectively ( $P_{\text{trend}} < 0.001$ ). PAB values also increased significantly across the four groups in women [ $1.70 \pm 0.45$ ,  $1.73 \pm 0.44$ ,  $1.75 \pm 0.44$ , and  $1.76 \pm 0.40$ , ( $P_{\text{trend}} = 0.003$ )]. Concerning anxiety, PAB values increased significantly across the four groups in men ( $P_{\text{trend}} = 0.02$ ) but not in women ( $P_{\text{trend}} = 0.2$ ).

**Conclusion:** Depression/anxiety symptoms are associated with higher oxidative stress, expressed by higher PAB values. The implication of oxidative stress in the pathogenesis of depression/anxiety disorders raises the possibility that oxidative stress may be a factor linking depression/anxiety and CVD.

**Keywords:** Depression; Anxiety; Pro-oxidant-antioxidant balance; Oxidative stress.

#### Identification, Detection and Investigation of Chronic Of *Cronobacter sakazakii* By Polymerase Chain Reaction In Infant Milk Formula And Infant Food Formula In Iran

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**Objectives:** *Cronobacteria* are pathogens that cause foodborne diseases, the most important of them is *Cronobacter sakazakii*. The mortality rate of these infections is 40-80% that causes meningitis, sepsisemia, and necrotizing enterocolitis infants in all age groups, especially in infants less than 28 days old or infants with immunodeficiency. Infant formulas and baby food are the most important sources for infecting

babies with this bacterium so in this study, infant and baby food was collected from pharmacies and analyzed.

**Materials and Methods:** A total of 200 samples from different manufactures with different health series were purchased from pharmacy. The samples composed of 100 samples of 6 infant milk formula brands and 100 samples of 8 infant food formula types. In this study, the first they were identified by National Iranian Standard Numbers (9430) and then the DNA of the suspected colonies was extracted by boiling method and Kiagen kit and finally, by a primer pair (16s rRNA) was confirmed.

**Results:** According to biochemical tests, from 100 samples of infant milk formula, 5 positive samples were identified and only 1 sample, which its DNA was extracted by kits, was confirmed by PCR. From the infant baby formula 8 samples were positive with biochemical tests and only 4 samples which their DNA extracted by kits were confirmed by PCR.

**Conclusion:** The prevalence of meningitis in newborns requires quick identification and verification. According to this, the gold standard methods for isolation and identification of *C. sakazakii* is time consuming and labor intensive so the use of DNA-based methods for rapid diagnosis of this bacterium is appropriate.

According to the evaluations carried out on infant formula and baby food, the rate of contamination observed in baby food is high, which shows that the microbial quality is not well suited which could be due to the use of undesirable raw materials in production Or non-compliance with health principles at all stages of production.

**Keywords:** *Cronobacter sakazakii*, Polymerase Chain Reaction, Infant milk formula, Infant food formula

#### Nutritional Status in Cancer Patients in Iran

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**Objectives:** Cancer patients are at risk of nutritional problems all around the world. Malnutrition leads to increased morbidity, side effects such as infection, length of hospital stay, disease burden and costs, Days off from work and decreased quality of life, response to treatment and survival. Finally, malnutrition leads to cachexia, a complicated syndrome with no exact management which is responsible for 20% of

cancer mortality. Thus, nutritional assessment and early intervention is of essential importance in cancer patients. There are few studies concerned about nutritional assessment in cancer patients in Iran. This article discusses about nutritional status of cancer patients in Iran.

**Materials and Methods:** We searched for related articles considering nutritional assessment and nutritional status of cancer patients- inpatients or outpatients- in electronic databases such as PubMed, Scopus, and also local databases such as Magiran, SID and Iranmedex.

**Results:** There are different ways for assessing nutritional status of patients including risk assessment tools in which PG-SGA is the most complete tool due to clinical symptom monitoring. There are few studies which applied this tool. Majority of studies only evaluated weight loss and BMI to evaluate nutritional status of cancer patients. Almost all studies reported that more than half of patients are at risk of malnutrition. Tumor site is one of the significant effective factors in which gastrointestinal cancer and leukemia are at the top and least nutritional risk is observed in breast cancer. Treatment procedures also affect nutritional status; in which up to 98% risk of malnutrition were seen in GI cancer patients after surgery. Chemotherapy also, deteriorates the nutritional status and dietary intake of patients with cancer. Age, living solitude and rural or urban living were effective on nutritional status of cancer patients in some studies, as well.

**Conclusion:** Malnutrition is prevalent in patients with cancer in Iran; therefore early, programmed and repeated nutritional screening and assessment and the sooner nutritional intervention is crucial in cancer patients.

**Keywords:** Malignancy, Nutritional status, Nutritional assessment, Iran

### Storage stability and antioxidant characteristics of synbiotic fig juice

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**Objectives:** Nowadays, consumption of functional foods is favored because of their health promoting characteristics. These foods

prevent chronic diseases in host by improving intestinal microflora. This study aimed to evaluate qualitative and antioxidant characteristics of fermented fig juice produced by *Lactobacillus delbrueckii* and inulin-type fructan.

**Materials and Methods:** In this research, treatments including control fig juice, fig juice containing *L. delbrueckii* (probiotic) and fig juice containing *L. delbrueckii* and inulin enriched with oligofructose (synbiotic) were produced and all treatments were analyzed for total phenolic content, antioxidant capacity and microbial survival aspects during the fermentation period and also during the 4 weeks storage at 4 °C.

**Results:** Total phenolic content and antioxidant capacity of fermented fig juices were significantly increased in comparison with control samples ( $p < 0.05$ ) during different incubation periods. But during storage, a significant decrease was observed. Viability of probiotics showed a significant decrease during storage time ( $p < 0.05$ ); however the rate of decline was lower in the synbiotic treatment in comparison with probiotic.

**Conclusion:** Monitoring viable counts of *L. delbrueckii* depicted that fermented fig juice could be a suitable medium for survival and proliferation of *L. delbrueckii* in adequate amount for health promoting. So this research showed the potential for manufacture of a new functional product.

**Keywords:** Fig juice, probiotic, *Lactobacillus*, inulin, antioxidant activity

### Development of antioxidant gummy jelly candy supplemented with red beet extract and *Salix aegyptiaca* distillate

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**Objectives:** Customer attitudes and behaviors have moved towards health foods because they have more concerns on increasing environmental stresses such as pollution and toxic substances in the environment. Confectionery products are not exactly foods, but they are widely consumed by children and adults. Traditional gummy confection consists of high amounts of synthetic colorings or flavorings in a



gelling agent medium, commonly known as gelatin, along with acids and sweeteners.

**Materials and Methods:** In this context, in this research, red beet extract (0.1 and 0.3%) and *salix aegyptiaca* distillate (bidmeshk) has been pointed out as a suitable replacer in formulation of gellan gum (0.5 and 1.5 %) and gelatin (constant) pastille. The total antioxidant activity of the samples were investigated using the DPPH method. Produced gummy candies also were evaluated for textural test (TPA: texture profile analysis), sensory tests, color and physico-chemical characteristics.

**Results:** According to analysis, high antioxidant capacity (>50 %) was obtained in higher level of red beet extract. Texture parameters like chewiness and hardness were influenced by gellan gum amount. All variables significant effect were obtained in sensorial characteristics (considering texture, flavor and overall acceptability).

**Conclusion:** In this sense, substitution of synthetic colors and flavors by red beet extract and Pussy willow essence improve this high protein product acceptability.

**Keywords:** Antioxidant properties, Gellan gum, gummy candy, *Salix aegyptiaca* distillate, red beet extract

#### Supplementation of gummy candy formulated by Zedo gum and gelatin with red beet extract and *Deracocephalum moldavica* distillate

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**Objectives:** Among confectionery products, gummy confection is second in sales. Therefore, there is continual consumer demand for more exciting textures, flavors and appearances in gummy confections. The replacement of synthetic compounds with healthier natural colors and flavors could lead to the production of added value gummy confections.

**Materials and Methods:** The aim of this research was to develop gummy jelly candy supplemented with red beet extract (0.1 and 0.3%) as coloring agent and *Deracocephalum moldavica* (badrashbi) distillate as flavoring agent with gelatin (constant) and Zedo gum (1 and 3 %) according to a factorial experimental design.

Treatment samples were evaluated for sensory (hedonic), textural (TPA: texture profile analysis), antioxidant (DPPH) and color (CIE Lab) properties.

**Results:** Increasing red beet extract content from 0.1 to 0.3 % caused antioxidant capacity increment significantly ( $p < 0.05$ ). Statistical analysis revealed that cohesiveness and other textural characteristics were dependent on Zedo gum levels. Sensorial aspects (including texture, flavor and overall acceptability) were significantly improved by incorporation of *Deracocephalum moldavica* distillate.

**Conclusion:** Considering the results, fortified gummy candy with red beet extract and *Deracocephalum moldavica* distillate in Zedo gum/gelatin medium would be a new confectionery formulation with health promoting effects.

**Keywords:** Antioxidant properties, *Deracocephalum moldavica*, gummy candy, red beet extract, Zedo gum

#### Antibacterial effect of *Teucrium polium* essential oil in probiotic kishk

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**Objectives:** Foodborne diseases recognized as one of the major public health problems worldwide, especially in developing countries. In this regard, new antimicrobial agents from plants and microbial source as biological additives are of significant importance.

**Materials and Methods:** In this research, the effect of Kalpooreh (*Teucrium polium*) essential oils (EOs) and probiotic fermentation on *E. coli* O157:H7 counts were investigated in probiotic kishk during 20 days storage time at 4°C.

**Results:** Kalpooreh EOs and probiotic fermentation reduced the number of *E. coli* during the cold storage time. The combination of Kalpooreh and probiotics showed stronger effect rather than individually added. Initial count of inoculated *E. coli* was 6.39 log CFU/g. After 20 days storage at 4°C, the number of *E. coli* in probiotic and control Kishk samples decreased to 4.30 and 4.54 log CFU/g, respectively.

**Conclusion:** According to antimicrobial effects of EOs, extracted from plant material and probiotic fermentation, it is recommended to use this for reducing the *E. coli* growth and population in food systems; especially in low pH food such as Kishk, a lactic acid fermented dairy product. Due to its probiotic nature, Kishk would bring numerous health advantageous for consumer.

**Keywords:** Antibacterial effect, Essential oil, *Teucrium polium*, Kalpooreh, Kishk, probiotic.

### Survey of effect of replacing sugar with stevia on the total energy of chocolate milk

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**Objectives:** Changing the culture of life, the prevalence of non communicable diseases such as overweight, obesity and diabetes show that the production of low calorie foods is essential. Reduce sugar intake due to the high calorie and adversely affects the body more recommended. Trends in production and consumption of foods with low sugar and calories is increasing. Stevia is a natural sweetener with create zero calories that 300 times more sweet than sugar is denominated. This study was done to reduce consumption of sugar and replace it with Stevia in chocolate milk.

**Materials and Methods:** In this study, sugar and stevia chocolate milk formulation was used in different proportions. Response surface methodology was used for statistical analysis of the samples was measured and the total sugar and calories.

**Results:** The results showed that the samples ( 100% sugar, 50% Stevia) the maximum amount of sugar and calories and sample(0% sugar, 50% Stevia) Had the lowest amount of sugar and calories. Samples containing large quantities of sugar, the maximum amount of sugar that increases with reduced sugar and reduced calorie stevia and sugar. By replacing sugar with stevia calories 13.3% decreased.

**Conclusion:** In order to reduce the consumption of sugar, stevia sweeteners can be replaced in the production of chocolate milk. Given the risks of sugar in the daily diet and replace it with the sweetener of the importance of safe, high nutritional value of different types of diet products using stevia seems necessary.

**Keywords:** Chocolate milk, sugar, stevia

### The role of bacteriophage in control of *Listeria monocytogenes* as foodborne pathogen

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**Objectives:** *Listeria monocytogenes* (*L. monocytogenes*) is a foodborne human pathogen that can result in human listeriosis. It develops a severe disease in certain high-risk individuals. Hence, listeriosis is a major health threat in food production and a growing concern for the food industry, as well. *L. monocytogenes* by production of biofilms are innately resistant to a wide spectrum of antimicrobial agents, and are difficult to eradicate from the body. In this regard, phage-treated samples have been shown a reduction of bacterial survival and growth. The aim of this study was to review the role of bacteriophages in control of *L. monocytogenes*.

**Materials and Methods:** The search was performed in the databases ISI Web of Knowledge, PubMed and Scopus using keywords including "food-borne", "pathogens", and "bacteriophage" in English studies (20 13-20 17). Relevant and available articles were selected for inclusion in this study.

**Results:** Based on studies, bacteriophage represents a safe biocontrol of targeted foodborne pathogens in biofilms in the food environment. Food and Drug Administration has recently approved several bacteriophage preparations for food safety applications. Bacteriophages including lauric arginate ethyl ester (LAE); a cocktail bacteriophage product (ListShield (TM)), *Listeria* phage A5 1 1, Bacteriophages LMPI and LMP7, P70-like, Lytic bacteriophage cocktails, and, Listex P 100 were used. Bacteriophages have been tested in various foods including fresh chicken breast tissue, lettuce, stainless steel, rubber, and precooked sliced turkey breast, milk, cantaloupes and ready to eat (RTE) meat, melon, pear, apple products

(juices and slices), cooked turkey, and roast beef. The combination with other technologies (such as combination with chemical antimicrobials and LAE treatment) may be required to improve the phage application on some difficult condition like high acidity fruits and RTE meats.

**Conclusion:** These results suggest that bacteriophages are an adequate tool for the inactivation of *L. monocytogenes* biofilms in the food industry. Finally, due to the absence of adequate control methods to inhibit contamination in food products, bacteriophages, as a component of a phage cocktail are an encouraging biocontrol agents against biofilms to enhance the safety of industry foods

**Keywords:** *Listeria monocytogenes*, Bacteriophages, Food, Nutrition.

### **The relationship between dietary patterns and inflammation: A systematic review**

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**Objectives:** Inflammation is a pathological process characterized by injury or destruction of tissues caused by a variety of cytological and chemical reactions. The emerging role of chronic inflammation in the major degenerative diseases of modern society has stimulated research into the influence of nutrition and dietary patterns on inflammatory indices. On the other hand, findings from observational and interventional studies suggest that appropriate lifestyle changes, in particular adherence to desirable diets, can play an effective role in reducing inflammation. However, few studies have ever done to the study of the association of dietary patterns with inflammation or inflammatory diseases has reported relatively sporadic results. This review examines the epidemiologic and clinical evidence concerning diet and inflammation.

**Materials and Methods:** a selection was done in articles that was related to dietary pattern, inflammation. All of these articles were in the electronic databases such as PubMed with emphasis from 2005 to 2017 onwards articles.

**Results:** These results reveals that dietary patterns are associated with inflammation and show that these relations in an ethnically diverse population with unique dietary habits are similar to findings in more homogeneous populations.

**Conclusion:** Most studies have shown a negative correlation between dietary patterns with high consumption of fruits, vegetables, legumes, fish,

poultry, whole grains and low meat consumption, fats and high-calorie drinks with levels of inflammatory mediators such as CRP, IL- 1, IL- 6 and TNF- $\alpha$ . On the other hand, unhealthy dietary patterns with a high consumption of red and processed meat, sweets, desserts, fried foods and refined grains appear to have a positive correlation with the levels of these inflammatory mediators.

**Keywords:** dietary patterns, inflammation

### **Adipokines and Visceral Adiposity Index in relation to clinical findings of NAFLD patients**

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**Objectives:** the present study aimed to investigate the levels of some adipokines and their relationships with clinical findings of patients with nonalcoholic fatty liver disease (NAFLD). In addition, the Visceral Adiposity Index (VAI) in relation to clinical characteristics of the patients was determined.

**Materials and Methods:** in this cross-sectional study, 83 NAFLD patients were studied. The plasma levels of omentin- 1 and vaspin were measured. Furthermore, anthropometric indices and metabolic status were assessed. The VAI and atherogenic index of plasma (AIP) were calculated.

**Results:** the plasma levels of omentin- 1 and vaspin were higher in female patients. The level of omentin- 1 was directly correlated with the hip circumference and weight of patients ( $p < 0.05$ ). In contrast, no correlation was found between the plasma levels of omentin- 1 and fasting blood sugar or HOMA-IR (Homeostatic model assessment). A positive correlation was found between omentin- 1 level and the NAFLD severity. The plasma level of vaspin was found to be directly correlated with plasma insulin ( $p < 0.05$ ). A positive strong association between the plasma vaspin level and HOMA-IR was noted in male patients ( $< 0.001$ ). In addition in both genders, VAI and AIP were in a strong direct relationship with ultrasound findings of the patients.

**Conclusion:** our findings showed that the plasma level of adipokines is gender-dependent. A direct correlation between the vaspin levels and ALT

(alanine aminotransferase) activity in female patients was observed. In addition, an abnormal level of circulating lipids, which is reflected by AIP was in a significant direct correlation with ultrasound grading of liver disease. AIP was associated with AST (aspartate aminotransferase) activity.

**Keywords:** Nonalcoholic Fatty Liver Disease, Visceral Adiposity Index, Adipokines, Atherogenic Index of Plasma, Liver Enzymes

### **Vitamin-D deficiency and risk of cardiovascular disease on women in Tehran: a case – control study**

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**Objectives:** According to WHO reporting in 2020, 67% of 25 million death will occur from cardiovascular disease in developing country. Smoking, lipid profile disorders, hypertension, low physical activity, obesity and low socio economic status are CVD risk factors. It's some evidence that low vitamin D levels could be a risk factor in CVD.

**Materials and Methods:** It was a case-control study on two group on women (mean age 55) ,50 women with a recent CVD in 1 or 2 last year and 50 women with no sign of CVD . We designed a 9 item questionnaire for evaluating vitamin D level and the ways which people receive vitamin D. Also we were checking all subject blood vitamin D levels in last two years in the hospital.

**Results:** This survey shows low vitamin D level (under 15 ng/ml) is common in most of Iranian women and Although there was a significant independent association between vitamin D level and CVD. Subjects with 25-OH D < 15 ng/mL had a multivariable-adjusted hazard ratio of 1.62 (95% confidence interval 1.11 to 2.36, P=0.01) for incident cardiovascular events compared with those with 25-OH D ≥ 15 ng/mL. This effect was evident in participants with hypertension (hazard ratio 2.13, 95% confidence interval 1.30 to 3.48) but not in those without hypertension (hazard ratio 1.04, 95% confidence interval 0.55 to 1.96).

**Conclusion:** Vitamin D deficiency is associated with incident cardiovascular disease. Further clinical and experimental studies may be warranted to determine whether correction of vitamin D deficiency could contribute to the prevention of cardiovascular disease.

**Keywords:** CVD , vitamin D , deficiency ,women

### **Green tea as a potential drug against breast cancer**

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**Objectives:** Breast cancer is one of the most preventable common cancers and is the second leading cause of cancer-related death for American women in 2017 (Approximately 14 % of all cancer deaths). In the recent decade, the breast cancer mortality rate in Iran, like the other developing countries, has been increased dramatically. According to the ability of the herbal drugs to minimize the dose and low toxicity compared to the chemical drugs, the complementary medicine has been highlighted to overcome cancers. The potential therapeutic roles of Green tea have been studied against different diseases. The various therapeutic features including antioxidant and anti-tumor were observed in both in vivo and in vitro experiments. In this review, the different characteristics of Green tea and breast cancer risk were encompassed.

**Materials and Methods:** Two key words, "Green tea" and "Breast cancer" were used by three important search engines, Web of Science, PubMed and Scopus.

**Results:** The major part of plant leaves is processed to black tea, whereas, only 20 percent is applied in the form of Green tea. Green tea has many interesting features such as antioxidant, antibacterial and anti-tumor properties. The anti-tumor feature comes from epigallocatechin gallate (EGCG), the most important constituents, which has an antioxidant effect. EGCG induced apoptosis by pro-apoptotic gene over expression and down regulation of the survival genes. The





tumor growth inhibitory effect of this component was studied well. It caused cell cycle arrest through p27 overexpression. In addition to, EGCG illustrated anti-proliferation features by down regulating EGFR and phosphorylation of Her-2/Neu. The important role of the EGCG in apoptosis was done by up regulating Fas pathway, suppressing expression of human telomerase reverse transcriptase (hTERT), down regulation of Bcl-2 and elevated expression of Bax, cytochrome c release, apoptotic protease activating factor 1 (Apaf-1), and cleavage of caspase-3 and poly (ADP-ribose) polymerase (PARP) proteins. Moreover, it has an effect on telomerase gene which cause to cellular aging. On the other hand, this polyphenol suppressed the VASP expression via Rac 1 pathway and showed the anti-migration and anti-invasion properties. Indeed, the Anti angiogenic effects of green tea were shown by decreased RNA expression levels of VEGF. Based on a review of the literature, Green tea constituents have epigenetic effects on breast cancer cell lines, for instance, hypo methylation and histone acetylation of hTERT promoter induce apoptosis in MCF-7 cells.

**Conclusion:** According to the low cost, bioavailability, minimum side effects and the vast anti-tumor characteristics of Green tea, it may be a potential drug for breast cancer alone or in combination with routine treatment regimes.

**Keywords:** Breast cancer, Green tea, epigallocatechin gallate

### The availability of Bajestan and Gonabad City Households to Desirable Food Basket in 2009

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**Objectives:** Determine and evaluation the regular diet is the first step in the process of improving nutritional status. In recent years, in order to evaluate the diet in particular community, "food patterns" is recommended. The aim of this study was to determine the availability of households in Bajestan and Gonabad city to desirable food basket.

**Materials and Methods:** This cross-sectional study included a group of 1358 households that living in the Gonabad or Bajestan city, Iran. General questionnaires were completed for all participants. Dietary intakes were evaluated by validated semi-quantitative questionnaire. The food items were classified into 13. Food items are grouped based on the similarity of their nutrients, according to previous research findings were based on Iranian foods, including: bread, rice, pasta, potatoes, vegetables, fruits, meat, fish, poultry, eggs, Beans, dairy, oil and sugar. Data were analyzed with SPSS version 20. P value less than 0.05 was significant.

**Results:** The present study showed that mean consumption of bread, potatoes, vegetables, fruits, meat, fish, poultry, eggs, oil and sugar were less than the recommended the adequate food basket, but mean consumption of beans and dairy were desirable.

**Conclusion:** Since, daily intake of fruits and vegetables (5 exchanges in day), can prevent the chronic diseases such as cardiovascular disease, and adequate consumption of high-quality proteins from animal products (e.g., lean meat and milk) is essential for optimal growth, therefore training to households that living in Gonabad and Bajestan city about healthy nutrition are necessary.

**Keywords:** Food Basket, Desirable Food Basket, Gonabad, Bajestan, Households

### Lifestyle study about behavior of eating and drink water

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**Objectives:** Lifestyle is one of the concepts of social sciences and the science of sociology and anthropology which recently and in recent decades has been highly regarded by researchers of social sciences and cultural directors and researchers in the field of medical sciences. In the present century, the most important way of preventing chronic diseases that affects all societies today is lifestyle, including eating. The present study attempts to introduce the correct food pattern.

**Materials and Methods:** The present study is a cross-sectional study that was designed to describe some of the behaviors of life style in different individuals. 403 people participated in this study. The research data were questionnaire replied to the Fatemeh Al-Zahra city of Khalil Abad, a face-to-face questionnaire. Data were analyzed by IBM SPSS software version 22.

**Results:** The mean age of subjects was  $36.11 \pm 14.23$  years. 75.7% were female and 24.3% were male. 15.9% of people immediately slept after eating. 47.6% of the people after eating were busy washing dishes that most of them women (95.8%). Men do not have physical activity after a meal. In other words, women were more active ( $P < 0.001$ ). 30.5% of people did not consume water while eating. 10.7% of people drank water during and 23.1% after eating. 88.8% of people used iodized salt, and the rest used other salts (mineral salt, sea). The average number of saltshaker on the lunch or dinner table was 0.66. 48.1% of people suffered from at least one of the diseases of diabetes, hypertension and joint pains and back pain. There was a significant relationship between salt intake and history of diabetes mellitus ( $P < 0.001$ ). No relationship was found between the time of drinking water and the history of diabetes ( $P < 0.02$ ).

**Conclusion:** The results of this study showed that lifestyle in eating has many drawbacks that make educational interventions more visible. It seems that health education has made households less likely to use salt on the table. While it is recommended that people do not sleep immediately after eating dinner or lunch, this behavior is more common in men.

**Keywords:** Lifestyle-Physical activity- Water and Food

### Effects of sorbitol, xylitol and maltitol on the quality of sugar free cakes

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**Objectives:** One way to achieve a healthy food product is to reduce some of the ingredients. Today, obesity is a serious health problem. cakes have a high sugar content in their recipe, In addition, because of the high glycemic index of cakes, people that suffer from diabetes are not able to eat large amounts of ordinary cake.

**Materials and Methods:** Order to compensate for the reduction of sucrose in low calorie cakes, some alternatives have been used as sweetener. In this work some sugar substitute (maltitol, xylitol and sorbitol) were used to totally replace sucrose in sponge cakes. The effect of this substitution on cake quality was determined by measuring texture and volume and sensory evaluation after baking under controlled conditions.

**Results:** Sugar free cakes showed lower specific volumes than control. Xylitol and sorbitol cakes

showed density values close to the control ones. In general, sugar free fresh cakes had significantly softer crumb textures than the control. In relation to sweetness, the sponge cakes elaborated with xylitol were the closest to the control one.

**Conclusion:** In conclusion, best results were obtained with xylitol and sorbitol, leading to sponge cakes more similar to the control cake and with the highest acceptance level in sensory evaluations. Lower quality sponge cakes were those elaborated with maltitol.

**Keywords:** sugar free cake; Maltitol; Xylitol; Sorbitol

### Investigation the use of *Lactobacillus plantarum* as probiotic bacteria against *Listeria monocytogenes* and shelf life extension of Olivier salad

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**Objectives:** Today, there is a strong tendency to use from safe and natural preservatives and techniques in foods in comparison with chemical preservatives. Due to the fact that Olivier salad does not heat, it can be a good carrier for probiotic bacteria that transmits them to the human digestive system. On the other hand, the ability to growth pathogenic psychrotrophic bacteria such as *Listeria*, *Clostridium* and *Yersinia* at temperatures below 4 °C caused such foods to always endanger the health of consumers. The purpose of this study is to use of *Lactobacillus plantarum* to shelf life extension of Olivier salad and survey of *Lactobacillus plantarum* behavior during the storage. According to the inhibitory effect of the growth of probiotics on pathogenic and foodborne bacteria, attempt to use these bacteria as a biological preservative in the food industry and in particular the Olivier salad.

**Materials and Methods:** In this study, Olivier Salad was prepared according to the Iranian National Standard No. 178 13 and then the probiotic species and also the chemical preservative of sodium benzoate were added to



its limit ( 150 mg / kg). *Lactobacillus plantarum*, inoculated into Olivier salad pure cultures of 10<sup>6</sup> cfu / ml. In addition to inoculating the probiotic species, *Listeria monocytogenes* was inoculated with 3log cfu / g on Olivier salad. Then, the treatments were kept at 4 °C for 14 days. On days 0-3-7- 10, and 14, the types of tests, acid production, total microbial load, and the number of lactic acid bacteria specifically were counted. Sensory evaluation was carried out by the point hedonic method by 15 evaluators.

**Results:** The results indicated that the probiotic used in the Olivier salad showed good growth in the refrigerator temperature in the 14 day and, against the control sample, they were able to prevent the growth of 3 log cfu / g *Listeria monocytogenes* without using sodium benzoate. Also probiotic samples had a better taste than the control sample, which indicates high probability inhibitory probiotic bacteria.

**Conclusion:** Using probiotic bacteria in products such as Olivier Salad can improve the taste of the product and prevent the use of preservatives.

**Keywords:** *Lactobacillus plantarum*, *Listeria monocytogenes*, Olivier salad

### Rhazes' concepts and manuscripts on nutrition in treatment and health care

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**Objectives:** The use of nutrition in medical practice has a long history dating back to 6000 years. The great Persian physician, and philosopher, Rhazes (865-925 AD), wrote over 200 books in different branches of science. Some of his work drew attention to the notion that nutrition is an important part of treating diseases and health care procedures. The aim of this study is to introduce concepts and manuscripts on nutrition in treatment and health care.

**Materials and Methods:** We searched international database PubMed, EMBASE, Cochrane library, and databases in Iranian SID, Magiran and textbook of Rhazes using a searching strategy that key words (2000-2015). Analysis of data extraction and quality evaluation of the Literature were performed with content analysis methods.

**Results:** Rhazes formulated highly developed concepts of nutrition and wrote several special books about food and diet such as *Manfe' al aghzie va mazareha* (Benefits of Food and its Harmfulness), *Teb al moluki* (Medicine for Kings), and *Ata'me al marza* (Food for Patients). His

writing included detailed guidance about eating fruit *ma iaghdam men al favakeh va al aghzieh va ma yoakhar* (Fruit Before or After Meal), and other food types *kefiat al eghteza* (Temperament and Quality of Foods) and *al aghziat al mokhtasareh* (Brief Facts about Food). He believed that when individuals eat only one group of foods at a meal, it is easier for the GI system to digest and absorb the food efficiently. He administered dietary regimes for weight gain and weight loss.

**Conclusion:** Rhazes attributed great importance to food in medical practice. Our findings demonstrated that Rhazes knew much about nutrition and diet. In this regard, many of his highly developed concepts are accepted by today's achievements in nutritional science. A book with special title on nutrition and dietetic medicine introducing him as one of the pioneers in nutritional science remains to be published.

**Keywords:** History, nutrition, Rhazes, Complementary of alternative medicine

### Cancer Epigenetics and Dietary Factors

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**Objectives:** The connection between human cancer and nutrition has a long history in research. Many studies suggest that dietary factors can affect gene expression through epigenetic mechanisms. Epigenetic modifications are heritable and potentially reversible changes in gene expression that do not require changes in the DNA sequence. The main mechanisms of epigenetic changes are DNA methylation, histone modifications, and RNA silencing. The reversibility of these changes suggests that we can modulate these alterations by nutrition and bioactive food compounds. Thus, epigenetic modifications could provide a link between dietary factors and cancer.

**Materials and Methods:** a selection was done in articles that were related to Cancer Epigenetics and Dietary Factors. All of these articles were in the electronic databases such as Web of Sciences and PubMed with emphasis from 2000 onwards articles. No restriction about language or study design was made.

**Results:** One of the most widespread approaches to the epigenetic alterations is dietary control.

This could be achieved through the quality and type of the diet. In all the studies that reviewed here many phytochemicals such as Dietary polyphenols, Tea polyphenols, Resveratrol, Curcumin, Isoflavones (genistein), and Isothiocyanates have modulating effects on epigenetic changes and are also efficacious for preventing or treating the epigenetic aberrations in cancer.

**Conclusion:** A wide range of nutritional interventions can lead to cancer, which are mediated in part by epigenetic processes. Recent advances indicate that epigenetic changes are an important cause of cancer and dietary factors and bioactive nutrients components can prevent or modify epigenetic changes. Epigenome is a good target for nutritional factors and we need more studies for demonstration this relationship.

**Keywords:** dietary factors; epigenetics; cancer; DNA methylation

#### **Non-invasive Body Contouring with a combination of Radio frequency and Ultrasound Cavitation methods**

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**Objectives:** Radio-frequency (RF) and ultrasound cavitation are two new methods, which have been reported to reduce the indices of obesity. This pilot study describes the results of a clinical trial in a group of women who received a low calorie diet besides underwent RF and ultrasound cavitation of the anterior abdomen and flank areas.

**Materials and Methods:** This randomized clinical trial study was done during January 20 14 and June 20 14 in Ghaem Hospital, Mashhad University of Medical Sciences, Mashhad, Iran. In total, fifty healthy women were recruited. Participants were randomized into two groups, both of them were received the low-calorie diet containing a 500-kcal energy deficit every day. The case group included twenty five subjects who were assigned to the combined alternative treatment of RF and ultrasound cavitation program of abdomen and flank area. The control individuals were comprised of twenty five subjects who were received the low calorie diet alone. Anthropometric parameters, including body mass index (BMI), abdominal circumference, waist circumference, fat mass and trunk fat, were measured before and after the intervention. Treatment was given twice weekly for a total period of forty minutes by the same trained nurse.

**Results:** Mean of abdominal circumference (AC) was reduced by 9% and 5% in the case and in control group, respectively. In both the case and control groups, waist circumference (WC) was reduced significantly by  $3.76 \pm 1.69$  cm and  $2.40 \pm 1.04$  cm, respectively ( $P < 0.05$ ). Also, abdomen circumference was reduced by  $9.5 \pm 2.66$  and  $3.12 \pm 1.88$  cm, in these groups, respectively ( $P < 0.001$ ). There were no reported adverse events in these study groups.

**Conclusion:** Measures of adiposity can be reduced significantly by using RF and ultrasound cavitation in combination with a low calorie diet.

**Keywords:** Obesity indices, Radiofrequency, Ultrasound cavitation, Reduction

#### **Relationship between student's micro and macronutrient intake and the menu served by the restaurant of the Bushehr University of Medical Sciences**

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**Objectives:** students need micro and macronutrient for growth, physical activity and physiological maintenance. Malnutrition leads to limited mental and physical performance. This study is conducted to explore the relationship between the amount of dietary micro and macronutrient intake in comparison to registered dietary allowance (RDA) and the



menu presented by the restaurant of the University.

**Materials and Methods:** Thirty students aged from 19 to 23 years old were selected randomly from those who used the restaurant of university for breakfast, lunch and dinner. A food frequency questionnaire (FFQ) was fulfilled by expert dietician for each student. In addition the weekly menu of the campus restaurant was obtained. The FFQ and menu was analyzed by nutritionist4 (N4) software and SPSS version 19 was used to compare the intakes of nutrients. The One-Sample T-test was used for statistical analysis.

**Results:** The calorie, Protein, Carbohydrate, fat, Cholesterol, Sodium, Iron, Calcium and Zinc intake from restaurant menu was 2434 Kc (110%RDA), 101.95 g (175%RDA), 272.18 g (74%RDA), 104.97 g (157%RDA), 334.7 mg (145%RDA), 1045.43 mg (26%RDA), 21.14 mg (107%RDA), 623.35 mg (37%RDA), 8.45 mg (92%RDA) respectively. The calorie, Protein, Carbohydrate, Fat, Cholesterol, Sodium, Iron, Calcium and Zinc intake from FFQ were 2754±1142 Kc, 92.34±55.07 g, 383.1±197.2 g, 105.45±0.28 g, 228.42±194.2 mg, 2674.04±2623.18 mg, 9.28±9.85 mg, 920.78±392.58 mg, 8.26±3.76 mg, respectively. There were no significant differences between micro and macronutrients intake from menu and FFQ.

**Conclusion:** The intake of micro and macronutrients in restaurant menu students of Bushehr University of medical sciences were not as RDA recommendation.

**Keywords:** micronutrient, macronutrient, student, food frequency questionnaire

### Does passive smoking affect the neuropsychological function of female adolescents?

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**Objectives:** It has previously been shown that smoking is strongly associated with mental health and sleep problems, but the possible effects of passive smoking on a broader range of psychometric measures (depression, aggression and sleep problems) have not been evaluated in adolescents. We aimed to investigate the association between passive smoking and cognitive abilities, emotional function and sleep patterns in adolescent girls.

**Materials and Methods:** We conducted a survey on 940 girls aged 12-17 years between January and April 2015. Of these, 305 (32.4%) subjects were exposed and 635 (67.6%) were not exposed to smoking at home. We compared anthropometric and biochemical parameters, tests for cognitive, emotional function and sleep problems between two groups.

**Results:** Fasting blood glucose, systolic and diastolic blood pressure were significantly higher in passive smoker group compared with non-passive smoker group (P value < 0.05). Passive smokers had significantly lower cognitive abilities and higher depression, aggression, and insomnia scores compared to normal controls (P < 0.05), but did not have significantly different score at day time sleepiness and sleep apnea (P > 0.05)

**Conclusion:** Passive smoking was associated with several cardiovascular disease risk factors, cognitive impairments, and depression aggression and sleep disorders.

**Keywords:** passive smoking, cognitive abilities, depression, aggression, adolescent

### Antimicrobial effect and chemical composition of nanofluid including Zinc oxide (ZnO) nanoparticles and *Trachyspermum copticum* and *Bunium persicum* essential oils

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**Objectives:** This study was carried out to evaluate the in vitro antibacterial activity of nanofluid based on *Trachyspermum copticum* and *Bunium persicum* essential oils and Zinc oxide (ZnO) nanoparticles against different bacterial species.

**Materials and Methods:** The essential oil was obtained by hydro-distillation and analyzed by

gas chromatography-mass spectrometry (GC-MS). The agar disk diffusion and micro-dilution methods were used to study the antibacterial activity.

**Results:** GC-MS analysis of the *Trachyspermum copticum* and *Bunium persicumboiss* essential oils revealed 16 and 22 compounds. Minimum inhibitory concentration (MIC) of *T.copticum* against *B.cereus*, *S.aureus*, *S.entrica* and *E.coli* was determined respectively at 250, 250, 500 and 500 ppm of ZnO and *B.persicumboiss* was determined respectively at 500, 500, 1000 and 1000 ppm of ZnO. Minimum bactericidal concentration (MBC) of *T.copticum* against the mentioned bacteria was respectively at 250, 500, 1000 and 500 ppm of ZnO and *B.persicumboiss* was determined respectively 1000, 1000, < 1000 and 1000ppm of ZnO. *B. cereus* and *E. coli* were respectively the most and least sensitive species.

**Conclusion:** ZnO nanoparticles improved the antibacterial activity of *T.copticum* and *B.persicumboiss* essential oils which shows the potent application of the particles in different industries like food packaging, food systems and pharmaceutical application.

**Keywords:** *Trachyspermum copticum*, *Bunium persicumboiss*, Antibacterial activity, Zinc oxide, Nanoparticles, GC-MS.

### Lower systolic and diastolic blood pressures are associated with more severe depression and anxiety symptoms

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**Objectives:** Depression and anxiety are two common mood disorders, which are associated with a variety of chronic conditions including cardiovascular diseases (CVDs). High blood pressure is also an important risk factor for CVDs and may be more prevalent in patients with depression and anxiety. This study examined the extent to which depression and anxiety symptoms are associated with systolic and diastolic blood pressures in 9,795 participants (40% males and 60% females) aged 35-65 years, enrolled in a population-based cohort (MASHAD) study.

**Materials and Methods:** Systolic blood pressure (SBP) and diastolic blood pressure (DBP) were

measured by sphygmomanometer twice in exactly the same manner. Symptoms of depression and anxiety were evaluated using the 2 1-item Beck Depression and Anxiety Inventories.

**Results:** The mean systolic and diastolic blood pressures decreased by increasing severity of depression and anxiety symptoms. Subjects with severe depressive symptoms had significantly lower SBP ( $p < 0.01$ ) and DBP ( $p < 0.001$ ), when compared with subjects with no or minimal depressive symptoms. Concerning anxiety, subjects with severe anxiety symptoms had significantly lower DBP ( $p < 0.02$ ). Moreover, the odds ratio of individuals having severe depressive symptoms compared with subjects with no or minimal depression symptoms was 0.994 (0.989-0.998) for SBP and 0.988 (0.981-0.995) for DBP. The odds ratios remained relatively unchanged after adjustment for age, sex, current smoking habit, body mass index, WBC count, RDW, and hs-CRP.

**Conclusion:** We have reported associations between systolic and diastolic blood pressures and depression/anxiety symptoms cross-sectionally; however, this relationship requires further examination in prospective studies in order to determine the direction of the relationship.

### Effects of edible composite coating soy protein isolate and Qodume Shahri seed gum based on physico-chemical and sensorial properties of "Golden Delicious" apple

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**Background:** Edible coatings were used to extend the shelf life and improve the quality of fresh-cut products by decreasing of respiration and oxidation in fruits and vegetables. In this research, the effect of edible composite coatings on quality and the shelf-life of fresh-cut "Golden Delicious" apples were studied.

**Materials and Methods:** Edible composite coatings were prepared from soy protein isolate (SPI) and Qodume Shahri seed gum. Fresh-cut Golden Delicious apples were coated with different concentrations of coating solutions and also sample control coated with distilled water.

Coated and uncoated fresh-cut were kept at 4 °C for 21 days. Samples were investigated by response surface methodology.

**Results:** Results indicated that the edible composite coating did not reduce weight loss in fresh-cut apples, probably due to the high relative humidity of the product. According to results, the amount of soluble solids and acidity in coated samples were lower than uncoated apples, because of low speed of organic acids in coated samples. The sensory panel differentiated samples coated with composite coatings from samples control after 21 days.

**Conclusion:** Edible coatings can be used to improve quality and maintenance of physicochemical and sensory properties in fresh-cut fruits for increasing shelf-life.

**Keywords:** Fresh-cut apple, Edible composite coatings, Soy Protein, Qodume Shahri seed gum, Shelf-life.

#### **Effects of soy protein isolate and Qodume Shahri seed gum based edible composite coating on firmness and color change of fresh-cut apple**

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**Background:** The use of edible coatings is a suitable method for maintenance of fruit, fresh-cut and vegetables. To provide greater functionality of coating is used the composite coating of protein and polysaccharide. In this research, the effect of soy protein isolate (SPI) – Qodume Shahri seed gum-based edible composite coatings with anti-browning agents on the shelf-life of fresh-cut apples were investigated.

**Materials and Methods:** Fresh-cut apples were coated with edible solutions. The effect of coating on firmness, color change and browning index (BI) were determined, during 21 days of storage at 4°C, using response surface methodology. Uncoated fresh-cut was used as a sample control.

**Results:** According to results, color changes and firmness of coated samples contain SPI – Qodume Shahri seed gum was significant at 0.01 probability and 0.05 probability, respectively. BI reduced in fresh-cut compared to uncoated samples. The results showed that the models based on the response surface methodology are

quite suitable for the evaluation of the effects of coating on the properties of fresh-cut apple.

**Conclusion:** Fresh-cut apples Coating helped to keep firmness. Also, color change and browning index in coated fresh-cut apples were lower than sample control, due to enzymatic browning preventing. So edible composite coatings were suitable coating for maintenance of fruits and vegetables properties that contained firmness and color of products.

**Keywords:** Fresh-cut apple, Edible composite coatings, Soy Protein Isolate, Qodume Shahri seed gum.

#### **The use of rosemary extract as a natural preservative to improve the oxidative stability of meat and meat products**

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**Objectives:** Lipid oxidation is one of the major reasons for the reduction of quality of meat and meat products during storage, which adversely affects their sensory quality and nutritional value as well as the generation of toxic reaction products such as malonaldehyde. Due to concerns about toxicological safety the use of synthetic antioxidants have been limited in many countries and replacing them with natural anti-oxidative components seems necessary. Some natural antioxidants such as spices, plant extracts and essential oils are powerful antioxidants which successfully improve the shelf life and color stability of meat and meat products. Rosemary extract is a natural compound that exhibited potent antioxidant activity and widely used in the food industry. Several studies reported the effectiveness of rosemary extracts on preventing lipid oxidation and subsequently achieving higher sensory scores and color stability. The objective of this work is to determine the effects of the addition of rosemary extract on the oxidative stability and sensory characteristics of different formulations of meat and meat products.

**Materials and Methods:** Scopus, PubMed, Web of Science, Google Scholar databases were evaluated. The keywords of study were “rosemary extract”, “lipid oxidation”, “meat”, “meat product”.

**Results:** Susceptibility of meat and meat products to lipid oxidation is because of the unsaturated fatty acids, additives with the nature of pro-oxidant, processing methods, storage conditions and pH of the muscle. Anti-oxidative

compounds can scavenge free radicals and therefore retard oxidative stress. These compounds prevent the degradation of lipids by interfering with oxidative reactions and consequently increase the nutritional value of food. Rosemary extract is a good source of natural antioxidants because of the presence of several phenolic diterpenes such as carnosic acid, carnosol, rosmanol, rosmariquinone and rosmaridiphenol, which can scavenge free radicals, donate hydrogen atoms and chelate metal cations. Although studies on rosemary, orange extracts and BHA/BHT have proven that rosemary extract has higher antioxidant activity.

**Conclusion:** This article presents a review of the studies published in recent years in the meat industry. Special attention to natural additives such as rosemary extract will lead us to apply these natural additives instead of using synthetic ones.

**Keywords:** Lipid oxidation, natural antioxidants, sensory, spices.

#### Soy based bioactive peptides in cake

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**Objectives:** Flour, sugar, egg and fat are major components in cake production and each has key role in structure and quality of the product. Egg has a large effect on color, flavor and nutritional value of cake. On the other hand egg has an important role on rheological properties and quality characteristics of dough and textural attributes in final product, because of its emulsifying properties, aeration agent and thermal coagulation of its protein moiety. Egg is the most expensive ingredient in cake formulation and its high cholesterol content is a serious danger for cardio vascular diseases. Elimination or partial substitution of egg with other ingredients (with the purpose of cholesterol reduction) would cause a disorder in quality and quantity of products. Therefore finding a proper substitute for egg in cake formulation would be important from nutritional and economical point of view. Bioactive peptides are specific protein derivatives that have physiological and functional properties therefore these are used in food and pharmaceutical

products. Among herbal foods, soy has attracted the highest attention and research because of its known functional properties and broad use and holds the greatest discovered bioactive component.

**Materials and Methods:** In current research soy flour and isolated soy protein as a source of cereal bioactive peptides were substituted with egg at 12.5, 25, 37.5 and 50% levels. Sensory properties, textural attributes, Colour indices, moisture and protein content, aw and weight loss were evaluated.

**Results:** Results showed that moisture content and aw reduced in all samples containing bioactive peptides comparing to control sample. Cake weight loss increased using soy peptides. As expected protein content increased significantly compare to the control sample. L\*, a\* and b\* showed a decline with increase in substitution level using soy bioactive peptides. No significant differences observed in flavor and texture of samples comparing to control.

**Conclusion:** Considering the remarkable functional properties of bioactive peptides based on soy, it can be claimed that use of mixture of egg and soy peptides in food formulations can prevent emergence of unfavorable qualitative changes in the product, making it a potentially great functional product.

**Keywords:** Cake, Egg, Bioactive peptide, Soy flour, Isolated soy protein

#### The role of perceived behavioral control construct in predicting fish consumption levels in women with children

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**Objectives:** As a valuable and beneficial food for women, fish can be a part of the family food basket. Fish is much less consumed in Iran than the recommended amounts. The present study aimed to evaluate the role of perceived



behavioral control construct in predicting fish consumption levels among women with children.

**Materials and Methods:** The present cross-sectional study recruited 414 women with children in Gonabad town, selected through systematic sampling from those covered by health center 1. Data were collected using a confirmed reliable and valid (face and content validity) questionnaire. Fish consumption behavior in the last three months was assessed using a 5-item questionnaire. Data were analyzed in SPSS-19. Fitness of the structural model was assessed in AMOS-16 using extended least squares method.

**Results:** Over the past three months, 120 (29%) participants had consumed fish at most once, and 237 (57.2%) had not used fish at all. Mean scores of perceived behavioral control and behavioral intention were  $2.77 \pm 0.66$  and  $2.8 \pm 0.69$  respectively. According to Pearson's correlation coefficient, perceived behavioral control has a direct and significant relationship with behavioral intention ( $r=0.6$ ;  $P<0.01$ ) and fish consumption behavior ( $r=0.44$ ;  $P<0.01$ ). This construct determined 48% of the intention to consume. Coefficient of direct effect of perceived behavioral control was 0.48 on behavioral intention, and 0.33 on fish consumption, which was statistically significant at 1%. The coefficient of direct relationship of subjective norms and attitude with behavioral intention were 0.27 ( $P<0.01$ ) and 0.06 ( $P>0.1$ ) respectively.

**Conclusion:** The results obtained revealed that consumption of fish is far below the recommended level. Perceived behavioral control was the most important factor in consumption of fish, which should be considered by health and nutrition systems.

**Keywords:** perceived behavioral control, fish, women with children

### Assessing the nutritional status of food units and energy intake in smokers after quitting smoking

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**Objectives:** Weight gaining have been reported in smokers after quitting. The aim of this study was to evaluate nutritional status, energy intake and weight gaining in smokers after smoking cessation.

**Materials and Methods:** This descriptive cross-sectional study have done involving 28 patients who quit smoking. Food Group calculation the energy intake of these was carried out people for three days per week including 24 hours and for 8 weeks, food receive and the evaluation was continued.

**Results:** The findings of study showed that smokers experienced weight gaining and body mass index after quitting and people who have smoked more years, after quitting, the weight gain and energy intake in these people will be more.

**Conclusion:** The findings of this study showed that smokers experienced weight gaining and body mass index after quitting that can increase the risk of obesity-related diseases, especially metabolic syndrome in the future. Therefore, some measures should be taken in this regard.

**Keywords:** smoking cessation, weight, food units, received energy

### Association of Junk Food Consumption with overweight-obesity among students of basic medical sciences in Shahid Beheshti medical university (SBMU)

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**Objectives:** The consumption of high energy and low nutritional content foods, which are known as junk foods, is considered as one of the main causes of obesity particularly in adolescents. The aim of this study was to determine the association of junk food consumption with obesity among students of basic medical sciences in SBMU.

**Materials and Methods:** In this cross-sectional study, students of basic medical sciences of SBMU were recruited by simple randomized sampling ( $n=186$ , male and female aged 18-22). Demographic and socio-economic data were collected by a questionnaire. Information relating to the consumption of junk foods were



provided by a 24-items self-administered semi-quantitative food frequency questioner (F.F.Q) that its content validity was approved by nutrition expert panel. Anthropometric measurements was obtained by standard methods. Overweight-obesity (O.O) was defined as  $BMI \geq 25$  kg/m<sup>2</sup>. Total servings of junk food or fast food consumption was categorized as tertiles. The relationship between the consumption of fast food and O.O was analyzed using SPSS software (version 2 1) through logistic regression method. P-value < 0.05 was considered as significant.

**Results:** Overweight-obese students ( $BMI \geq 25$ ) accounted for 63(33.9%) of the total participants. The mean of total junk food consumption was  $23.71 \pm 13.02$  serving/week. A total of 85(45.7%), 45(24.2%), 56(30.1%) of students consumed fast foods < 1.26, 1.26- 1.5 and > 1.52 serving/week, respectively. Students who were at the highest tertile of fast food consumption, had a higher chance of O.O (OR= 1.79, CI95%:0.83-3.86) in comparison with those in the lowest tertile. After adjustment for confounders (age, economic status, stress and depression), this chance was strengthened (OR=5.107, CI95%: 1.89 - 13.76); but, after adjusting for lifestyle variables (physical activity and screen time) this relationship wasn't significant anymore (OR=2.56, CI95%:0.18 to 35.47). Other groups of junk food including sweets, beverages, biscuits, etc. didn't have any significant relationship with O.O.

**Conclusion:** The findings of this study represent positive association between fast-food consumption and O.O in students of medical sciences. The confounding role of economic, psychological and lifestyle determinants on this association should be regarded in future research or nutritional interventional programs.

**Keywords** Junk foods, Fast foods, Overweight-Obesity, Medical students

### The Role of Vitamin D in Male and Female reproductive health: A Review Study

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**Objectives:** Vitamin D deficiency is common during in reproductive age. Recent data suggest that vitamin D deficiency in reproductive age is associated with Poor reproductive function in women and men. We conducted this Review study to determine the role of vitamin D in Male and Female reproductive function such as polycystic ovary syndrome, endometriosis infertility, myoma infertility, male infertility, premature ovary failure and in vitro fertilization.

**Materials and Methods:** This study is a review study articles that published during the years of 1997 to 2016 in Persian and English with full text which were indexed in PubMed, Magiran, Google Scholar, Iranmedex, Irandoc and the SID databases.

**Results:** A collection of 35 observational study from 302 articles which were related to 25-hydroxyvitamin D and adverse reproductive function were studied. The results of latest research articles in those fields has been discussed and summarized.

**Conclusion:** The deficiency of vitamin defined as the concentration of 25-hydroxycalciferol < 20 ng/ml is frequently showed in patients of reproductive age. Current research on the role of vitamin D in reproductive dysfunction, such as polycystic ovary syndrome, uterine fibroids, abnormal semen parameters and in the case of in vitro treatments and pregnancy failure, suggests it plays an important role in human reproduction processes. Vitamin D supplementation is advised in infertility therapy in both male and female.

**Keywords:** vitamin D; infertility; polycystic ovary syndrome; in vitro fertilization; male infertility; endometriosis infertility; myoma infertility; premature ovary failure; ART

### Assessment of the relationship between parental factors and newborn anthropometric indices Kogilueh and boyer amad roviene, Southwest of Iran 2015-2016

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**Objectives:** Identification and management of factors affecting fetal development can be a valuable contribution to promote infant survival, growth, and development, also in order to improve the two important indicators of prematurity and infant mortality rates. The purpose of this study was to investigate the relationship between some of these factors and the birth anthropometric variables.

**Materials and Methods:** This research was based on secondary data analysis of pediatric and pregnancy surveillance systems in which 1366 cases of children below two years were selected by proportional sampling method from different regions of the province. The outcome indexes in this study included birth weight, height and head circumference. According to the binary dependent variables, the generalized linear model approach with logit link function and binomial probability distribution were used using SPSS software. The significance level was considered 0.05 for two-tailed hypothesis tests and confidence interval estimates for model parameters was 95%.

**Results:** In this study, the prevalence of low birth weight, short stature and small birth head circumference was estimated to be 3.3%, 4.2% and 4.4%, respectively; all three of which were more common in baby girls than in baby boys. In the generalized linear model with logit link function, predictor variables of birth weight included occupation, paternal education level ( $P=0.04$  and  $P<0.001$ , respectively), and education level, body mass index and pregnancy rates of mother ( $P<0.001$ ,  $P<0.001$  and  $P<0.001$ , respectively). The predictor variables of birth height were paternal occupation, baby sex and maternal body mass index ( $P<0.001$ ,  $P<0.001$  and  $P<0.001$ , respectively). In addition, variables of baby sex, paternal occupation and maternal anemia during the first trimester of pregnancy were the most important predictors of birth head circumference ( $P<0.001$ ,  $P<0.001$  and  $P<0.04$ , respectively). Model fitness index also showed a

relative and acceptable fit of the model to the data.

**Conclusion:** The effects of family socioeconomic factors, body mass index, anemia and pregnancy rates of mother on birth anthropometric variables suggest that more attention should be paid to improve the pregnancy nutrition and surveillance systems and to eliminate maternal anemia during the first trimester of pregnancy for survival and health of the infants.

**Keywords:** Birth Weight, Birth Height, Birth Head Circumference, Anthropometry, Infants, Pregnancy, Risk Factors

### **Effect of probiotics on quality of life and depression in pregnant women with gestational diabetes: A randomized double-blinded clinical trial**

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**Objectives:** Women are vulnerable during pregnancy and face new problems that can affect mental health and quality of life. Pregnancy complications make pregnant women more vulnerable to loss of life quality and mental health problems. The purpose of this study was to investigate the effect of probiotic supplement on quality of life and depression in women with gestational diabetes mellitus (GDM).

**Materials and Methods:** In this randomized, double blind clinical trial, 64 pregnant women with GDM at 24-28 weeks of pregnancy were diagnosed after matching on the basis of fasting blood glucose and body mass index before pregnancy, and were randomized to receive probiotic or placebo supplementation for 8 weeks. Probiotic supplement was a combination of four probiotic strains of *Lactobacillus acidophilus*, *Bifidobacterium*, *Streptococcus thermophilus* and *Lactobacillus delbrueckii-bulgarius*. The short form of Iranian species of World Health Organization Quality of Life Questionnaire was used to assess the quality of

life and the Edinburgh Depression Questionnaire to assess depression before and after intervention.

**Results:** 56 of the surveyed individuals completed the study. Probiotic supplement significantly improved the quality of life in terms of physical and mental dimensions, as well as the overall quality of life score. Also, the effect of probiotic supplementation was significant in improving depression compared with placebo.

**Conclusion:** It seems that probiotic supplementation promotes quality of life and depression levels in pregnant women with GDM.

**Keywords:** Gestational diabetes mellitus, Probiotics, Quality of life, Depression

### The Evaluation of The 0-72 Month-old Children's Trophic Indicators in Torghabeh and Shandiz in 1395

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**Objectives:** Considering the necessity of monitoring of children's trophic indicators we evaluated the 0-72 month-old children's anthropometric indicators from 1-9-95 till 10-9-95 due to the assessment and determination of the priorities of nutritional programs. The aim of this study is to obtain the indices of stunting, underweight, Wasting, and overweight and obesity among 0-72 month-old children.

**Materials and Methods:** The study was a descriptive sectional study. We designed a questionnaire and a number of trained questioners were sent to all health centers of the city.

The study was done within the standard timeframe ( 10-day period). Children were categorized into 6 age categories: 0- 1 years, 1-2 years, 2-3 years, 3-4 years, 4-5 years and 5-6 years and samples from each age group were randomly selected and analyzed based on family records at health centers and bases.

**Results:** Data analysis was performed by EPI6 software and from a total of 699 children, 373 boys were examined:

(Stunting) 3.2% =  $HAZ \leq -2$

(Underweight) 3.5% =  $WAZ \leq -2$

(Wasting) 6.2% =  $WHZ \leq -2$

(Obesity) 1.6% obesity =  $WHZ \geq +2$

326 girls were examined:

(Stunting) 3.7% =  $HAZ \leq -2$

(Underweight) 5.2% =  $WAZ \leq -2$

(Wasting) 7.7% =  $WHZ \leq -2$

(Obesity) 1.8% =  $WHZ \geq +2$

The indicators of stunting, overweight and obesity among urban children are more than rural children and the index of wasting in rural children was higher than urban children.

**Conclusion:** Considering the results of this study the higher indices of wasting in girls than boys are alarming for the society. These girls are mothers of the future. It is possible that the birth of a underweight baby will grow in the future.

**Keywords:** Children, Obesity, Overweight, Stunting, Trophic Indicators.

### High Sensitive Electrochemical Strategy for Trace Analysis of 4-Aminophenol

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**Objectives:** Paracetamols as an operative and safe agent act effectively to relieve the moderate pains and widely used as an antipyretic and analgesic drug. Among hydrolytic degradation product of paracetamol, 4-Aminophenol (4-AP) can be detected as a synthetic intermediate. Since 4-AP revealed high toxicity, therefore, according to the European, United States, and Chinese pharmacopeias, the maximum content of 4-AP in pharmaceuticals is limited to 50 ppm (0.005%, w/w). Therefore, due to the importance of 4-AP, its accurate determination in pharmaceutical and clinical samples is greatly demanded. Current work deals with fabrication of electrochemical nanostructured sensor as an accurate and rapid tool with high sensitivity for reliable determination of 4-AP in pharmaceutical preparations.

**Materials and Methods:** A square wave voltammetric (SWV) method for the trace analysis of 4-AP was developed in this study. Carbon paste electrode (CEP) was modified with CdO nanoparticle and 1-butyl-3-methylimidazolium tetrafluoroborate (BMITFB) as a binder. Electro-oxidation behavior of 4-AP on the modified electrode was studied, which indicated that the nanostructure modified electrode could efficiently promote electrocatalytic oxidation of 4-AP.

**Results:** A fast, selective, high sensitive and simple electrochemical strategy was developed for trace analysis of 4-AP using the constructed electrode. The catalytic oxidation signal exhibited a wide linear range from 10.0 to 450.0



$\mu\text{M}$  towards the concentration of 4-AP, and the limit of detection was as low as  $3.0 \mu\text{M}$ .

**Conclusion:** It can be concluded that, the developed BMITFB/CdO/NPs/CPE in the current work was a promising approach for successful determination of 4-AP in pharmaceutical samples.

**Keywords:** 4-Aminophenol analysis; CdO nanoparticle; Electrochemical sensor; Pharmaceutical samples.

### **Effect of crocin, a carotenoid from saffron, on plasma cholesteryl ester transfer protein and lipid profile in subjects with metabolic syndrome: A double blind randomized clinical trial**

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**Objectives:** Metabolic syndrome is defined by insulin resistance and a clustering of other cardiovascular risk factors. Crocin is a carotenoid derived from the stigmas of the saffron flower and has previously been shown to affect lipid profile, but the mechanisms for this are not well understood. The present trial aimed to investigate the possible effect of crocin on plasma levels of cholesteryl ester transfer protein and lipid profile in individuals with metabolic syndrome.

**Materials and Methods:** This was a randomized, double-blind, placebo-controlled, clinical trial consisting of an 8 week treatment with crocin, or placebo tablets between April and June 20 14 in the Nutrition Clinic of Ghaem Teaching Hospital, Mashhad, Iran. Participants were randomly assigned to take a 30 mg/day crocin ( $n=22$ ) in the intervention group or placebo ( $n=22$ ) in the control group. Anthropometric, hematological and biochemical parameters were measured and recorded during pre and post-treatment periods.

**Results:** Whilst plasma cholesteryl ester transfer protein was increased in the group taking the crocin tablet by 27.8 1% during the trial period ( $p=0.013$ ), the difference between the crocin and placebo groups was not significant ( $p=0.116$ ). Moreover, the percent changes in cholesterol ( $p=0.702$ ), triglyceride ( $p=0.080$ ), LDL ( $p=0.986$ ), HDL ( $p=0.687$ ) and fasting blood glucose ( $p=0.614$ ) did not differ significantly between intervention and control groups.

**Conclusion:** Although crocin supplements increased the serum cholesteryl ester transfer protein in patients with metabolic syndrome, this change was not significant between treatment and placebo groups.

**Keywords:** Cholesteryl ester transfer protein, Crocin, HDL, LDL, Metabolic syndrome, Saffron.

### **Nutritional Behaviors in Patients with Allergic Rhinitis**

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**Objectives:** Allergic rhinitis might be seasonal or permanent. In this regard, inappropriate nutrition can contribute to allergy. The aim of this study was to compare the nutritional behaviors in patients with allergic rhinitis and healthy controls in Qazvin, Iran.

**Materials and Methods:** In this case-control, study was initiated by selecting the patients diagnosed with the allergic rhinitis based on the clinical signs and the diagnosis of the lung super specialist. The group was compared with the patients' companions as control group (healthy individuals). The data were collected using the questionnaires: 1- Demographic Questionnaire 2- Checklist of Disease and 3- Nutritional Behavior Questionnaire. The data were analyzed in SPSS 22.

**Results:** A total of 144 patients and 225 companions were selected. Urban life frequency was significantly higher in control than in patient group. Frequency of hereditary diseases was significantly higher in the patient group than the control. No significant difference was found in terms of nutritional behavior frequency (Good, Moderate, Bad) between the patient and control groups. The frequency of snack, saturated oil and vegetable consumption was significantly higher in the control group than in the case group. No significant difference was found between two groups in terms of the frequency of nutritional behaviors (Good, Moderate, Bad) based on gender, BMI, and age group.

**Conclusion:** According to the results, vegetable, saturated oil, and snack consumption was significantly higher in control group. However, no significant difference was found between two groups in terms of the prevalence of nutritional behaviors (Good, Moderate, Bad).

**Keywords:** Allergic Rhinitis, Nutritional Status, Behavior

#### **Determination of relationship between cesarean delivery with a body mass index of the mother**

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**Objectives:** Cesarean section (CS) as a consequence of pregnancy is still increasing and one of the factors in the incidence of cesarean section is a high Body Mass Index (BMI). In developing countries, women's obesity has always been considered as a serious problem therefore This study looked at the association between caesarean section and Body Mass Index.

**Materials and Methods:** This case-control study was conducted on 150 healthy mother with cesarean section (case) and 150 healthy mother with vaginal delivery (controls) who were referred to health centers in Qazvin In the most recent quarter at the time of study. General information and type of delivery were collected through interviews. Body sizes were evaluated with Anthropometric indices. Data analysis using SPSS statistical software and Chi-square tests and t tests and logistic regression. The p less than 0/05 was considered as significant.

**Results:** The results of the study showed that the cesarean section rate increased with increasing BMI. Chance of cesarean section in people who are overweight is 1.8 1 times more than normal weight people and in obese people is 3.05 times too. That even after adjusting for effects of confounder, association still remained significant.

**Conclusion:** Given the association between body mass index and type of delivery and the high prevalence of overweight and obesity in Iran, preventive interventions should be done including education, individual and family counseling and diet under the supervision of dietitians.

**Keywords:** Delivery, Cesarean Section (CS), Body Mass Index (BMI), Obesity.

#### **Food Insecurity, Body Mass Index and Demographic factors in Children and Their Parents**

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**Objectives:** Adequate food and proper nutrition are human beings basic necessities. Food insecurity and starvation have several physical, psychological, and social effects. To identify food insecurity and its association with demographic variables, body mass index, and sleeping habits in children and their parents.

**Materials and Methods:** In a descriptive-analytical study, 1582 children were selected using random cluster sampling in 10 health centers in Qazvin. Their data were collected using of nutritional assessment questionnaire, anthropometric measurements, and a checklist of demographic variables. Then, the data were analyzed by chi-square test, t-test, logistic regression and a significant level of <0.05.

**Results:** 1582 children aged between 3 and 6 years were studied, being 5 1.2 % male and 48.8 % female. 780 subjects (49.2%) had food security, while 53 1 (35.5%) affected by food insecurity without hunger, 2 16 subjects (13.6%), food insecurity with slight hunger, and food insecurity with severe hunger affected 57 (3.6%) of the population. There was a significant correlation between parental education level and food security. (P<0.00 1) There was no significant correlation between body mass index and food security. (P>0. 1) There is no significant

difference between BMI, mother weight before delivery and children's sleeping and wake-up time in both groups, however, the age of complementary nutrition in secured group was significantly higher. ( $P < 0.001$ )

**Conclusion:** Food insecurity was significant in the study population and the effective factors such as the number of family members and their educational level played a crucial role.

**Keywords:** Food security, body mass index, child, sleeping

### **Smoking habit, Caffeine Intake and Body Mass Index in infertile and fertile women aged between 25 and 40 years old**

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**Objectives:** Infertility is a major problem in healthcare sector of many communities. Infertility is related to environmental conditions and is preventable. The goal of the present study is to determine the effects of smoking habit, caffeine intake and body mass index in infertile and fertile women aged between 25 and 40 years old.

**Materials and Methods:** In this cross-sectional study, 144 infertile and 144 fertile women were elected in Tehran. Demographic, food consumption data and anthropometric measurements for each respondent was collected through questionnaires. Statistics were analyzed based on Chi-Square, Independent Sample T-Test and Logistic regression. P value less than 0.05 was considered significant.

**Results:** The mean of caffeine intake in infertile women ( $140/68 \pm 105/32$ ) was more than from fertile women ( $122/5 \pm 96/8$ ), but there wasn't significant relation between 2 groups. There was no significant relation between smoking and caffeine consumption with infertility. The mean body mass index in infertile and fertile women were  $26/74 \pm 4.11$  and  $24/98 \pm 2.88$  kg/m<sup>2</sup> respectively. A significant difference was observed between the averages BMI in subjects. The prevalence of obesity was higher among infertile women ( $p < 0/009$ ).

**Conclusion:** Regarding rampant infertility in Iran in recent years and the relation between obesity and infertility, it is necessary to teach women nutrition education and providing them with information on negative consequences of overweight and obesity.

**Keywords:** Smoking, Caffeine, Infertility, Body Mass Index

### **Comparison of dietary pattern during pregnancy in mothers with low and normal birth weight infants in Qazvin**

Ahmadi-Taheri Samira<sup>1</sup>, Javadi Maryam<sup>1,2</sup>, Barikani Ameneh<sup>2</sup>

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**Objectives:** Neonatal mortality, especially due to low birth weight, is one of the the important health indicators, and the mother's nutritional status during pregnancy may be a factor in increasing the risk of low birth weight. Considering the importance of children's health, this study was conducted to compare the food pattern of mothers with low birth weight and normal weight in Qazvin.

**Materials and Methods:** This case control study is conducted in 80 healthy mothers referred to health center in Qazvin who had given birth in the last three months at the time of the study. Data collected through the demographic and Food frequency questionnaire with 61 items.

**Results:** According to the results two dietary patterns were identified: healthy and unhealthy dietary patterns. There was significant relation between infant birth weight with weight before pregnancy and unhealthy dietary pattern. ( $p < 0.05$ )

**Conclusion:** Following a unhealthy diet during pregnancy have a negative effect on pregnancy outcomes and increase low birth weight.

**Keywords:** Birth weight, Infants, dietary patterns, pregnancy

### **Dietary pattern during pregnancy in mothers of low birth weight and normal birth weight infants**

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**Objectives:** Low Birth weight is an important factor in neonatal mortality and infant and also in childhood diseases. Low birth weight is weight less than 2500 gram (LBW). Inadequate intake of many micronutrients can affect the growth and health of the fetus and the mother. Unhealthy

Dietary pattern in pregnancy is a risk factor for low birth weight. For the importance of children's health, this study aimed to compare dietary patterns during pregnancy, mothers of children with low birth weight children with normal birth weight in Tehran.

**Materials and Methods:** This case control study is conducted in 300 healthy mothers referred to health center in south of Tehran who had given birth in the last three months at the time of the study. Data collected through the demographic and Food frequency questionnaire.

**Results:** According to the results three dietary patterns were identified: healthy, unhealthy and undervalued dietary patterns. There was significant relation between infant birth weight with mothers education, jobs and with healthy dietary pattern. ( $p < 0.05$ )

**Conclusion:** Following a healthy diet during pregnancy have a positive effect on pregnancy outcomes and reduced low birth weight.

**Keywords:** Birth Weight, Infants, Diet, Pregnancy

### Nutritional Behaviors in Patients with Allergic Rhinitis

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**Objectives:** Allergic rhinitis might be seasonal or permanent. In this regard, inappropriate nutrition can contribute to allergy. The aim of this study was to compare the nutritional behaviors in patients with allergic rhinitis and healthy controls in Qazvin, Iran.

**Materials and Methods:** In Case-Control study was initiated by selecting the patients diagnosed with the allergic rhinitis based on the clinical signs and the diagnosis of the lung super specialist. The group was compared with the patients' companions as control group (healthy individuals). The data were collected using the questionnaires: 1- Demographic Questionnaire 2- Checklist of Disease and 3- Nutritional Behavior Questionnaire. The data were analyzed in SPSS 22.

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control. No significant difference was found in terms of nutritional behavior frequency (Good, Moderate, Bad) between the patient and control groups. The frequency of snack, saturated oil and vegetable consumption was significantly higher in the control group than in the case group. No significant difference was found between two groups in terms of the frequency of nutritional behaviors (Good, Moderate, Bad) based on gender, BMI, and age group.

**Conclusion:** According to the results, vegetable, saturated oil, and snack consumption was significantly higher in control group. However, no significant difference was found between two groups in terms of the prevalence of nutritional behaviors (Good, Moderate, Bad).

**Keywords:** Allergic Rhinitis, Nutritional Status, Behavior

### The dual effects of curcumin on stem cells

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**Objectives:** Curcumin, a natural food additive from *Curcuma longa*, has a long history on traditional medicine. Curcumin is still attracting considerable interest to treat various diseases due to its biological and pharmacological effects including antioxidant, anti-inflammatory, anti-proliferative, and anticancer activities. The well-documented activities of curcumin may influence stem cells owing to shared features between stem cells and cancer cells. However, the effect of curcumin on various properties of stem cells is still not widely understood. This review outlines the effects of curcumin on stem cells and presents crucial points regarding the combination therapy of curcumin and stem cell.

**Materials and Methods:** A systematic search was performed in PubMed and ISI Web of Science to identify studies on curcumin relation to stem cell up to August 20 17. The search terms "curcumin" was used in combination with "stem cell", "differentiation", and "proliferation" were used to search for words in titles and abstracts.

**Results:** Several studies have been carried out on the effects of curcumin on various sources of adult stem cells. The evidences showed that curcumin increased cell survival and proliferation of BMSCs after 48 h while it had no effect on adult NSCs proliferation except a toxic effect in the concentration of 10  $\mu$ M of curcumin. Inconsistently, curcumin may contribute to neurogenesis due to enhancing the proliferation of embryonic neural progenitor cells via



activation of ERK and p38 kinase. Curcumin could induce osteogenic differentiation through increase ALP activity and over expression of Runx2, osteocalcin as well as HO-1. Although, curcumin downregulated adipocyte differentiation via inhibition of PPAR $\gamma$ 2, the critical regulator of adipogenesis, and C/EBP $\alpha$  expression. It is demonstrated that curcumin could stimulate ESCs differentiation to cardiac cells partly through nitric oxide signaling (Figure 1).

**Conclusion:** In conclusion, beside promising therapeutic effects of curcumin, it can influence on cell survival, proliferation rate, and differential potency of stem cells. These effects depend on its concentration, treatment duration and the type of the stem cells. Therefore, it is necessary to apply curcumin in the proper concentration in research and clinical studies especially in combination therapy of curcumin and stem cells.

**Keywords:** Curcumin, Stem Cell, Proliferation, Differentiation

#### **Effect of meat aging on survival of MS2 bacteriophage as a surrogate of enteric viruses on lamb meat**

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**Objectives:** The objective of this study was to determine the role of meat aging process on survival of male specific bacteriophage MS2 on meat.

**Materials and Methods:** MS2 was used as a viral surrogate to study the impact of aging on enteric viruses on lamb meat. They were spiked at concentration of 10, 10<sup>3</sup> or 10<sup>5</sup> pfu on lamb chops sliced into cuts of meats at 10× 10× 1.5 cm<sup>3</sup>, and were stored at 4°C for 14 days. Physicochemical characteristics such as pH, oxidation-reduction potential, water holding capacity and total count of mesophilic bacteria as well as MS2 were measured during the aging.

**Results:** The results indicated that the aging were not sufficient to completely inactivate all spiked MS2 on the lamb meat. However, physicochemical changes during muscle convert

to meat significantly reduced MS2 survival (P<0.05).

**Conclusion:** The results also indicated that by increasing the spiked concentration of MS2, the survival rate of virus was significantly increased (P<0.05).

**Keywords:** Aging process, Enteric virus, Lamb meat, MS2 bacteriophage, Physicochemical properties

#### **Cut-off point of waist circumference for Metabolic Syndrome components among Turkman and non-Turkman ethnic adults in the north of Iran**

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**Objectives:** The MetS (metabolic syndrome) is the main risk factor for cardiovascular disease and the aim of this study was to compare the differentiate ability of waist circumference in the prediction of relevant optimal cut-off in Turkman and non-Turkman people in the north of Iran.

**Materials and Methods:** 248 subjects aged 25-70 years have been chosen from 25 clusters with 10 cases. ATP-III method was used for diagnosis of MetS. P-value <0.05 considered statistically significant. The optimal cut-off and the corresponding sensitivity and specificity for age have been estimated in the threshold that maximizes the sum of sensitivity and specificity or equivalently maximizes in ROC curve operating points.

**Results:** The statistical differences were significant between Turkman and non-Turkman groups based on the mean of HPLC (P=0.006), LDLc (P=0.028), cholesterol (P=0.016), TG (P=0.015) and FBS (P=0.001). In the non-Turkman group, the association between WC and TG, LDLc and FBS was positive significant (P<0.05 for all) but it was negative with HDLc (P=0.001). The association between WC and cholesterol level was not significant. The cut-off values of WC for hyper TG, HDLc low and diabetes were respectively higher 6.0, 7.25 and 8.25 cm in the non-Turkman group than in Turkman group, however; based on hypercholesterolemia and LDLc it was lower in non-Turkman than in Turkman group.

**Conclusion:** The cut-off value of WC for MetS in Turkman is higher than in non-Turkman groups (90.5 vs 89.5). In addition, for all of the MetS

components, it was higher in Turkman group than in the non-Turkman group, but it is inverse based on cholesterol level. It seems the genetic has a protective role based on the cholesterol in Turkman people.

**Keywords:** Metabolic Syndrome, Adults, AUC, Iran

#### **A review of the effects of flaxseed oil on non-alcoholic fatty liver disease (NAFLD)**

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**Objectives:** Non-Alcoholic Fatty Liver Disease (NAFLD) is one of the most common of chronic liver diseases and also is a manifestation of metabolic syndrome, which can range from hepatitis to cirrhosis and liver cancer. Its main causes include obesity, insulin resistance, hyperglycemia, diabetes type II and hyperlipidemia. The present review summarized the available evidence about the pathophysiology of NAFLD and the therapeutic effects of flaxseed oil on it.

**Materials and Methods:** Key words including Nonalcoholic Fatty Liver, PUFA, Flaxseed oil, and Diet have been searched in PubMed database and Google Scholar between 1995 and 2015.

**Results:** NAFLD is associated with an increased prevalence of obesity worldwide. Although a specific therapeutic strategy does not exist, but the evidence shows the importance of diet in its treatment. Losing weight and eating a healthy diet (reduced in saturated and trans fatty acids and increased in polyunsaturated fatty acids with emphasis on rich sources of omega-3 fatty acids) strongly is one of the most appropriate therapeutic strategies in NAFLD. Recently, long chain omega-3 fatty acids were assumed a therapeutic way for hepatitis because of lessen in hepatic fat accumulation.

**Conclusion:** Healthy diet is a gold standard in the treatment of NAFLD patients and a diet rich in

flaxseed oil is recommended to reduce the risk of NAFLD and elevate remission.

**Keywords:** Fatty liver, Diet, Flax seed, Oils

#### **Safety and efficacy of Cryolipolysis for subcutaneous fat layer reduction**

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**Objectives:** In recent years, body-sculpting became more popular for localized obesity. Anesthesias, downtime for recovery and financial cost with invasive procedure have led to the development of a number of noninvasive methods. One of these methods is Cryolipolysis that uses controlled cooling for destruction of subcutaneous fat tissue. The principle behind it is based on the concept that fat cells may be more susceptible to cooling than the surrounding tissue. This study was carried out to evaluate the volume change of fat following Cryolipolysis treatment in flank, abdomen, arm, thigh, back, chin, knees and male breast with an emphasis on the safety, side effects, patient satisfaction and the long term visibility of fat layer thickness reduction.

**Materials and Methods:** This study is a review of the literatures published during the years 2009-2017. Database such as PubMed, Scopus, Web of Science, Medline and Google Scholar based on the combination of the following **keywords:** Cryolipolysis; fat reduction; body contouring; subcutaneous fat; cosmetic procedure; thermal injury; body sculpting; cold induced fat loss; lipid profile and liver tests.

**Results:** Results of 93 article, 22 reviews and 6 systematic reviews were used as related articles. In a clinical report with the ultrasound of 42 patients, data showed fat layer reduction of 2.8mm in inner thigh and 0.9cm in circumferential measurements. Reduction in the volume of fat in flank is 20% after 2 months and 25% after 6 months. In another study which was performed on 60 people, the results showed 2-5mm reduction in fat layer in double chin and 83% of subjects were satisfied, 80% would recommend submental Cryolipolysis to a friend and 77% reported visible fat reduction. Another study with 528 patient determined the side effects as follow: erythema, edema, bruising and

transient neuralgia. Side effect resolve completely within 14 days after treatment. A recent retrospective review found delayed onset of pain in female. Paradoxical adipose hyperplasia (PAH) was estimated 0.02 1% or 2 in 10000 treatments. Also PAH was more common in males.

**Conclusion:** Cryolipolysis is a promising noninvasive method for body contouring with a limited side effect that resolves without intervention. This method represents a high level of patient satisfaction and results in significant fat reduction when used for localized adiposities.

**Keywords:** Cryolipolysis; reduction fat layer; noninvasive; subcutaneous fat; body sculpting.

### **Comparative Study of Local and Industrial Consumed Eggs from the Aspect of Contamination to Lead as a Heavy Metal in Cold and Warm Seasons in Ahvaz Region**

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3. MSc of Nutrition, Department of Health Education, Academic Center for Education, Culture and Research (ACECR)-Khuzestan, Ahvaz, Iran.

**Objectives:** Health problems related to the water, soil and food pollution is increasing due to the expansion of industrial societies. Due to be rich of protein and essential minerals, egg is used in human societies greatly. Heavy metals such as lead found in egg can be a threat for human health. The aim of this study was the investigation of the amount lead as a heavy metal in local and industrial eggs in warm and cold seasons in Ahvaz region.

**Materials and Methods:** 80 egg samples (40 local and 40 industrial samples) were collected from the area of Ahvaz city. After samples preparation, the amount of lead was measured by using of atomic absorption spectrometry in the laboratory. Data were analyzed by using SPSS version 16 and statistical tests include one sample T-test and Independent T-test.

**Results:** In the present study lead content of industrial eggs in warm and cold seasons was obtained  $0.16 \pm 0.2$  and  $0.18 \pm 0.2$  respectively. Also, the lead content of local eggs in warm and cold seasons was reported  $0.8 \pm 1$  and  $0.11 \pm 0.13$  respectively. There were no significant

differences between lead content of local and industrial egg samples comparatively. Generally lead content of industrial egg samples was significantly higher than local samples ( $P=0.047$ ).

**Conclusion:** Generally the amount of lead as a heavy metal in industrial samples was obtained higher than allowable limit and in the local samples it was obtained less than allowable limit. Due to the importance of food contamination to heavy metals, consistent monitoring of these metals in eggs and other food stuffs is recommended in society.

**Keywords:** egg, contamination, heavy metal, lead

### **Meat consumption and risk of esophageal cancer**

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**Objectives:** Esophageal squamous cell carcinoma (ESCC) is one of the most common types of cancer with poor survival rate. There is a mount of data on the association of diet, such as meat consumption, with the increased risk of colorectal cancer, pancreatic cancer, and bladder cancer. Also, higher consumption of white meat might decrease the risk of lung cancer and ovarian cancer. The data on meat (e.g., red meat, processed meat, white meat, poultry, and fish) consumption and EC risk are in somehow controversies epidemiological studies.

**Materials and Methods:** Here we assess the impact of meat consumption on ESCC. It has been shown that there is a direct correlation between consumption of red meat, lamb, and boiled meat and the risk of ESCC.

**Results:** Taken together, meat consumption is related to the risk of esophageal cancer, which depends on meat type and histological type of ESCC.

**Conclusion:** In particular, high intake of red meat and low intake of poultry are correlated with an enhanced risk of ESCC. Moreover, increasing fish or poultry intake, without decreasing red meat intake, may be less beneficial for cancer prevention.

**Keywords:** ESCC; red and white meat; nutrition pattern.

### **Evaluation of dietary habits and urinary and blood cadmium of some gastrointestinal cancer patients with healthy people**

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**Objectives:** Cancer is one of the main health problems in the world. Among all cancers, gastrointestinal cancer has more prevalence. About 20 percent of new cancer cases are allocated to gastrointestinal cancer. Heavy metals exposure such as cadmium has been shown to have strong correlation with the incidence of many cancers. This study was aimed to assay dietary habits, blood and urinary levels of cadmium of patients with some gastrointestinal cancer.

**Materials and Methods:** This comparative cross sectional study was carried out on 111 patients with some gastrointestinal cancer as cases and 111 healthy people. Patients were recruited after histopathological confirmation for cancer. Demographic questionnaire including age, gender and smoking status and also food frequency questionnaire containing 84 items divided into six food groups were completed for participants. Urine and blood samples were collected after an overnight fasting. The concentration of cadmium in blood and urine (adjusted by creatinine) was measured by means of graphite furnace atomic absorption spectrophotometer after acid digestion.

**Results:** The concentration of urinary and blood cadmium was higher in cancer patients in comparison with controls (urine:  $3.35 \pm 1.80 \mu\text{g/g}$  creatinine vs.  $2.09 \pm 1.12 \mu\text{g/g}$  creatinine,  $p < 0.001$ ; blood:  $2.57 \pm 1.7 \mu\text{g}$  vs.  $2.10 \pm 1.83 \mu\text{g}$ ,  $p = 0.037$ ). Age and gender showed a significantly positive correlation with the incidence of cancer. The risk of cancer incidence increased 5% per year ( $p < 0.001$ ) and odds ratio for males were 75% more than females ( $p = 0.037$ ). The results of regression analysis showed that urinary cadmium after adjusting for confounding variables had a significant correlation with cancer; however, this correlation was not observed for blood cadmium. There was no significant difference between dietary habits of the patients and healthy people. In addition,

there was no correlation between dietary habits and urinary and blood cadmium.

**Conclusion:** According to the results, the urinary and blood cadmium concentrations in cancer patients were significantly higher than healthy subjects. Future studies are suggested to identify other environmental factors affecting the urine and blood cadmium levels in cancer patients.

**Keywords:** Gastrointestinal system, Cancer, Cadmium, Dietary Habits

#### **Dietary intake of Carotenoids were negatively related to aggression scores in adolescent girls**

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**Objectives:** There are limited data on the relationship between dietary intake and aggression. There appears to be a growing prevalence of aggressive behavior in some populations, so we aimed to analyze the relationship between the dietary intake and aggressive behavior in adolescent girls living in northeastern Iran.

**Materials and Methods:** In this cross-sectional study, data on aggression score and related dietary intake was obtained for 988 adolescent girls between 12- 18 years of age in different areas of the cities of Mashhad and Sabzevar. A valid and reliable food frequency questionnaire (FFQ) containing questions about 168 food items, was used to obtain dietary intake of the study participants. Aggression score was



determined using a validated Persian version of Buss-Perry questionnaire.

**Results:** After adjustment for potential confounding factors, we found that those in the highest quartile of energy intake tended to have a high aggression score than those in the lowest quartile ( $p=0.01$ ). There was an inverse association between daily intake of soluble fiber ( $p=0.003$ ), insoluble fiber ( $p=0.001$ ),  $\alpha$  carotene ( $p=0.02$ ) and  $\beta$  carotene ( $p=0.04$ ) with aggression score.

**Conclusion:** We found that a high-energy intake was associated with a high aggression score, while lower intake of soluble and insoluble fiber and  $\alpha$  and  $\beta$  carotene was associated with a greater risk of aggression in adolescent.

**Keywords:** Carotenoids, aggression, adolescent girls

### The Effect of Metabolic Syndrome on Prevalence of Fatty Liver among Students

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**Objectives:** fatty liver is a typical inflammatory liver that is the result of the excess accumulation of fat in liver tissue. Wrong dietary habits and lifestyle has decreased the age range of this disease. Due to the lack of researches about the prevalence of this disease among students, this study aimed to investigate the effect of metabolic syndrome on prevalence of fatty liver among students separately in both gender.

**Materials and Methods:** A total of 150 students (80 men and 70 women) were participated in this cross-sectional study. Data gathering was conducted by questionnaire and blood test. Also, all serological interpretations were adjusted with global standard of Adult Treatment Test III (ALT III).

**Results:** The prevalence of the most prevalent effective factors on diagnosis of fatty liver was as follows: fatty liver 16.66% (17.5% for men and 15.7% for women); metabolic syndrome 19.33% (20% for men and 18.57% for women); high blood sugar 17.33%; high triglyceride 16.25%; increase in ALT with 34.66% and high AST with 25.33%.

**Conclusion:** The results showed that high ALT and AST levels are not necessarily symptoms of fatty liver. However, the symptoms of metabolic syndrome including high blood sugar, high blood pressure and high triglyceride are effective on fatty liver and metabolic syndrome and its symptoms are among causes of fatty liver.

**Keywords:** fatty liver, metabolic syndrome, students.

### Crocus sativus as a natural food coloring and flavoring attenuates colitis-induced colorectal carcinogenesis

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**Objectives:** Ulcerative colitis is a chronic inflammatory bowel disease with high incidence and prevalence worldwide. In this study the therapeutic potency of crocin, a biochemically active component of *Crocus sativus* L., was investigated on dextran sodium sulfate (DSS)-induced colitis mice model.

**Materials and Methods:** The expression of hs-CRP levels, as a negative inflammatory phase, were assessed by BT3000 autoanalyzer to evaluate up-regulation of this marker in both serum and colon tissue homogenates. Then the expression of cyclin D1 and GSK-3 $\beta$  were assessed by western blotting in C57BL6 mice colon colitis tissues to evaluate clinicopathological significance of canonical Wnt  $\beta$ -catenin and cell proliferation.

**Results:** Our results showed that crocin inhibits colitis-induced colorectal carcinogenesis by down-regulation of cyclin D1 expression and inactivation of Wnt/ $\beta$ -catenin signaling pathway by dephosphorylation and activation of glycogen synthase kinase 3 $\beta$  (GSK-3 $\beta$ ), a key inhibitor of Wnt signaling, in colon tissue homogenates. Furthermore, our results demonstrated that crocin reduces hs-CRP in both serum and colon tissue homogenates.

**Conclusion:** These results clearly showed that crocin is a novel therapeutic agent with low toxicity with great clinical significance in terms of the treatment of colitis patients.

**Keywords:** Colitis, Crocin, Inflammation, Colon cancer

### Antitumor effect of Resveratrol in colon cancer

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**Objectives:** Colon cancer is one of the most common cancers in people in the world. Several studies have connected the utilization of fruits and vegetable to a decrease risk of colorectal tumor and little organic product is especially rich wellsprings of phytochemical, such as resveratrol. Resveratrol is an active polyphenol with various physiological properties including antitumor function, particularly in colorectal cancer. Resveratrol induces apoptosis of tumor cells and inhibits inflammatory factor.

**Materials and Methods:** The search was run in 2017 and all articles were collected since 2010. We searched the PubMed, Elsevier, MEDLINE, google scholar, four other databases .we conducted full-text searches and applied restrictions to language, human study and publication date of documents.

**Results:** The underlying overview of 90 gathered articles, According to the criteria of our paper, a total of 20 articles were accepted and reviewed. The low oral bioavailability demonstrated for this polyphenol, with the digestive tract to its absorption, has advanced the large intestine as a potential target site for its chemo preventive movement. Extraordinary compared to other portrayed Resveratrol, has been known as a cancer prevention agent as an antioxidant, anti-aging, anti-inflammation. resveratrol has various pharmacological function, which incorporate malignancy prevention, a cholesterol-lowering impact, improved insulin sensitivity, and expanded lifespan.

**Conclusion:** This review condenses comes about identifying with the potential utilization of Resveratrol as tumor chemo preventive operators, their mechanism of function, and additionally their pharmacokinetics and adequacy for the counteractive action of colorectal cancer in people. The investigation proposed a promising anticancer action of resveratrol. Calorie restriction pathway might be one of the main thrusts for this action.

**Keywords:** Resveratrol, colon neoplasm, apoptosis

### Functional and microstructure properties of textured whole Soy bean

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**Objectives:** Scientific reports have shown that the quality and quantity of protein in daily foods with higher content of protein like soy, which is the most important source of commercial protein with desirable nutritional characteristics and functional properties. Soy protein is a good alternative for animal proteins, especially in the form of textured soy protein.

**Materials and Methods:** The aim of this research was finding optimal process conditions to produce textured soy protein with higher fat content which could be very useful in food industry for products contain higher content of protein and fat. Response surface methodology for designing experiments plan and optimization was used. Defatted soy grits was substituted with pre conditioned and grinded soy beans by 20 percent and then a central composite design using Design-Expert® software was planned to study the effects of process variables including barrel temperature ( 145- 185 °C), helix speed (250 -325 rpm) and feed moisture content (20-27%) on functional, physicochemical and textural properties of textured soy protein, including water holding capacity, bulk density, color, protein dispersibility index, water absorption, fat absorption, hardness, cohesiveness and chewiness. The next step was finding optimized condition to produce texturized soy protein with the best quality and higher fat content. The optimal range of process variables to achieve optimum conditions in terms of texture, functional, chemical, color properties for the production of TSP were temperatures of ( 175 ± 2) °C, 20% moisture content and the helix speed of 287/5 rpm

**Results:** Quality control of optimized products and control sample during storage showed that high temperature of extrusion process and alkaline preconditioning has not undesirable impact on quality and peroxide value increase.

**Conclusion:** High temperature of extrusion process and alkaline preconditioning does not have undesirable impact on quality and peroxide value increase.

**Keywords:** Textured Soy Protein, Fat, Functional Properties, Protein Dispersibility Index, response surface methodology.

### Study on the consumption of fast foods and snacks in the employees of government departments of Tabriz in 1395

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**Objectives:** One of the important issues affecting the health of the community is the tendency of people to use ready-made and fast food. Therefore, it is very important to know the reasons for using fast food, how much it is consumed and how to prevent it. The purpose of this study is to assess the use of fast food, refreshments and carbonated beverages by state employees.

**Materials and Methods:** In this descriptive study, 268 employees of government departments were evaluated. Initially, anthropometric tests were performed and nutritional questionnaire was completed for the subjects. The results were analyzed by SPSS software using descriptive statistics.

**Results:** In this study, 44% were female and 56% were male. The literacy rate of 20.1% of subjects was less than diploma, 30.6% had a diploma and 45.5% had a bachelor's and master's degrees and 3.8 doctoral degrees. The BMI is as follows: 0.8% were slim, 23% were natural weight, 48% overweight and 28.2% obese. Findings indicate that 1.9% of studied people were on a weekly basis, 2.16% on a monthly basis, and 76.5% of them rarely used fast food. Also, 24.6% of cases do not use carbonated beverages at all.

**Conclusion:** By educating healthy eating and increasing the awareness of the public about the harm and consequences of using this type of food can be used to reduce the fast food consumption index in the community.

**Keywords:** Fast Food, Health, Government Employees

#### **A review of the use of fruits and vegetables in the staff of government departments of Tabriz in 1395**

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**Objectives:** Inadequate intake of fruits and vegetables as important components of healthy diet can be a risk factor for many chronic diseases. The aim of this study was to measure the amount of fruits and vegetables consumed by employees of government departments of Tabriz city

**Materials and Methods:** In this descriptive study, 268 employees of government departments of Tabriz were studied in 1395. Initially, anthropometric measurements and then information were collected by completing

the questionnaire. Data were analyzed using SPSS software.

**Results:** In this study, 44% were female and 56% were male. The literacy rate of 20.1% of subjects was less than diploma, 30.6% had a diploma and 45.5% had a bachelor's and master's degrees and 3.8 doctoral degrees. The BMI is as follows: 0.8% were slim, 23% were natural weight, 48% overweight and 28.2% obese. Fruit consumption was 57.5%, 2 units or higher, 34% less than 2 units, and the rest was rarely. Also, in the case of vegetable consumption, 27.6% of employees were 3 units or more, 50% of employees were less than two units, and the rest rarely used vegetable groups.

**Conclusion:** According to the results of the study, it seems that accurate policy is needed to provide educational programs and to control and evaluate them in order to promote nutritional patterns among employees and the general public.

**Keywords:** Fruit, Vegetables, Governmental staff

#### **Tracheal relaxant effect of *Zataria multiflora* Boiss L., possible mechanisms and clinical application**

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**Objectives:** *Zataria multiflora* Boiss (*Z. multiflora*) belongs to the Lamiaceae family and used traditionally for culinary and medicinal purposes. Different therapeutic properties of *Z. multiflora* including the effects on asthma and dyspnea, digestive and gynecology disorders have been suggested. The relaxant effects of this plant and its constituents on different types of smooth muscle including trachea, gastrointestinal, urogenital, and vascular smooth muscle were shown. The relaxant effect of *Z. multiflora* could be of therapeutic importance, such as bronchodilation in asthma, vasodilation in hypertension and relieving digestive or urogenital disorders.

**Materials and Methods:** This review article was prepared by searching for the terms: *Z. multiflora*, smooth muscles and relaxant effects.

**Results:** The bronchodilatory effect of the plant extract and carvacrol on smooth muscle may be due to several different mechanisms including inhibitory effect on histamine (H<sub>1</sub>) and muscarinic receptors, a stimulatory effect of the

beta adrenergic receptor and calcium channel blocking effects.

**Conclusion:** the relaxant effects of *Z. multiflora* and its constituents on various types of smooth muscles and its possible mechanisms of this effect were reviewed. In fact, if *Z. multiflora* and its constituents have smooth muscles relaxant effects, they could have a potential therapeutic effect on asthma and chronic obstructive pulmonary diseases (COPD).

**Keywords:** *Zataria multiflora* Boiss L, Carvacrol, Relaxant effect, Possible mechanisms

### The effect of supportive program on the developmental condition of children under the age of six years in Tabriz from 2013 to 2015

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**Objectives:** Current reports in the country indicate that malnutrition is prevalent in underweight, sluggish and short stature in children under the age of 6 years. This study was conducted to examine the effectiveness of this intervention in poor nutrition children

**Materials and Methods:** This descriptive-analytic study was performed on 228 children aged 6-59 months with a diet that received the food basket for 6 to 24 months. At first, children who did not grow enough in two health care were selected, then referred to the doctor, and those who had no other illness and only the poor family were introduced to the Imam Khomeini Committee for support to find a basket of food. And monitored monthly to determine the impact of this intervention on the child's growth status

**Results:** In this study, the percentage of girls was 67 and the percentage of boys was 33. 3.5% of the children studied were under one year and 96.5% were above one year old, 85.3% were urban (mostly marginalized) and 14.7% were rural the percentage of children's developmental disorder recovery in the first year was 61%, reaching 73.2% in the second year, reaching 79.12% in the third year.

**Conclusion:** The results indicate the effect of food basket feeding on the development of children under the age of six years. As a result of identifying and timely interventions (educational and supportive) for the cause of growth impairment, it will prevent irreparable malnutrition in this age group.

**Keywords:** children, poor households, malnutrition, supportive counseling

### Omega-3 Fatty Acid Could decrease serum Myostatin in Male Patients with Coronary Artery Disease: A Randomized, Double-Blind, Placebo-Controlled Trial

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**Objectives:** Myostatin (Mstn) is a family member of TGF- $\beta$  that recognized as negative regulator of skeletal muscles growth, increased in patients with CVD diseases, and contribute in CHF induced Cachexia. The purpose of this study was to survey effect of omega 3 supplementation on myostatin in CVD patient.

**Materials and Methods:** This study was conducted as a randomized, double-blind, placebo, controlled trial in 8 weeks. Forty-two CVD male patient (omega3=21 placebo=21). The participants were divided into 2 groups (intervention and placebo) by the permuted block randomization method. The intervention group allocated to receive four softgels of omega-3 daily (2 softgels after lunch and 2 softgels after dinner), containing 720 mg eicosapentaenoic acid (EPA) and 480 mg docosahexaenoic acid (DHA), while the placebo group received four softgels containing paraffin in edible form. Serum myostatin concentration was assessed by ELISA kit. Paired t-test was conducted for within-group comparisons (baseline vs post-intervention) and independent Student's t-test was used for comparisons between two groups.

**Results:** At 2month of follow-up, patients who received daily 4 soft gels of Omega-3 fatty acids at a dose of 480 mg DHA and 720 mg EPA had a decrease serum myostatin compared to control group (P = 0.04).

**Conclusion:** Omega-3 fatty acids supplementation at a dose of 480 mg DHA and 720 mg EPA decrease serum Mstn and may suggest as a new therapeutic agent in CVD patient.

**Keywords:** Cardiovascular disease (CVD), myostatin (Mstn), eicosapentaenoic acid (EPA), docosahexaenoic acid (DHA)

### Quality assessment of low-calorie and prebiotic gluten-free biscuits

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**Objectives:** The aim of this study was to evaluate the effects of inulin (IN) as fat replacer and prebiotic on gluten-free biscuits and dough.

**Materials and Methods:** In this study four formulations were prepared including control, with no replacement, and three formulations in which 25, 50 and 75 % of fat was replaced by inulin. The influence of prebiotics on the properties of biscuit dough was studied via texture profile analysis including firmness, cohesiveness, adhesiveness, gumminess and springiness. Biscuit quality was assessed by spreading behavior, texture and surface characteristics, chemical properties and sensory evaluation.

**Results:** The gumminess, cohesiveness and firmness of dough showed significantly increase than control when substituted fiber percent increased. Hardness of biscuits (except IN 25) and Biscuit darkness increased significantly than control with enhancing of fat replacement percent. In general, water activity, moisture, total fat and peroxide index decreased significantly as fat replacement increased with deferent percent. Gluten-free biscuits contain IN had significantly higher fiber (9.46gr/ 100) and carbohydrate (84.44 gr/ 100) and lower calorie (396.5 18 Kcal) and fat content (3.92 gr/ 100) than control ones (2.02, 76.49, 443.38, 12.65 Respectively). The consumers did not find significant differences in acceptability between the control biscuits and the biscuits with 25% of fat replaced by IN expect color and flavor that were better than control.

**Conclusion:** Low-fat/ low calorie GF biscuits contain IN25 were similar to the control biscuits, and they can have additional health benefits derived from IN presence.

**Keywords:** Gluten-free, Biscuit, Inulin, Texture, Sensory

#### **Exclusive breastfeeding and its duration related to mental concentration and short term memory**

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**Objectives:** The aim of this study was to investigate the relationship between exclusive breastfeeding, mental concentration and short-term memory in first and second-grade primary school children.

**Materials and Methods:** In this cross-sectional study, a total of 90, 7-8-year-old students were studied in Mashhad, Iran. The history and duration of breastfeeding were asked from the

children's mothers, mental concentration and short-term memory were measured by Toulouse Pieron and Digit learning tests respectively.

**Results:** The average of the breastfeeding period was a  $5.72 \pm 6.89$  month and the mean of total scores was  $5.12 \pm 32.44$  for Toulouse Pieron test and  $8.57 \pm 6.52$  for Digit learning test in all participants. The correlation between the Toulouse Pieron and Digit learning test and breastfeeding history indicated that exclusively breastfed children showed higher test results and therefore, better mental concentration and short term memory ( $P < 0.001$ ).

**Conclusion:** Based on our findings, exclusive breastfeeding has a positive effect on mental concentration and short-term memory with respect to the duration of it.

**Keywords:** Breastfeeding, Mental concentration, Short-term memory

#### **Ramadan Fasting Decreases the Activity of Matrix Metalloproteinases 2 And 9 In Patients with Non-Alcoholic Fatty Liver Disease (NAFLD)**

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**Objectives:** Non-Alcoholic Fatty Liver Disease (NAFLD) is a major public health issue due to its high prevalence worldwide. NAFLD is characterized by excessive accumulation of triglyceride in the hepatocyte due to increased inflow of free fatty acids and de novo lipogenesis caused by insulin resistance in the adipose tissue. At present, therapeutic options of NAFLD are limited to medications that reduce risk factors. The first line treatment includes lifestyle modification and weight loss combined with exercise. Ramadan is the holiest month of the Islamic calendar during which healthy Muslim adults are required to fast every day from dawn to sunset. Thus, we have evaluated the effects of Ramadan fasting on metabolic conditions in patients with NAFLD.

**Materials and Methods:** 62 volunteer patients with NAFLD in the age range of 18-65 years were enrolled in the study. The blood samples of subjects with an average 12-hours fasting were taken before and after Ramadan. The relative activity of Matrix metalloproteinases 2 and 9 was measured by Zymography. The data analysis was

performed by SPSS 16.00 software. The  $p$ -value  $<0.05$  was considered statistically significant.

**Results:** A significant reduction of serum Matrix metalloproteinases 2 and 9 were observed after Ramadan fasting ( $p<0.05$ ).

**Conclusion:** The results of this research reveal that among patients with NAFLD, fasting during Ramadan may exert an inhibitory effect on enzyme activity of Matrix metalloproteinase and therefore, can improve body inflammation after a month of fasting. However, further studies are required to confirm the findings of this paper.

**Keywords:** Nonalcoholic fatty liver disease; Ramadan fasting; Matrix metalloproteinases.

### Effects Of Ramadan Fasting on Oxidative Stress And Inflammation In Patients With Non-Alcoholic Fatty Liver Disease (NAFLD)

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**Objectives:** Non-Alcoholic Fatty Liver Disease (NAFLD) is the most common chronic liver disease, which can lead to liver cirrhosis. Today, the primary method for treating Non-alcoholic fatty liver disease is gradual loss of weight with the help of diet and proper physical activity through changing lifestyle. Islamic fasting is a lifestyle technique that includes fixed dietary restriction. This study was conducted to evaluate the effect of Ramadan fasting on the Non-alcoholic fatty liver disease.

**Materials and Methods:** 62 Non-alcoholic fatty liver patients in the age range of 18-65 years were included in the study after diagnosis by a specialist. The blood samples of subjects with an average 12-hours fasting were taken before and after Ramadan. High sensitivity C-reactive protein (hs-CRP) levels and Gamma glutamyl transferase (GGT) were measured by Autoanalyzer BT-3500. Superoxide dismutase and catalase enzymes were analyzed by spectrophotometry. The data analysis was performed by SPSS 16.00 software. The  $p$ -value  $<0.05$  was considered statistically significant.

**Results:** At the end of Ramadan, there was a significant decline in the levels of hs-CRP ( $p<0.05$ ). Superoxide dismutase and catalase enzymes activity increased significantly ( $p<0.05$ ). However, the changes of gamma-

glutamyl transferase were not significant ( $p>0.05$ ).

**Conclusion:** The results of this study indicate the increased activity of antioxidant enzymes and lower levels of hs-CRP after one month of fasting, which can decline inflammation and oxidative stress in Non-alcoholic fatty liver patients. Therefore, it can be concluded that fasting does not have any negative effects on patients with Non-alcoholic fatty liver and it can have positive results in some cases. However, further studies are required to corroborate these findings.

**Keywords:** Nonalcoholic fatty liver disease; Ramadan fasting; Oxidative enzyme.

### Relationship between nutritional status of elderly people and cardiovascular diseases

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**Objectives:** Older age is a vulnerable stage from the nutritional point of view. Nutritional deficiencies are frequent and their consequences are serious. That is why restricting diets is dangerous and must be considered with precaution. Though in developed countries the number of elderly people is increasing, the treatment of cardiovascular diseases in this age group is based on extrapolating the recommendations set for adults of minor age, and this may be incorrect. High cholesterol and saturated fat intakes are recognized as harmful, but diet restrictions can lead to other nutritional deficiencies that can be damaging in relation to cardiovascular diseases. To improve the diet can be of great help in this sense. Diet restrictions concerning one or more foodstuffs must be introduced with caution and control, watching the nutritional status of the elderly person. It must be avoided that the fight against cardiovascular diseases may lead to other nutritional deficiencies with similar or worse sanitary repercussions. So the aim of this study was to investigate the relationship between nutritional status of elderly people and cardiovascular diseases in the rural region of Tabriz.

**Materials and Methods:** The study was descriptive and randomized. The participants were 150 elderly people from the rural house health's of Tabriz. The data were collected by questionnaire and consult with the participants. The data were analyzed by SPSS.

**Results:** The findings show that 70% of the participants was female and 30% was male 20% of the participants had normal BMI, 48%

overweight and 32% were obese. More than 80% of the participants ate fatty foods and had high blood lipids. 15% suffered from cardiovascular diseases and used drug.

**Conclusion:** This study shows the high prevalence of overweight in rural elderly and emphasizes the importance of addressing their nutritional status in order to reduce the risk of diseases such as diabetes and cardiovascular diseases.

**Keywords:** nutritional status; elderly people; cardiovascular diseases.

### Assessing the serum zinc concentration in Human T-cell lymphotropic virus (HTLV) infected subjects

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**Objectives:** Zn is an essential trace element for the immune system. Zn deficiency may result in non-specific killing activity and functional loss of the Natural killer cells. Human T-cell lymphotropic virus (HTLV) is a retrovirus which mainly infects CD4<sup>+</sup> T cells and can cause adult T-cell leukemia lymphoma (ATLL) as well as a neurologic disease called HTLV associated myelopathy/tropical spastic paraparesis (HAM/TSP). These diseases affect only 3-5% of HTLV positive patients; while the majority are asymptomatic carriers. The difference in the immunity system function among HTLV carriers is one of the reasons presented for this fact. As the Zinc-deficient patients are shown to have severe immune dysfunctions, we studied the relation between serum zinc concentration and HTLV infection in this study.

**Materials and Methods:** In a retrospective study, the serum zinc concentration of 170 subjects who were positive for HTLV- 1 or 2 was compared with 170 unaffected controls who matched them by age, sex and socioeconomic status. HTLV- 1/2 infection was tested using Enzyme linked immune sorbent assay (ELISA) kits and confirmed using PCR. Serum zinc was measured by flame atomic absorption (Varian AA240FS). The data were analyzed using SPSS 18 software.

**Results:** The mean serum zinc concentration was  $82.99 \pm 15.46$   $\mu\text{g/dl}$  in patients with HTLV 1/2 infection and  $87.7 \pm 20.74$   $\mu\text{g/dl}$  in the control

group which was significantly different ( $p = 0.019$ ).

**Conclusion:** The serum zinc concentration was higher in patients who were negative for HTLV 1/2 infection. Thus it could be assumed that HTLV 1/2 infection might alter the zinc metabolism. The results also could mean that zinc deficiency could increase the patients susceptibility to HTLV infection. Larger studies are needed to investigate.

**Keywords:** HTLV, Zinc, ELISA

### Neuroprotective agents in the intensive care unit; a review

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1. Department of pharmacotherapy, Tehran University of Medical Sciences, Tehran, Iran.

**Objectives:** Neuroprotection or prevention of neuronal loss is a complicated molecular process that mediated by various cellular pathways. Use of different pharmaceutical agent as neuroprotectant reported by researchers especially in last decades.

**Materials and Methods:** Published articles, books, and conference papers in English until 2017 from PubMed, Scopus, Google Scholar with subject of neuroprotection and neuroprotective agents were used.

**Results:** These neuroprotective agents act by inhibition of inflammatory process and apoptosis, attenuation of oxidative stress and reduction in free radicals. Control of this injurious molecular process is essential to the reduction of neuronal injuries and associated with better functional outcome and recovery of the patients admitted to the intensive care unit.

**Conclusion:** This study reviews neuroprotective agents and mechanisms of their action in the central nervous system damages.

**Keywords:** Neuroprotection, Neuroprotective agents, ICU, Stroke, Apoptosis, Neuronal injuries

### Insulin resistance and PPAR- $\gamma$ : a novel treatment pathway for treatment of Multiple Sclerosis

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**Objectives:** Multiple sclerosis (MS) is a chronic and progressive autoimmune disease of the central nervous system (CNS). Despite complicated mechanism of multiple sclerosis, inflammation is found to play a major role in the characteristic white matter lesions, demyelination, and axonal degeneration associated with MS. Relationship between MS

and systemic insulin abnormalities such as diabetes, insulin resistance and metabolic syndrome have been considered with very little attention.

**Materials and Methods:** This review provides summary of literatures related to relationship between insulin abnormality and multiple sclerosis to define a line in treatment of MS.

**Results:** Potential mechanisms for these effects include insulin's role in cerebral glucose metabolism, peptide regulation, modulation of neurotransmitter levels, and modulation of many aspects of the inflammatory network. However, during chronic hyperinsulinemia or chronic inflammation, insulin may exacerbate inflammatory responses and increase markers of oxidative stress. In humans, co-administration of insulin and lipopolysaccharide produces a synergistic increase in plasma concentrations of C-reactive protein and proinflammatory cytokines (IL-1 $\beta$ , IL-6, tumor necrosis factor  $\alpha$  [TNF $\alpha$ ]). In brain, peroxisome proliferator-activated receptor- $\gamma$  (PPAR $\gamma$ ) has been detected in neurons and astrocytes, where it influences cell survival, often through anti-inflammatory actions. In addition, in the periphery, PPAR $\gamma$  is expressed highly in adipocytes, where it plays a crucial role in adipogenesis, triglyceride storage, and regulation of free fatty acid levels. Also, PPAR $\gamma$  effects on insulin sensitivity by increasing fatty acid influx into adipocytes and reducing fatty acid availability for muscles, decreases TNF $\alpha$  expression, and shifts fat from visceral to subcutaneous depots. PPAR $\gamma$  appears to play a role in EAE, an animal model of human MS. It has recently been reported that PPAR $\gamma$  agonists inhibit the activation of microglia and astrocytes, and dose-dependently reduce the lipopolysaccharide-induced production of the proinflammatory cytokines TNF- $\alpha$ , IL-1 $\beta$ , and IL-6 and chemokine monocyte chemoattractant protein-1 (MCP-1).

**Conclusion:** PPAR $\gamma$  agonists may offer a novel class of therapeutic agents for neuroinflammatory conditions and multiple sclerosis.

**Keywords:** Insulin, Multiple sclerosis, inflammation.

### Nutritional Status of Children with Congenital Heart Disease

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**Objectives:** Congenital heart disease accounts for more infant deaths than all other congenital defects put together. Malnutrition is a common cause of morbidity in children with congenital heart disease (CHD). In this study we aimed to determine the nutritional status of Children with Congenital Heart Disease.

**Materials and Methods:** In this cross-sectional study we enrolled 130 children with CHD aged 1-16 years old that referred to Ghaem Hospital in 2016-2017. Anthropometric factors, CHD disease history, nutritional status, z-scores, blood biochemical factors such as vitamins, CBC, Fe, Folic acid were determined. Finally the data were analyzed by SPSS version 16.

**Results:** A marked degree of undernutrition was evident in all children; 52% had weight less than the third centile, 37% were below the third centile for height, and 12.5% were below the third centile for triceps skin fold thickness and 18.8% for subscapular skin fold thickness. Mid-arm circumference and arm muscle circumference were below the fifth centile in 20.1% and 16.7% of children respectively. Five or more of the 29 biochemical and haematological measurements were abnormal in 83.3% of patients; 10 or more were abnormal in 12.5% of patients.

**Conclusion:** In conclusion, Malnutrition in children with congenital heart disease remains common. Nutritional interventions after diagnosis were suggested to prevent malnutrition and patients have normal weight and height.

**Keywords:** Nutritional Status, Congenital Heart Disease, Children.

### Investigation of Efficacy and safety of Spinal-Z on clinical signs of the patients with gastroesophageal cancer

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**Objectives:** The purpose of this study is to investigate the efficacy and safety of spinal-Z in the patients with esophageal and stomach adenocarcinoma, and squamous cell carcinoma of the esophagus.

**Materials and Methods:** Sixty-one patients with malignancies of the upper gastrointestinal tract were participated in a double-blind prospective clinical trial. Patients randomly assigned to one of two groups of treatment and control. Six capsules



of Spinal-Z were prescribed to the patients with the regimen of 600 mg/m<sup>2</sup>/day and placebo to the control group for six months.

**Results:** Results of this study showed no significant difference between two groups regarding age, sex, duration of cancer, type of cancer and family history of cancer. There was a significant difference in the abdominal pain, heartburn, constipation and vomiting between the two groups before and after the intervention. Evaluation of drug side effects showed no significant difference regarding coughing, respiratory, complained of itching, headache and complained of dizziness between two groups before and after the trial.

**Conclusion:** This study indicates that Spinal-Z is efficient and safe to the patient with the upper gastrointestinal tract cancers.

**Keywords:** Gastroesophageal cancers, adenocarcinoma, squamous cell carcinoma of esophagus, Peganum harmala, Dracocephalum kotschyii Boiss, Spinal-Z

### **Antibiotic use in the management of nosocomial infection in Intensive Care Unit (ICU)**

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1. Department of Pharmacotherapy, Tehran University of Medical Sciences, Tehran, Iran.

**Objectives:** Nosocomial infection (NI) among patients admitted to intensive care unit is a challenging area for healthcare professionals.

**Materials and Methods:** Published articles in English until 2017 from PubMed, Scopus, Google Scholar with subject of nosocomial infection were used.

**Results:** Surgical site infections (SSI) and three other types of infections commonly seen in ICU patient's; central-line associated bloodstream infections (CLABSI), catheter-associated urinary tract infections (CAUTI), and ventilator-associated pneumonia (VAP) account for more than 80 percent of all NIs. Increased level of microbial resistance in the intensive care unit make the combination antimicrobial therapy necessary because uncontrolled bacterial infection in critically ill patients lead to higher rate of mortality and hospital stay.

**Conclusion:** Education of staff and healthcare provider in the ICU, determination of common microbial agents and resistance in every ICU, adequate antimicrobial therapy and choose of correct antimicrobial agents are crucial in the prevention and control of NI.

**Keywords:** Nosocomial infection, ICU, Surgical site infections, catheter-associated urinary tract

infections, ventilator-associated pneumonia, central-line associated bloodstream infections

### **Performance of lentil and chickpea in deeply fried crust model (DFCM): Oil barrier and crispy properties**

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**Objectives:** In recent decades, as the result of industrial life, consuming fried and fast foods have increased significantly. Easy and rapid preparation, desirable sensory attributes like good color, texture, aroma, and flavor in fried foods, have resulted in more interests. Excessive use of fat especially saturated fats and trans fatty acids is one of the important factors that increase heart diseases, weight gain and cancers. By increasing awareness of the effect of dietary fat on health, the tendency to production and consumption of low-fat foods is increasing significantly. Therefore, using effective methods for decreasing fat absorption not only retains desirable features but also seems essential. Therefore, the purpose of the present study is to study the effect of different batter formulation (replacing different levels of lentil and chickpea flour) on physicochemical characteristics of fried crusts.

**Materials and Methods:** The performance of batters containing (0, 25 and 50%) lentil flour and chickpea to produce crispy deep-fried snacks crusts was studied by using a deep-fried crust model. DFCMs were fried at 180 °C for 0, 1.5, 3, 4.5 and 6 min. The experiments included loss moisture, oil uptake, texture parameter especially crispiness by texture and sound emission, color parameter.

**Results:** Results showed that frying time has a significant effect on the physical, texture, acoustic and structure properties of DFCMs. It has been shown that when frying time increased, the moisture content, a\*, b\* decreased while the oil content, a\*, number and maximum of force and acoustic peaks increased and also resulted in structures characterized by a high number of small cells. Principal component analysis demonstrated a correlation among the sensory attributes and the instrumental parameters (both mechanical and acoustic).

**Conclusion:** The major advantages of working with the DFCM are the better reproducibility of the crusts, the ease by which crusts can be separated from the core, and the possibility of varying batter/core ratio independent of batter viscosity. This greatly facilitates studying the

effect of ingredient and processing variations on the resulting snacks with a moist interior and dry crust. The findings showed that samples containing 50% lentil or chickpea flour, had highest moisture content and less oil absorption. **Keywords:** Deep Fried Crust Model (DFCM), Batter, Lentil Flour, Chickpea Flour.

#### **Evaluation the effect of chitosan on reducing oil uptake of Kurdish Cheese Nuggets during deep frying**

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**Objectives:** The popularity of the frying process can be attributed to certain features of fried foods. Fried foods have a good odor and visual appeal due to the golden brown color. However, one problem in connection with batter-fried foods is the significant amount of oil absorption during frying. The development of methods to produce fried products with less oil uptake during frying is one of the main research fields of food science and technology. Since the demand for high-quality and healthy food is globally increasing, in this study a comprehensive evaluation of the physicochemical properties of fried Kurdish cheese nuggets was performed by adding chitosan to reduce oil uptake during frying.

**Materials and Methods:** Comprehensively evaluate physicochemical properties (batter pickup, moisture loss, oil uptake, texture and color parameters) of fried cheese nuggets so that chitosan (0, 0.5 and 1.5%) was added to batter formulation under different processing conditions namely frying temperature (150, 170 and 190°C) and time (0-4 min). A nondestructive, image-based method was used to measure mechanical properties of fried, breaded cheese nuggets.

**Results:** The results of this study showed that water binding capacity of each ingredient in the batter will affect coating pickup which is quite important for product quality. The cheese nuggets containing 1.5% chitosan had higher moisture contents (core and breading layer) and lower oil contents (core and breading layer) than the control sample. Porosity negative correlates with moisture content but negatively correlates with frying time. Cutting force may represent crust hardness and correlation with the structure of cheese nuggets.

**Conclusion:** The results of this study indicated that all the batters have shear-thinning behavior

and the coating pickup was found to be directly proportional to batter viscosity. The highest reduction in oil uptake (22.7%) was observed in samples containing 1.5% chitosan. The optimum conditions resulting in desirable physicochemical properties and minimum oil uptake were cheese nuggets with chitosan content of 1.5%, fried at a temperature of 170°C for 4 min.

**Keywords:** Oil uptake, Chitosan, Sound emission; Porosity; Image processing;

#### **Association of adherence to Alternative Healthy Eating Index (AHEI-20 10) with general obesity and abdominal obesity in Tehranian elderly**

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**Objectives:** Previous studies have shown that high adherence to Alternate Healthy Eating Index (AHEI-20 10) reduces the risk of the diseases. However, there is no study related to AHEI-20 10 with the obesity and abdominal obesity. The present study aimed to investigate the relationship between the AHEI-20 10 with obesity as a whole and abdominal obesity in the elderly population.

**Materials and Methods:** This cross-sectional study was conducted on 226 elderly residents in Tehran, with a mean age of 67.04 (60-83). Food frequency questionnaire includes 147 food items were collected by qualified and trained experts. Then the score of Alternative Healthy Eating Index (AHEI-20 10) was calculated based on the 11-item food intake. General and abdominal obesity was defined by body mass index (BMI)  $\geq 30$  and waist circumference  $\geq 88$  cm<sup>2</sup> and  $\geq 102$  cm<sup>2</sup> respectively for men and women.

**Results:** Higher adherence to AHEI-20 10 did not show any significant relationship with general obesity ( $p = 0.828$ ) and abdominal obesity in the elderly people ( $p = 0.279$ ). Significant association was found after adjustment for age, total energy intake, physical activity, marital status, smoking and education level, between adherence to AHEI-20 10 and abdominal obesity ( $P$  for trend = 0.01), While there was no significant association with general obesity ( $P$  for trend = 0.67).

**Conclusion:** The present study showed that high adherence to the Healthy Eating Index (AHEI-20 10) had inverse relationship with abdominal obesity among the elderly people of Tehran.

**Keywords:** Alternative Healthy Eating Index, general obesity, abdominal obesity, elderly.

### Effect of a hot meal in the rural kindergarten on the weight and height of 3-6-year-old girls in Tabriz

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**Objectives:** Malnutrition of children in the early years of life is one of the problems of general health in Iranian society, especially in rural communities, which is often characterized by growth impairment (low weight, stunting). Nutrition education and nutrition improvement for under-6 years children in rural areas can play an important role in reducing malnutrition in these children. The purpose of this study was to determine the effect of a hot meal in rural areas on the weight and height of 3 to 6 year old girls in Tabriz in 1395.

**Materials and Methods:** In this clinical trial, 899 girls aged 3-6 years old received a hot meal for a period of 5 days a week in a kindergarten with a mean energy of 350-400 kcal per day for 130 days, along with proper nutrition education for children and parents. Before and after the intervention, the weight and height of the children were measured.

**Results:** The mean  $\pm$  standard deviation of the weight in children before the intervention was  $19.20 \pm 3.24$  kg, which after the intervention was  $20.58 \pm 3.47$  kg. This increase was statistically significant ( $p < 0.001$ ). The mean  $\pm$  standard deviation of the height in children before and after the intervention was  $112.61 \pm 5.89$  cm, which after the intervention reached  $115.22 \pm 6.01$  cm, which was statistically significant ( $p < 0.001$ ).

**Conclusion:** According to the findings of this study, nutrition education along with giving a hot meal in rural kindergarten significantly increased height and weight in girls ages 3 to 6 years. Therefore, it seems that this intervention can increase the weight and height in children and will be effective in improving the malnutrition of children.

**Keywords:** Hot meal, nutrition education, children

### Association between alanine aminotransferase (ALT) levels and lipid profile in a population based study from northwest of Iran

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**Objectives:** Recently, it is hypothesized that the within normal range of liver markers may also associated with dyslipidemia. Finding an association between within the normal range of ALT and dyslipidemia may have clinical significance in terms of early recognition of CVD risk factors. So, the correlation between lipid profile and AST level was assessed.

**Materials and Methods:** This cross-sectional study was comprised of 700 Iranian adults who participated in the major Life style Promotion Project conducted in the districts of East Azarbaijan in 2015. The outcomes for analyses were serum level of ALT, triglyceride (TG), high density lipoprotein-cholesterol (HDL-C), low density lipoprotein-cholesterol (LDL-C), and total cholesterol. The ANOVA and Logistic regression were used to for statistical analysis.

**Results:** With increasing the quartile of ALT, the mean level of TG, LDL and TC increased in both sex, however the results were only significant in women ( $P < 0.05$ ). The results of logistic regression revealed that after adjusting for potential confounders such as BMI, age, smoking and employment status, men in the third quartile of ALT were 2.87 fold at an increase risk of having higher TG ( $p = 0.03$ ). Women in the 4th quartile of ALT were 4.12 fold at an increased risk for having higher than normal TG level when compared to those with concentrations in the 1st quartile ( $p < 0.001$ ). The associations of liver enzymes with other lipid profile were not statistically significant.

**Conclusion:** Based on the results, the use of ALT as continuous biomarkers for early signaling of dyslipidemia could be encouraged.

**Keywords:** Alanine amino transferees, lipid profile prognosis

### Serum Vitamin E Status and Its Influencing Factors in Iranian Adult Population: A Cohort Population-Based Study

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**Objectives:** Vitamin E is a fat soluble vitamin and known as a potent antioxidant. Despite the important role vitamin E may play in preventing or controlling chronic disease, few population-based studies of distributions and correlates of blood concentrations of vitamin E have been

performed. Therefore, in this study we aimed to determine the serum vitamin E status and its influencing factors in Iranian adult population.

**Materials and Methods:** In this A Cohort Population-Based Study, participants were drawn from three regions in Mashhad, located in the north-eastern Iran, using a stratified cluster random sampling technique. Each region was divided into nine sites centered upon Mashhad Healthcare Center divisions. Finally 363 participants of 15-65 years old were randomly chosen by using table of random numbers from 9704 subjects of each cluster was investigated. Biochemical blood and anthropometric characteristics were obtained. Finally, data were analyzed by SPSS version 16.

**Results:** The mean of vitamin E was  $0.54 \pm 0.01$  and  $0.58 \pm 1.07$  ( $\mu\text{mol/l}$ ) in male and female subjects respectively. There was a statically significant correlation between vit E/ (TC+TG) and weight, weight/height, BMI, waist circumference, hip circumference, middle arm, systolic blood pressure, Heart rate hs-CRP and Triglycerides. According to a univariate logistic regression analysis triglycerides, total cholesterol and HDL proved to be significant factors that affects serum vitamin E but a multivariate logistic regression analysis shows that anxiety score, depression score, triglycerides and calcium proved to be significant factors that affects serum vitamin E with triglycerides being the most influential factor.

**Conclusion:** In conclusion, almost all of the Mashhad population had a severe vitamin E deficiencies. Weight, weight/height, BMI, waist circumference, hip circumference, middle arm, systolic blood pressure, Heart rate hs-CRP and Triglycerides had a significant correlation with vit E/ (TC+TG). Anxiety, depression, triglycerides, total cholesterol and HDL are the most significant factors that affects serum vitamin E.

**Keywords:** Serum, Vitamin E, Iran

### Production of Novel Multilayer Microcapsules Based on Soy Protein Isolate Fibrils and High Methoxyl Pectin

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**Objectives:** Layer-by-layer (LbL) polyelectrolyte deposition has become a popular technique for preparing polyelectrolyte capsules because of its ability to create highly tailored capsule shells through a simple, inexpensive and easily

controllable adsorption process. It has been applied to produce capsules of various sizes, with well-defined barrier properties. The mechanical strength and permeability of the capsules can be controlled by varying the number of layers or by changing the characteristics of the encapsulating materials. The purpose of this study is to produce microcapsules using supramolecular assemblies consisting of common food ingredients such as soy protein isolated (SPI) and high methoxyl (HM) pectin and some features of the developed microcapsulation were studied

**Materials and Methods:** SPI fibrils were prepared based on the method developed by Akkermans et al., (2008). 0.5% (w/w) SPI fibril and pectin solutions were prepared by mixing at pH 3.5 were left stirring overnight. The LbL process for the production of microcapsules with protein fibril-reinforced nanocomposite shells is illustrated in (Humblet-Hua et al., 2012). Some features of the microcapsulation, including size, zeta potential, morphology and release kinetics were studied.

**Results:** The results revealed that this system was capable of producing microcapsules with different number of layers with the same mean particle size, resolving conventional issues in previous studies including flocculation and sedimentation. Result showed that the zeta potential distribution of emulsion droplets reverses from about plus (+) 30 mV (odd number with SPI fibrils as outer layers) to about negative (-) 20 mV (even number with HMP as outer layers) confirming the layer-by-layer adsorption based on electrostatic attraction. Comparing SEM of microcapsules with various numbers of layers, an improvement in shell strength can be seen. These observations indicate that the slope of limonene release profile decreased as the number of layers increased. The obtained results from different kinetic models showed that the release of L1 and L2 microcapsules took place based on the diffusion mechanism and that of L5 and L6 ones followed non-Fick law. Furthermore, the results exhibited that the multilayer microcapsules had lower diffusion coefficients than the L1.

**Conclusion:** This study was conducted to present a simple and industrially-applicable method for the production of novel microcapsules. Since the microcapsules were prepared from edible raw materials with vegetable-based protein sources, these microcapsules could be used in food and pharmaceutical products, especially for vegetarians.



**Keywords:** Multilayer microcapsules, Layer by Layer, Control release, Soy protein isolate fibril, High methoxyl pectin

**The effect of education and follow-up by text messages on the weight and diet modification in overweight and obese female students in Qazvin University of Medical Sciences.**

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**Objectives:** Nowadays, One of the of the greatest health challenges in the 21 century across the world are obesity and overweight. In Iran researches shows that obesity and overweighing patterns were changed so that females students are more obese and overweight than males. Therefore, examining different approaches are needed to find an effective, acceptable, economically reasonable program for modifying behaviour and lifestyle factors which are associated with obesity and overweight.

**Materials and Methods:** With conventional sampling 50 overweight and obese females students of the Qazvin medical university selected and divided in two control and interventional groups (25 in control and 25 in intervention group). All subjects in intervention group attended a face to face information session and received a booklet contains strategies and recommendations for weight control after that the intervention group received text messages about weight control twice a day for two months. The study consisted of two months intervention and one month wash out period. Baseline and secondary BMI and food habits were measured in two groups using stadiometer, calibrated scale and food habits questionnaire respectively and were compared by parametric and nonparametric tests.

**Results:** The interventional groups\ lost more weight than the control group (P=0.02 1). The mean reduction in BMI was significantly greater than intervention group (P=0.000). Although the intervention group raised dietary breakfast ,fruits , and decreased fats height calories drinks, fast-food and miscellaneous, but there was no significant differences in other aspects of food habits between intervention and control groups after three month.

**Conclusion:** Text messaging seems to be an effective and productive channel of communication in weight loss programs in overweight woman.

**Keywords:** text messaging, obesity, overweight, Body mass index, Food habit

**Food insecurity status in heart failure patients in Iranian population**

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**Objectives:** We were conducted this study to assess the prevalence of food insecurity in heart failure patients households and the relationship between food security and some variables in this households.

**Materials and Methods:** In this cross sectional study, a total of 300 heart failure patients' households were studied in Imam Reza hospital of Mashhad. The Iranian version of household food insecurity access scale was used to measure food security.

**Results:** Among the participants in this study, 129 patients (43%) were secure, 42 patients (14%), 82 patients (27.3%) and 47 patients (15.7%) were mild, moderate and sever insecure respectively. Chi-square test results show that there is a strong correlation between diabetes, hypertension, BMI and food security distribution (P <0.0 1).

**Conclusion:** Based on our findings, food insecurity is mild to severe prevalent in heart failure patients households, meanwhile there is a strong relationship between diabetes, hypertension, BMI and food security status, so it is important to assess their food status and prevent from worsening their nutritional status.

**Keywords:** Food Insecurity, Heart Failure, Prevalence

**Twenty-four-hour endocrine and metabolic profiles following consumption of high-fructose corn syrup-, sucrose-, fructose-, and glucose-sweetened beverages with meals**

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**Objectives:** We have reported that, compared with glucosesweetened beverages, consuming fructose-sweetened beverages with meals results in lower 24-h circulating glucose, insulin, and leptin concentrations and elevated triacylglycerol (TG). However, pure fructose and glucose are not commonly used as sweeteners. High-fructose corn syrup (HFCS) has replaced sucrose as the predominant sweetener in

beverages in the United States. Objective: We compared the metabolic/endocrine effects of HFCS with sucrose and, in a subset of subjects, with pure fructose and glucose.

**Materials and Methods:** Thirty-four men and women consumed 3 isocaloric meals with either sucrose- or HFCS-sweetened beverages, and blood samples were collected over 24 h. Eight of the male subjects were also studied when fructose- or glucose-sweetened beverages were consumed.

**Results:** In 34 subjects, 24-h glucose, insulin, leptin, ghrelin, and TG profiles were similar between days that sucrose or HFCS was consumed. Postprandial TG excursions after HFCS or sucrose were larger in men than in women. In the men in whom the effects of 4 sweeteners were compared, the 24-h glucose and insulin responses induced by HFCS and sucrose were intermediate between the lower responses during consumption of fructose and the higher responses during glucose. Unexpectedly, postprandial TG profiles after HFCS or sucrose were not intermediate but comparably high as after pure fructose.

**Conclusion:** Sucrose and HFCS do not have substantially different short-term endocrine/metabolic effects. In male subjects, short-term consumption of sucrose and HFCS resulted in postprandial TG responses comparable to those induced by fructose.

**Keywords:** High-fructose corn syrup, Sucrose, Fructose, Endocrine and metabolic profile

### **Levels of fatty acids in serum, plasma and erythrocytes predict the risk of metabolic syndrome**

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**Objectives:** A clustering of metabolic disorders (in particular, high fasting glucose levels, abdominal obesity, low levels of HDL-C, hypertriglyceridemia and hypertension) which are known to elevate cardiovascular morbidity and mortality, is determined metabolic syndrome. Studies have indicated that fatty acids profile reflecting the dietary intake, may affect the cardio-metabolic risk, and is related to the development of metabolic syndrome. The quality of dietary fats have an effect on metabolic syndrome components therefore much attention is toward the quality of dietary fat independent of its total amount.

**Materials and Methods:** The search strategy focused on articles published in English language journals between the years 2000 until now. The databases used were Google Scholar and PubMed and keywords used in each electronic database search included metabolic syndrome, plasma fatty acids, serum fatty acids, erythrocyte fatty acids and gas chromatography.

**Results:** Many studies have been performed to understand the fatty acid role in different disorders such as metabolic syndrome, Therefore the present review aimed at determining the plasma, serum and erythrocytes fatty acids profile via gas chromatography and discovering their relationship with metabolic syndrome. As a result, profiles of fatty acids could be used as a useful screening tool for prevention of metabolic syndrome.

**Conclusion:** This review suggests that an altered fatty acid profile is related to the main criterias of metabolic syndrome and dietary interventions can have beneficial effects on specific metabolic syndrome features.

**Keywords:** Metabolic syndrome, plasma fatty acids, serum fatty acids, erythrocyte fatty acids, gas chromatography

### **Association between serum Osteocalcin and body mass index: A systematic review and meta-analysis**

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**Objectives:** Osteocalcin is considered as a bone-derived hormone affecting the body fat distribution and body mass index (BMI). Several cross-sectional studies have investigated the association between serum osteocalcin and BMI. The aim of this study was to summarize the evidence on the relationship between serum osteocalcin and BMI.

**Materials and Methods:** We conducted a complete search up to November 20 16 in PubMed and SCOPUS and reviewed reference list of all relevant articles and reviews. The DerSimonian-Laird method was used to pool effect sizes of eligible studies. The potential sources of heterogeneity were assessed using the standard  $\chi^2$  test. To find possible the sources of between-study heterogeneity, we carried out subgroup analyses based on sex, and type of study population.

**Results:** There was a significant inverse association in the overall result of this study between serum osteocalcin levels and BMI ( $r = -0.16$ ; 95%CI:  $-0.197, -0.124$ ,  $p = 0.000$ ). In the

subgroup analysis to find the sources of significant heterogeneity between-study, we observed that type of study population may be the sources of between-study heterogeneity and the most correlation was seen in metabolic syndrome studies ( $r = -0.265$ ;  $p = 0.000$ ).

**Conclusion:** Findings from the available data indicated an overall significant inverse association between serum osteocalcin and BMI. Further studies based on the type of study population are needed to better clarify these associations.

**Keywords:** Meta-analysis; serum osteocalcin, body mass index

### The impact of micronutrients on the risk of esophageal squamous cell carcinoma

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**Objectives:** Esophageal squamous cell carcinoma (ESCC) is the leading cause of cancer mortality and the 8th most prevalent cancer in the worldwide. Hot drinks, Opium use, tobacco smoking, polycyclic aromatic hydrocarbons, low socioeconomic status and nutritional deficiency are among the risk factors. It has been shown that higher plasma level of 25(OH)D is related with decreased risk of ESCC. The purpose of current study was to give an overview of the impact of micro-nutrients and its relationship with risk of ESCC.

**Materials and Methods:** Searching for related publications has been done using keywords including " Esophageal squamous cell carcinoma" AND " micronutrients " in PubMed, Google Scholar, and Scopus databases.

**Results:** Saturated fatty acid, monounsaturated fatty acids, biotin, selenium, riboflavin, sodium, calcium, phosphorus, fat, cholesterol, protein, iron, vitamin E, vitamin D, vitamin B( 12) and manganese are shown to be related to the risk of developing ESCC. It has been reported that there is a relationship between dietary consumptions of selenium, copper and magnesium and risk of ESCC. Moreover higher consumptions of calcium, vitamin D3, beta-carotene, and zinc are related with reduced risk of ESCC. Also, there is a significant relationship between plasma riboflavin levels with prognosis and risk of ESCC via modulation of C20orf54.

**Conclusion:** These observations provide a proof of concept about the association of high consumption of calcium, vitamin D, zinc, riboflavin and beta-carotene with reduced risk of

ESCC, although further cohort studies are warranted to explore these findings.

**Keywords:** ESCC; Micronutrients; Vitamin D3.

### Dysfunction of Metabolically Controlled Cell Hydration as a Primary Mechanism for Carcinogenesis

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Overhydration of cells is a hallmark for early detection of cancer. However, the nature of the metabolic mechanism, the dysfunction of which leads to decontrolling of cell hydration and generation of Warburg phenomena in cancer cells, has not been elucidated yet. Na<sup>+</sup>/K<sup>+</sup>-ATPase, having a central role in metabolic regulation of cell hydration, has three catalytic isoforms with different affinities to ouabain and functional activities. Among these isoforms,  $\alpha 3$  isoform with the highest affinity to ouabain isn't involved in ion-transporting process and has an intracellular signaling function. It is known that  $\alpha 3$  isoforms of Na<sup>+</sup>/K<sup>+</sup>-ATPase, which are absent in non-excitabile cells of healthy animals, are highly expressed in cancerous cells. On the basis of this, the expression of these isoforms is considered as one of the early hallmarks for carcinogenesis. However, by our previous work it has been shown that all 3 isoforms are present both in tumor and non-excitabile tissues of mice carrying sarcoma- 180. It has also been shown that  $\alpha 3$  isoform, which is absent in non-excitabile cells of healthy animals, appears in non-cancerous tissues of women with breast cancer, as well as in all non-excitabile tissues of mice carrying sarcoma- 180 tumor. Moreover, it has also been shown that this expression of  $\alpha 3$  isoform is accompanied by cell hydration. On the basis of these data, it has been hypothesized that dysfunction of intracellular signaling system controlling cell hydration could serve as a primary mechanism for carcinogenesis. To check this hypothesis, in non-excitabile tissues of healthy and sarcoma- 180 carrying mice (including tumor tissues), dose-dependent ouabain effects on Na<sup>+</sup>/K<sup>+</sup>-pump activity, cell hydration, intracellular cyclic nucleotides (cGMP and cAMP), glycolysis rate (lactate concentration in blood and lactate dehydrogenase activity), membrane permeability for protons, Na<sup>+</sup>/H<sup>+</sup>, Na<sup>+</sup>/Ca<sup>2+</sup> exchange and cell proliferation by means of electrophysiological, isotope, immunoassay and microscopic methods were studied. These studies have brought us to conclusion that dysfunction of  $\alpha 3$  isoform-

dependent cGMP-activated  $\text{Na}^+/\text{Ca}^{2+}$  exchange in forward mode, which controls  $\text{Na}^+/\text{K}^+$ -pump activity, cell hydration, membrane permeability for  $\text{Na}^+$  and  $\text{Ca}^{2+}$ , glycolysis activity and cell proliferation, is a primary mechanism for generation of cell overhydration and Warburg phenomena leading to carcinogenesis. Therefore,  $\alpha 3$  isoform-dependent cGMP-activated  $\text{Na}^+/\text{Ca}^{2+}$  exchange in forward mode has been suggested as a novel therapeutic target for early stage of carcinogenesis.

**Keywords:** cell hydration, cancer,  $\text{Na}^+/\text{K}^+$  pump

### Fluid Intake: Lesson-learned from the Indonesia Population

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Water plays essential roles in maintaining physiological body functions, i.e. thermoregulation, and physical and cognitive performances for all ages. The adequate total daily water intake recommendation for healthy Indonesians has been published in the 2012 Indonesian RDA. The following are reviews on fluid intake from several data collected in Indonesia. Based on THIRST data (2008-2009), the fluid intake among adolescent subjects (15-18 y) was  $2773 \pm 439$  mL/d, while for adults was  $2730 \pm 456$  mL/d. Survey conducted in 2012 among 595 and 1366 Indonesian aged 4-18 and 18 y and over, respectively found that the mean total fluid intake was  $2.03 \pm 0.83$  L/d and  $2.28$  L/d (95%CI 2.23, 2.34). Bardosono et al (2015) have different finding based on two different fluid intake measurement instruments. By using 24-h dietary recall, the fluid intake of adolescents is  $1982 \pm 786$  mL/d, and for adults is  $2164 \pm 931$  mL/d. While by using 7-day fluid record, the study found that the fluid intake for adolescents is  $2392 \pm 855$  mL/d, and for adults is  $2529 \pm 864$  mL/d. Survey among 295 pregnant and 296 lactating women in Jakarta, Yogyakarta and Surabaya (2014) revealed that the average of fluid intake were  $2381 \pm 829$  mL/d and  $2575 \pm 962$  mL/d, respectively. While survey among bottled water factory in Sukabumi (n = 102), Klaten (n = 100) and Pandaan (n = 101) in 2015 found that the average fluid intake were  $3299 \pm 1237$  mL/d,  $2953 \pm 735$  mL/d, and  $2819 \pm 111$  mL/d, consecutively. In addition, a small survey among 59 free-living elderly in Jakarta (2015) found an average of fluid intake  $1327 \pm 407$  mL/d. Besides the diversity in methodologies used to assess fluid intake, water

intake data collection is relatively new in which water is often not recorded or reported in populations' survey as it was not always considered important.

**Keywords:** fluid intake, Indonesia, methods, population

### Ramadan and fasting, recent advances, introducing the practical guideline for Diabetes and Ramadan

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Ramadan is a whole month of intermittent fasting, from dawn to dusk, every year. Islam has over one billion followers worldwide. Fasting is one of duties for every Muslim, although it is allowed just for those fasting not harmful for them. One of the most important question for diabetic patients and their physicians before Ramadan is whether fasting is safe for them or not. Considering the fact that many Muslims with diabetes prefer to fast in spite of inhibitory advises and to answer several conflicts and controversies regarding diabetes and Ramadan, IDF in collaboration with Diabetes and Ramadan (DAR) International in Alliance decided to develop a comprehensive guideline to be used by health care professionals. This guideline was then developed on April 2016 by 12 main authors and 20 co-authors from all around the world, and published by International Diabetes Federation.

The guideline is provided in nine chapters: 1) Introduction to the IDF-DAR Practical Guidelines, 2) Epidemiology of Diabetes and Ramadan Fasting, 3) Physiology of Ramadan Fasting, 4) Risk Stratification of Individuals with Diabetes before Ramadan, 5) Diabetes and Ramadan: A Medico-religious Perspective, 6) Pre-Ramadan Education, 7) Ramadan Nutrition Plan (RNP) for Patients with Diabetes, 8) Management of Diabetes during Ramadan and 9) Identifying and Overcoming Barriers to Guideline Implementation. This guideline tries to answer three main questions: 1) Is fasting during Ramadan associated with a significant risk? 2) What are the criteria that predispose patients with diabetes to increased risk during fasting? 3) What is the most appropriate oral anti-diabetic drug(s) or type and regimen of insulin for patients with type 2 diabetes who fast?

**Keywords:** Ramadan; Diabetes; Guideline





### Fluid Intake: Lesson-learned from the Indonesia Population

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Water plays essential roles in maintaining physiological body functions, i.e. thermoregulation, and physical and cognitive performances for all ages. The adequate total daily water intake recommendation for healthy Indonesians has been published in the 2012 Indonesian RDA. The following are reviews on fluid intake from several data collected in Indonesia. Based on THIRST data (2008-2009), the fluid intake among adolescent subjects (15-18 y) was  $2773 \pm 439$  mL/d, while for adults was  $2730 \pm 456$  mL/d. Survey conducted in 2012 among 595 and 1366 Indonesian aged 4-18 and 18 y and over, respectively found that the mean total fluid intake was  $2.03 \pm 0.83$  L/d and  $2.28$  L/d (95%CI 2.23, 2.34). Bardosono et al (2015) have different finding based on two different fluid intake measurement instruments. By using 24-h dietary recall, the fluid intake of adolescents is  $1982 \pm 786$  mL/d, and for adults is  $2164 \pm 931$  mL/d. While by using 7-day fluid record, the study found that the fluid intake for adolescents is  $2392 \pm 855$  mL/d, and for adults is  $2529 \pm 864$  mL/d. Survey among 295 pregnant and 296 lactating women in Jakarta, Yogyakarta and Surabaya (2014) revealed that the average of fluid intake were  $2381 \pm 829$  mL/d and  $2575 \pm 962$  mL/d, respectively. While survey among bottled water factory in Sukabumi (n = 102), Klaten (n = 100) and Pandaan (n = 101) in 2015 found that the average fluid intake were  $3299 \pm 1237$  mL/d,  $2953 \pm 735$  mL/d, and  $2819 \pm 811$  mL/d, consecutively. In addition, a small survey among 59 free-living elderly in Jakarta (2015) found an average of fluid intake  $1327 \pm 407$  mL/d. Besides the diversity in methodologies used to assess fluid intake, water intake data collection is relatively new in which water is often not recorded or reported in populations' survey as it was not always considered important.

**Keywords:** fluid intake, Indonesia, methods, population

### Food Safety Challenges and preventative strategies

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It is estimated that 600 million people in the world are involving food borne diseases due to eating contaminated food every year and consequently 420 000 people dies and 33 million healthy life years (DALYs) losses every year because of unsafe food consumption regarding to WHO report.

In spite of the growing our knowledge about identification and control of microbial risks and chemical contaminants through the food chain from farm to fork, the rate of foodborne diseases are increasing in developing and developed countries. Regarding to current burden of foodborne diseases in the world some national and global strategies are required to decrease foodborne health risks.

Ratification of modern food safety laws and regulations base on national and international demands. Development and strengthening of risk-based, integrated national food safety systems for assessment and prevention high impact risks and designing a science base methodology for measuring food attribute risks along the entire food-chain. Empowerment of food tractability system in supply chain for monitoring chemical contamination and microbial sources of outbreaks to prevent foodborne diseases. Providing international and national networks and cross-sectorial collaborations for food risk reduction through advocacy and communication.

Research on accurate and precise methods detection and determination of microbial and chemical contamination and frauds to protect consumer health.

Food safety issues and challenges are very important for prevention foodborne diseases, therefore integrated scientific base strategies and programs are needed to control increasing trend of foodborne diseases in national and international level.

**Keywords:** Foodborne diseases, Risk based assessment, Food contamination, Food safety

### The use of quantitative PCR assays for identification and enumeration of *Lactobacillus acidophilus* in dairy products

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Now, increasing knowledge of probiotic bacteria has promoted the use of fermented products containing these bacteria. In fact, the growing



attention toward probiotics is due to their healthful effects, for instance on intestinal and immune-related diseases. In addition to dairy products that are good carriers for the delivery of the viable probiotic bacteria, non-dairy products and supplementations have entered the market and are being diurnally consumed. Moreover, these products must be labeled with the contained microorganisms, and the number of the viable ones. Therefore, identification and enumeration of the viable probiotics in these products is an important matter, to express the information on the product label and to inform the customer. Various bacterial species have been introduced as probiotics in which lactobacillus and bifidobacteria are the most common ones. Traditionally, these bacteria are determined by cultivation on selective nutrient media. These traditional, culture-based tests are time-consuming; and if closely related species exist in the sample, they can have poor results. Thus, faster methods based on molecular techniques, such as polymerase chain reaction (PCR) or real-time PCR, which are extremely sensitive, have been developed to support or replace the traditional techniques. In this work we determined the number of lactobacillus acidophilus bacteria by using competitive PCR and real-time PCR assays in bio-yogurt. Comparison of the data obtained from these quantitative molecular assays in yogurt samples by paired t-test showed that there were not significant differences ( $p > 0.05$ ) between two methods. Thus, with regard to laboratory equipment and facilities, each of these two methods is recommended for accurate assessment of Lactobacillus acidophilus bacteria. **Keywords:** probiotic bacteria, PCR-based methods, enumeration. dairy products.

### Significant role of nutrition and micronutrient in genetics and inherited disease

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Dietary improvements are widely used and offer the potential to improve health if appropriately targeted to those in need. Inadequate nutrition and micronutrient deficiencies are prevalent conditions that adversely affect global health. Deficiency levels of key nutrients have been indicated as causing poor child development and may cause genetic and inherited syndrome. For

instant some of more prevalence of these syndromes are in public healthcare noticed.

Recent reports provide strong support for the view that maternal deficiency of Vitamin D leads to overt bone disease from before birth. While the best known consequences of vitamin D deficiency in childhood are rickets and hypocalcaemia. Vitamin B 12 (cobalamin) is necessary for development of the fetus and child of development from brain to bone and comes from countries characterized by vegetarianism and low intake of animal source food. In another genetic diseases, higher homocysteine, lower folate and vitamin B 12 and B6, are risk factors for neural tube defects. A number of roles for folate in maintaining health from early life to old age. Folate is required for one-carbon metabolism, including the remethylation of homocysteine to methionine. The most important genetic determinant of homocysteine in the general population is the common 677C → T variant in the gene encoding the folate-metabolising enzyme. The consumption of alcohol, tea and coffee, and low intakes of fruit and vegetable are associated with the increased risk of neural tube defects (NTDs), and should be avoided by women of childbearing age. Maternal non-staple food consumption of milk, fresh fruits and nuts in the first trimester was associated with reducing neural tube defects risk in offspring. In common metabolic inherited disease Diabetes in pregnancy is associated with higher rates of miscarriage, pre-eclampsia, preterm labor, and fetal malformation. To prevent these obstetric and perinatal complications, women with diabetes have to control levels of blood sugar, both prior to and during pregnancy. The potential use of fish oil in treating Down syndrome chromosomal abnormality and associated early-onset Alzheimer disease, which is linked to overexpression of RCAN 1 on human chromosome 2 1. Postnatal growth failure is a serious problem in children with Epidermolysis bullosa. Strategies to maximize nutritional support could alleviate growth failure in children with Epidermolysis bullosa, and thus improve clinical outcomes. If people with phenylketonuria (PKU) an autosomal recessive skip sharing on social media links do not restrict the phenylalanine in their diet, they develop severe intellectual and developmental disabilities. The enzyme phenylalanine hydroxylase is needed to convert the amino acid phenylalanine into other substances the body needs. Maple Syrup Urine Disease (MSUD), BCKDHA, BCKDHB, and DBT genes the protein complex is essential for



breaking down the amino acids leucine, isoleucine, and valine, which are present in many kinds of food, particularly protein-rich foods such as milk, meat, and eggs. Galactosemia, an inherited disease. Infants with classic galactosemia cannot have products containing lactose because galactose, which makes up half of lactose, builds up in the bloodstream, damaging the brain, eyes, kidney and liver. Infants with galactosemia cannot have animal or human milk and must consume soy milk instead. This article focused on the nutrition and micronutrient support of genetic and inherited syndrome from diverse and heterogeneous groups around the globe. An electronic search of peer-reviewed articles was systematically performed to obtain the relevant literature with the CINAHL, Google Scholar, and PubMed databases. The keywords included Genetics, inherited patients, nutrition and micronutrient deficiencies. The inclusion criteria for the article were that the documents were original quantitative research and published in English. Articles that were not directly relevant to the present objective were excluded. The objective view was the outcome of these article resources may be helpful for clinicians, healthcare to address nutrition, particularly with regard to prevention, healing, and survival of genetics and inherited patients. Using select healthy dietary agents to treat genetically defined pathologies, an approach that we believe is simple, healthy, and cost-effective.

**Keywords:** Genetics, Inherited Syndroms, Nutrition, Micronutrient, deficiencies.

### **Vitamin D and Autoimmunity, The case of Juvenile Idiopathic Arthritis**

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Recently the roles of vitamin D in metabolism and signaling for both innate immune and adaptive immune response have been reported. Link between other autoimmune disease and lower levels of vitamin D established. However, less it is known about the association between vitamin D and Juvenile Idiopathic Arthritis (JIA) as one of the most common chronic childhood diseases. In this lecture, I will provide an overview of the existing literature, including data from our own research, about the association between vitamin D and JIA. Also I will discuss the gaps in research and potential mechanistic pathways that explain such association.

**Keywords:** vitamin D, autoimmunity, arthritis

### **Lead-sensitive ion selective electrode application for quantitative analysis of Lead in different samples with low detection limit**

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Lead and its compounds are a serious threat to the environment. Lead causes atmospheric and water pollution due to its application in various industrial products, and accumulates in soil and natural waters. Lead poisoning is a medical condition in humans caused by increasing levels of this heavy metal in the body. Lead interferes with a variety of body processes and is toxic to many organs and tissues including the heart, bones, intestines, kidneys, and reproductive and nervous systems. In the environment it is generally present as inorganic Pb<sup>2+</sup> which can be easily detected and determined by lead ion-selective electrode (ISE). Monitoring of this toxic heavy metal is a driving force for the continuous development of novel lead (II) ionophores to be applied in fabrication of membrane ion-selective electrodes. The mechanism of the potential formation of ion selective electrodes with a liquid or pseudoliquid (polymeric) membrane depends strongly on extraction and ion-exchange processes between the aqueous and organic phases. It is known that the nature and amount of the ionophore strongly affects the response of the membrane ion-selective sensors, for instance by reducing the membrane resistance, improving the response behavior, selectivity and sensitivity of the membrane sensors. Recently, various macrocyclic and acyclic ligands have been used as suitable neutral carrier in polyvinylchloride (PVC)-based membrane electrode studies for different metal ions. Crown ethers and related compounds have widely been used as complexing agents for metal selective extractions, separations, phase transfer catalysis, membrane transport, ion exchange systems, and as ionophores for the fabrication of membrane and coating ion-selective electrodes. Ionophores for use in membranes should have rapid exchange kinetics and adequate complexation formation constants in the membrane. In addition, they should be well soluble in the membrane matrix, and have a sufficient lipophilicity to prevent leaching from the membrane into the sample solution. A PVC membrane sensor for Pb<sup>2+</sup> ions has been prepared. The electrode membrane phase contains an ionophore selective to Lead ions. The proposed Lead ion-selective electrode is characterized by good analytical parameters. The

potentiometric measurement of Lead ion-selective electrode shows high potential stability, excellent selectivity, and Nernstian response for lead ions over a wide concentration range, with low detection limit. It has a fast response time, and can be used long time without any divergence in potential. The proposed sensor shows a very good discriminating ability towards  $Pb^{2+}$  ions in comparison with some alkali, alkaline earth, transition and heavy metal ions. It is successfully applied as an indicator electrode in potentiometric titration, and direct determination of  $Pb^{2+}$  ions in real sample solutions. The potentiometric response of ionophore-based  $Pb(II)$ -ISE was compared to measurements done by atomic absorption spectroscopy. Comparable concentrations of lead were obtained by both techniques, which indicate the possibility to apply such ion-selective electrodes for monitoring of lead in presence of high concentrations of interfering ions, such as  $Na(I)$ ,  $Cu(II)$ ,  $Cd(II)$ ,  $Zn(II)$ ,  $Mg(II)$  and  $Ca(II)$ .

**Keywords:** Lead(II), potentiometry, ion selective electrode, membrane, ionophore.

#### Data mining development in medicine

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Data mining is a science of searching large sets of data in order to discover patterns and features that are not discovered by statistical analyses. Data mining uses segmentation of data and develops predictive models to predict future events. Data mining is an extension of existing statistical methods and can be effectively used in combination with them. It overcomes the weakness of traditional methods which work under some assumptions such as normality etc. A data mining approach is a non-parametric set up where the analysis only depends on data, not on any model assumptions about data or data generating processes. Also, data mining covers the entire process of data analysis including cleaning, preparation and visualization. It has only been over the last 10 years that data mining techniques have been used in medical research.

However, the implementation of data mining techniques in large epidemiological studies has not been fully explored. Medical data mining has great potential for exploring hidden patterns in data sets of medical domain. These patterns can be utilized for clinical diagnosis. However, available raw medical data are widely distributed, heterogeneous in nature, and huge in size. These data need to be collected in an organized form. Data mining technology provides a user-oriented approach to novel and hidden patterns in data. Data mining in health and medicine can provide several advantages such as detection of fraud in health insurance, availability of medical solution to patients at a lower cost, detection of possible causes of diseases and identification of medical treatment even making efficient healthcare policies, constructing drug recommendation systems, grouping patients having similar diseases to provide them effective treatments. However, data mining in healthcare today remains, an academic exercise with only a few practical success stories. Healthcare has always been slow to incorporate the latest research into everyday practice. The question that practitioners are asking themselves is this: how do we bring the latest research to pragmatic quality improvement and improve outcomes?

**Keywords:** Data mining, Traditional Methods, Medicine.

#### Optimization of gluten-free bread formulation using sorghum, rice and millet flour by D-optimal mixture design approach

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There is an increasing interest in gluten-free (GF) products as the prevalence of celiac disease. Sorghum, millet and rice flours are the most suitable cereal flours for GF products. The objective of this study was to optimize mixtures of sorghum flour (SF), rice flour (RF) and millet flour (MF) with the fourth kept constant at the level of 10% (soy) for production of GF bread based on D-optimal mixture design approach. The characteristics of flours including moisture, proteins, fat, ash, fiber and pH were measured. Bread quality parameters such as specific



volume, hardness, crumb structure and sensory evaluation were also analyzed. Our results revealed that three flour blends (SF, RF and MF) had remarkable effect on physical and sensory properties of GF bread. Increasing MF and SF together with decreasing RF increased specific volume and mean cell area and produced breads with a softer texture. Color and taste improved with incorporation of RF, SF and MF at high levels. The sensory evaluation of texture was correlated to texture analysis. Optimum formulation obtained according to sensory evaluation, specific volume, hardness and crumb structure contained 67.18% SF, 17.82% RF and 15% MF with combined desirability equals to 0.791. In general, the results of present study indicate that RF, SF and MF can be used as a substitute for wheat flour in producing high quality GF bread. The data presented in this study could be useful in producing GF bread for celiac patients.

**Keywords:** Gluten-free bread, D-optimal mixture design, Rice flour, Sorghum flour, Millet flour

#### **The necessity of pesticides residues control in agricultural products**

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2. Associate Professor, Food and Drug Laboratory Research Center (FDLRC), Food and Drug Administration (FDA), Ministry of Health and Medical Education (MoH+ME)

The use of agricultural inputs, including pesticides in recent decades, has grown dramatically as a result of population growth and growing demand for agricultural products, although this approach has led to an increase in agricultural production, but the inappropriate use of agricultural pest controllers is likely to lead to Environmental problems and many human diseases and abnormalities in the community. Monitoring the pesticide residues used in agricultural production and taking into account the Ministry of Health's mission of providing consumers health, makes the reviewing and controlling of pesticide residues in garden and horticultural products in the country as necessary. The results of the first research of the Iranian Food and Drug Administration (IR-FDA) showed the highest percentage of contamination of the samples taken from Tehran to pesticides residue. Therefore, the follow-up program in Shahid Beheshti University of Medical Sciences and Health Services (SBMU)

was continued so that according to the results, it would be able to plan for the consumer's health.

**Keywords:** Pesticide Residues, Monitoring, SBMU, Pesticides, Country Development Program

#### **A review of the possibility of the presence of Mycotoxins in refined oils**

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In recent years, edible oils derived from vegetable seeds have gained a lot of popularity than animal fats, mainly due to their potential health effects. There are numerous reports of fungal contamination of oily seeds and the presence of Mycotoxins in extracted oil. The contamination of food and feed by fungi and the production of Mycotoxins is one of the food safety problems around the world, and most of the Mycotoxins are potentially carcinogenic, teratogenic, nephrotoxic, immunotoxic and hemorrhagic. In general, crude oil is extracted without heat processing during compression, mainly by a mechanical process. This type of oil is obtained by washing, filtering, or centrifuging without using any additional process (such as alkaline refinement, bleaching and sterilization). Edible oil refining is currently mainly used to remove impurities in oils as well as to increase shelf life. The reduction of Mycotoxins in refined oils can be attributed to various refining processes. There are numerous reports on the reduction of Mycotoxins after the use of conventional processing techniques such as thermal processing, milling and brewing. However, few reports are available on the fate of Mycotoxins during oil extraction from the seeds and its refining process.

**Keywords:** Mycotoxins, Edible Oil, Process, Refinement, Food Safety

#### **Reward deficiency syndrome in obesity: genetic and epigenetic phenomena**

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Obesity prevention is a global public health priority. Although genetic factors may underlie the propensity of individuals to become obese, the pace at which obesity prevalence has grown at the population level during recent decade's points to social and environmental causes. Obesogenic environment refers to the cheap and easy availability of high caloric diet and sedentary lifestyle. Certain foods, particularly those rich in sugars and fat, are potent rewards that promote eating even in the absence of an energetic requirement. In obesogenic environment, overeating often occurs in the absence of true physiological hunger. So, why do some people become overweight and even obese, whereas others appear to be able to keep their weight within normal range? Some people are more susceptible than others to gain weight. Modern obesogenic environments accentuate the genetic risk of obesity. The DRD2 gene, which is highly polymorphic is a key neurotransmitter modulating reward (natural and drug rewards). Reward Deficiency Syndrome (RDS) which is a genetic and epigenetic phenomenon leads to impairment of the brain reward circuitry resulting in a hypo-dopaminergic function. The A1 variant of the DRD2 gene generates an alteration in the reward pathways and has been associated with a spectrum of addictive, compulsive and impulsive behaviors. Those with the A1 variant (A1/A1 or A1/A2) have a 30-40% lower density of DRD2R. The result is that an increased intake is necessary to experience the same degree of reward. Obese animals with unhealthy eating habits also show downregulation of DRD2R. However, studies in obese human subjects have provided controversial results, with some finding lower striatal DRD2R availability, and others unaltered striatal DRD2R availability. There are several reports that individuals with the A1 allele are less able to benefit from an intervention that aimed to reduce weight, possibly a reflection of increased impulsivity. No doubt, studies will build on current knowledge to provide a clearer picture. However, these models may provide a new theoretical basis for the development of innovative treatment strategies, either psychological or pharmacological, with the aim to improve the outcomes of eating disorders. Finally, will therapeutic agents that combat drug abuse be effective for treating compulsive overeating?

**Keywords:** Obesity, Reward Deficiency Syndrome, Obesogenic Environment, genetic and epigenetic phenomena

### **Cytotoxic effects of *Urtica dioica* radix on human colon (HT29) and gastric (MKN45) cancer cells mediated through oxidative and apoptotic mechanisms**

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Defects in the apoptotic pathways are responsible for both the colorectal cancer pathogenesis and resistance to therapy. In this study, we examined the level of cellular oxidants, cytotoxicity and apoptosis induced by hydroalcoholic extract of *U. dioica* radix (0-2000 µg/mL) and oxaliplatin (0- 1000 µg/mL, as positive control) in human gastric (MKN45) and colon (HT29) cancer, as well as normal human foreskin fibroblast (HFF) cells. Exposure to *U. dioica* or oxaliplatin showed a concentration dependent suppression in cell survival with IC<sub>50</sub> values of 24.7, 249.9 and 857.5 µg/mL for HT29, MKN45 and HFF cells after 72 h treatment, respectively. ROS formation and lipid peroxidation were also concentration-dependently increased following treatment with *U. dioica*, similar to oxaliplatin. In addition, the number of apoptotic cells significantly increased concomitantly with concentration of *U. dioica* as compared with control cells, which is similar to oxaliplatin and serum-deprived cancer cells. In conclusion, the present study demonstrated that *U. dioica* inhibited proliferation of gastric and colorectal cancer cells while posing no significant toxic effect on normal cells. *U. dioica* not only increased levels of oxidants, but also induced concomitant increase of apoptosis. The precise signaling pathway by which *U. dioica* induce apoptosis needs further research.

**Keywords:** *Urtica dioica*, cytotoxicity, apoptosis, oxidative stress, MKN45 cells, HT29 cells

### **Food-directed synthesis of cerium oxide nanoparticles**

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Nanotechnology is a new and emerging technology with the wealth of applications. Green synthesis route is highly relevant as it is nontoxic, decreasing/completely eliminating the use and generation of substances hazardous to human health and the environment. The biological process is a bottom-up method and green route which it uses plants, fungus, nutrient, biopolymer, bacteria and, algae in the synthesis process. These materials contain some biological components acting as capping and/or stabilizing agents in the synthesis process. Now, food mediated synthesis of metal/metal oxide nanoparticles, as well as cerium oxide, is interested because foods are available, natural, inexpensive, nontoxic, biodegradable; also, increasing the application of cerium oxide nanoparticles ( $\text{CeO}_2\text{-NPs}$ ) in medicine encourages the researchers to produce them with less toxic and safe methods. The  $\text{CeO}_2\text{-NPs}$  have been synthesized using food/nutrients such as aloe vera, watermelon juice, lemongrass, olea europaea (olive), egg white, and honey. The nature of biological components of these foods in different concentrations effects on the size and shape of NPs. The  $\text{CeO}_2\text{-NPs}$  have shown promising approaches as therapeutic agents in biology and medical sciences. The physicochemical properties of  $\text{CeO}_2\text{-NPs}$  (e.g., size, shape, and surface charge) play important roles in the ultimate interactions of the NPs with target cells. This review shows the application of some foods in green synthesis process of  $\text{CeO}_2\text{-NP}$  and their medical advantages.

**Keywords:** Cerium oxide nanoparticles; nanotechnology; food-directed; green synthesis

### Functional liquid Kashk based on native inulin and guar gum

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Functional food production which improves technological properties and promotes food nutritional value are food industry's necessity. Liquid whey is produced by the suitable industrial process and has high nutritional value. Syneresis during storage is one of the most important problems in liquid whey industry. The aim of this study is the production of a functional food using inulin as prebiotic (extracted from Jerusalem artichoke) and also guar as natural

hydrocolloid to decrease liquid whey syneresis. Inulin is ever-increasing considered by researchers and food scientists due to its functional properties. Prebiotics such as inulin is none or very low digestible carbohydrates which grow as carbon source or energy in simulate probiotic activity. Besides inulin, hydrocolloids may also use to interest their good effects on final product quality. Addition of hydrocolloids or natural gums is one of the stability ways and also prevents phase separation and protein sedimentation in fermented products. In this study, guar (at the levels of 0, 0.2 and 0.4%) and inulin (at the levels 0 and 1.2%) was added to product formulation and the characteristics of liquid whey such as adhesion, gumminess, acidity, dry matter and color parameters, were evaluated. Central composite design of response surface methodology to assess and analyze the measured characteristics was used. The results showed that the addition of these two variables caused syneresis and hardness to decrease and viscosity to increase and also improve sensory properties such as texture, flavor and mouth feel. Increase in guar level to about 0.3% caused to increase and then decrease in syneresis and inulin addition to about 1% resulted in an increase and then decrease of syneresis. The corresponding effect of these compounds reduced syneresis. The optimum condition to achieve the best final product was 1.05% of inulin and 0.25% of guar concentrations. In this condition, texture score was 4.58, flavor score was 4.62 and syneresis was 4.57%. In this study guar application caused a significant decrease in liquid whey syneresis. Ails, inulin utilization resulted in functional food.

**Keywords:** liquid whey; inulin; syneresis; viscosity, sensory properties.

### Nutritional and functional properties of extruded snacks enriched with Apple pomace-wheat flour

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Apple pomace is the press cake resulting from pressing apples for juice. In large scale apple juice industry, about 25% is the byproduct. In Iran, total production of apple pomace is about 1 million tons per annum which generally is thrown away and causes environmental pollution. As the pomace is a part of the fruit, it has a potential for being converted into edible products. Apple pomace is a rich source of carbohydrate, pectin, crude fiber, and minerals, and as such is a good source of nutrients. Apple

pomace was added to corn grit at 10-30 % (w/w) to produce fortified extruded snacks. The increase of total dietary fiber from 4.82 % (wb) to 5.92– 18.00 % (wb) and protein from 5.03 % (wb) to 5.40– 10.94 % were observed. The product indicated high expansion and good acceptance tested by sensory panels. There were 22.33–33.53 and 5.30– 11.53 fold increase in the phenolics and antioxidant activity in the enriched snack products. The effects of feed moisture content, screw speed, and barrel temperature on expansion and nutritional properties of the extruded products were investigated by using response surface methodology. Regression equations describing the effect of each variable on the product responses were obtained. The snacks extruded with feed moisture 14 % (wb) and extrusion temperature at 180 °C indicated the products with high preference in terms of expansion ratio between insoluble dietary fiber and soluble dietary fiber balance. The results showed that the by-products could be successfully used for nutritional supplemented expanded snacks.

**Keywords:** Extrusion cooking Snack food By-product Dietary fiber Phenolic compound

### The clinical impact of Wnt pathway in cervical cancer

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Cervical cancer is the most commonly diagnosed cancer in women, supporting the need for identification of novel prognostic and predictive biomarkers to predict the risk of developing of this malignancy or predict the prognosis of patients. The aim of the current review is to give an overview of the potential application of WNT

pathway and its value which is differentially expressed in cervical cancer versus non-tumorigenic tissue as a biomarker for risk stratification and predict the prognosis of patients with cervical cancer. HPV is one of the main risk factors for cervical cancer. It has been shown that HPV can modulate several signaling pathways, such as Wnt signaling pathway as well as the cell cycle. Moreover, Wnt pathway is among the major dysregulated pathways in cervical cancer, which is associated with increased cell proliferation and metastasis and drug resistance in different tumor types, including cervical cancer. Activation of this pathway is shown to be related with poor prognosis of cervical cancer patients. Therefore these data provide a proof of concept of its potential value as a prognostic biomarker, although further studies in a larger population and in the multi center setting are warranted to explore the value of this pathway as a prognostic marker.

**Keywords:** cervical cancer; patients; WNT pathway.

### The Effects of Green tea and Honey Mixture on Coronary Artery Disease

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Nowadays, many people prefer to use herbal remedies instead of chemical treatments because of fewer side effects. It seems that herbal drugs can be useful for cardiovascular diseases like coronary artery disease (CAD).

In most industrialized countries, CAD is the first cause of death. This disease is caused by the oxidation of lipids (such as LDL and cholesterol) which ultimately causes atherosclerosis. Hyperlipidemia, hypertension and high levels of homocysteine are the main causes of CAD.

Green tea is a plant with unique properties. It contains strong antioxidants such as vitamins A, C and E, Catechins and Flavonoids. Studies showed that daily drinking a cup of green tea reduces the risk of CAD up to a third. Catechins can reduce the death of the cardiac cells after a heart attack and repair damaged cells of the vessels. Also, Catechins inhibit the activation of pancreatic lipase, therefore blood fat increases slightly and prevent the accumulation of lipid in the arteries. Flavonoids are polyphenolic antioxidants that inhibit the oxidation of LDL, reduce thrombotic tendency and improve coronary flow velocity reserve.



Honey is another compound for improving CAD. It contains magnesium, potassium, Diastase, Flavonoids and phenolic compounds. Studies in UAE showed that consumption of honey reduced the levels of homocysteine greatly. The protective effects of phenolic compounds in CAD include anti ischemic, antioxidant and vaso relaxant. Diastase can dissolve the accumulated fats in the arteries and prevent sedimentation of them. Also, magnesium and potassium can reduce hypertension. With these interpretations, we can propose that green tea and honey mixture may reduce the prevalence and incidence of CAD. After taking any meal, the level of triglyceride increases (which is a risk factor for CAD), therefore taking a cup of green tea and honey after each meal is a good way to prevent CAD. Green tea and honey mixture besides the medications that patients with CAD are taking, may play a critical role in improving CAD.

**Keywords:** green tea; CAD ; Catechins

#### **The prevalence of metabolic syndrome and different obesity phenotype in Iranian male military personnel**

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Obesity, especially when concentrated in the abdominal area, is often associated with the presence of metabolic syndrome. Stress, particularly occupational stress, is one of the

most important factors contributing to the increased prevalence of metabolic syndrome components among different populations. This study aimed to investigate the prevalence of overweight and obesity as well as the criteria for metabolic syndrome and its risk factors and different obesity phenotype in a population of military personnel aged 20 - 65 years.

This study is a retrospective cross-sectional study in which data is extracted from the database of a military hospital (2,200 subjects). The records of participants contained information such as age, marital status, educational level, weight, height, body mass index, blood pressure, waist circumference, history of drug use and smoking, as well as the results of tests including lipid profile and fasting blood glucose, respectively. The ATP III criteria as well as two national criteria were used to identify metabolic syndrome among participants. Data analysis was performed using SPSS version 16. The average age of participants was 33.37 (7.75) years. The prevalence of metabolic syndrome according to Iranian cut off was 26.6 % for the waist circumference >90 cm (585 persons) and 19.6 % for the waist circumference > 95 cm (432 persons), respectively. As well, the rate of metabolic syndrome was identified as 1.1 % (432 cases) according to APTIII criteria.

The results of this study identified that the prevalence of metabolic syndrome among military individuals is less than other populations, but the prevalence of the syndrome is higher than other military personnel in other countries.

**Keywords:** metabolic syndrome, obesity, waist circumference, abdominal obesity, blood pressure, lipid profile, fasting blood glucose, military.

#### **The pathogenic mechanism of small dense low-density lipoprotein particles formation in obesity**

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Low density lipoprotein (LDL) particles are heterogeneous in terms of size, density and lipid composition. Among low-density lipoprotein cholesterol (LDL-C) particles, the smaller and denser LDL (sd-LDL) particles are atherogenic because of their faster penetration into the sub-vessels, susceptibility to oxidation, low affinity for binding to LDL-C receptor and a high tendency for connecting to vascular wall proteoglycans. Obesity is one of the main features of metabolic syndrome that is associated with an increasing risk of cardiovascular disease and elevating levels of sd-LDL particles. The pathogenic mechanism of formation of sd-LDL particles in patients is related to intra-abdominal fat containing high levels of triglyceride and also increasing the activity of liver lipase enzyme. Besides, obese subjects are usually resistant to insulin. It can facilitate the formation of sd-LDL particles. In humans, the plasma concentration of Adiponectin has an inverse relationship with body mass index (BMI), the percentage of the body fat, fasting insulin concentration and triglyceride plasma. It has a direct relationship with plasma cholesterol in HDL-C. The studied results show that patients with the lowest Adiponectin levels have been associated with a higher probability of having sd-LDL particles. Epidemiologic studies indicate that diets with interval food (IF) and caloric restriction (CR) cause a decrease in body weight, blood pressure and triglyceride levels and improve glucose regulation and blood lipoprotein levels. As a result, they reduce oxidative stress in the cardiovascular system and decrease the level of leukocytes and tumor necrosis factor and other inflammatory cytokines in the bloodstream. So these diets are an obstacle to the development of atherosclerosis.

Triglyceride richen LDL-C is a good substrate for the liver lipase enzyme and causes a shift progress of LDL-C particles to sd-LDL. Metabolic syndrome and obesity have a close relationship with sd-LDL particles and high prevalence of cardiovascular disease in the patients who are associated with increasing levels of atherogenic particles. Control of hyperglycemia with proper diets, loss weight, dyslipidemia control and blood pressure and increasing physical activity can have an effective role on this risk reduction.

**Keywords:** Small dense low-density lipoprotein; Obesity; Low-density lipoprotein cholesterol particles.

#### **Hypovitaminosis D: A Novel Risk Factor in Multiple Sclerosis**

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Multiple Sclerosis (MS) is a chronic neurodegenerative disease that is associated with inflammation of the central nervous system in humans. The etiology of this disease is still unknown. Clinical studies have shown that genetic and environmental factors are effective in the development of this disease. Vitamin D, as a fat soluble vitamin, includes ergocalciferol (vitamin D<sub>2</sub>) from herbal sources such as cereals, and Cholecalciferol (vitamin D<sub>3</sub>) from animal sources such as sardines, milk, and eggs. Cholecalciferol can also be synthesized by ultraviolet rays from 7-dehydrocholesterol in skin. Because of the low levels of vitamin D in foods, the highest levels of vitamin D are provided through dermal synthesis. Geographically, the risk of MS is increased by approaching the polar and reduced by synthesis of vitamin D in sunlight. In addition to its classic role in calcium and phosphorus homeostasis, it can be able to regulate the expression of many target genes associated with vitamin D by connecting to its receptor which exists in many cells. It also has effect on cell proliferation, differentiation, apoptosis, angiogenesis, inflammation and immune regulation through the increase or decrease in expression of many genes. The active form of vitamin D, 1,25(OH)<sub>2</sub>D<sub>3</sub> (Calcitriol) is the production of the CYP27B 1 gene expression which is expressed in many body cells such as epithelial cells, neurons, immune cells. It regulates the function of the inherent and humoral immune system. Epidemiological studies have shown that there is a direct relationship between the mutation of this gene and the spread of MS disease.

The low concentration of vitamin D in blood and its interaction with genetic factors are the most important factors in the incidence of MS. Vitamin D deficiency is associated with an increasing risk of diseases such as cancer, autoimmune disease, metabolic and cardiovascular disease. There is an inverse relationship between sunlight and MS prevalence; Thus, increasing vitamin D levels through diet or ultraviolet radiation can have a protective role in the development of MS.

**Keywords:** Vitamin D; CYP27B 1; Multiple Sclerosis

### Melatonin Effects on Serum Lipids and Body Weight

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Melatonin (N-acetyl-5-methoxy-tryptamine) is an endogenous neurohormone that is produced by the pineal gland. The synthesis of melatonin in the pineal gland is influenced by circadian rhythms and it is regulated by the light conditions of the environment received through retinal light sensitive cells. According to epidemiological survey, the presence of chemical elements in food can be influenced by the expression of genes directly and indirectly and then affect the human health. Tryptophan and subsequent serotonin degradation causes reduction of melatonin secretion. Melatonin decreases serum lipid levels by reducing the absorption of cholesterol from the intestine, inhibition of cholesterol biosynthesis and accumulation of LDL-C. It can also inhibit the transmission of fatty acids through metabotropic receptors and increase the catabolism of cholesterol to bile acids. Melatonin stimulates antioxidant enzymes including superoxidase, glutathione peroxidase, glutathione reductase and catalase which should be considered as lipoxygenase inhibitors. They can also prevent lipids peroxidation because of their solubility in lipids, removal of free radicals and increase the

efficacy of other antioxidants such as vitamins E and C. Some epidemiological studies have illustrated that the use of melatonin helps control obesity because it can reduce body weight and body fat with its effect on *brown adipose* tissue. *Brown adipose* tissue has mitochondria that produces uncoupling protein 1 (UCP 1). This protein is responsible in burning calories and generating heat. Melatonin supplements are sometimes used to treat jet lag or insomnia. The production of melatonin is influenced by age, sex, season, and some diseases. Melatonin and insulin levels in plasma were decreased with aging in humans, while visceral fat and plasma leptin have an increased tendency. This increase is often associated with dangerous metabolic outcomes such as hypertension, dyslipidemia, glucose intolerance, insulin resistance and diabetes.

Melatonin affects body weight, obesity and consuming energy. Epidemiological studies show that melatonin is ineffective on normal weight while it will be reduced with increasing of the fat mass. In addition, melatonin causes positive changes in serum lipid content and it can help control weight gain and prevent cardiovascular disease which is associated with obesity and dyslipidemia.

**Keywords:** Melatonin; Serum lipids; Body weight

### Application of gamma irradiation in meat and meat products

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Irradiation of food products is a physical treatment involving direct exposure to electron or electromagnetic rays, for their long time preservation and improvement of safety and quality. Gamma irradiation can be used for many applications related to food science and safety. The application of irradiation in meats, at doses less than 1 kGy, eliminates parasites or delay spoilage deteriorations. Therefore irradiation is beneficial for protection of food, although it might have some undesirable effects on lipids, proteins or vitamins when it is used at high doses in food. Gama irradiation in medium doses can be used to improve the microbial quality of meat, ensures its safety and extend its shelf life with no adverse changes or deterioration. During irradiation treatment, DNA molecules undergo swelling and break alongside the chain, preventing them from functioning normally



resulting in development of undesirable flavors in irradiated meats. Similar to lipids, protein damage is catalyzed by free radicals formed by radiolysis of water. The minimum irradiation dose (threshold dose) in irradiated meats was reported to be 2.5 kGy. When irradiation is used in combination with other preservation methods such as mild heat treatments, addition of spices and plant extracts and application of edible coatings and films, the irradiation doses can be reduced without affecting the product quality due to synergistic effects; resulting in elimination of pathogenic bacteria and reduction of the rate of unsaturated fatty acid oxidation as well as reduction of microorganisms load with application of reduced irradiation doses.

**Keywords:** Gamma irradiation, Meat, Safety, Shelf life,

#### **Ozone application in food as antimicrobial agent**

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Ozone was discovered in 1839 by Schönbein who had identified a distinctive odour produced at the anode of an electrolytic cell. After trials in de Meritence in France and other European countries, ozone was first used for drinking water disinfection in 1893 at the Oudshoorn Water Treatment Plant (WTP) in the Netherlands, followed by other full-scale plants in France (1906) and the USA (1908). Its use quickly spread and by 1920 it was established as a major water disinfection process used throughout continental Europe and beyond. Ozone is a strong oxidant and potent disinfecting agent. There are numerous application areas of ozone in the industry such as food surface hygiene, sanitation of food plant equipment, reuse of waste water, treatment and lowering biological oxygen demand (BOD) and chemical oxygen demand (COD) of food plant waste. Treating fruits and vegetables with ozone has been found to increase shelf-life of the products. Notably, when ozone is applied to food, it leaves no residues since it decomposes quickly. Ozone is a powerful antimicrobial agent that is suitable for application in food in the gaseous and aqueous states. Molecular ozone or its decomposition products (for example, hydroxyl radical) inactivate microorganisms rapidly by reacting with intracellular enzymes, nucleic material and components of their cell envelope, spore coats, or viral capsids. Ozone destroys microorganisms by reacting with oxidizable cellular components,

particularly those containing double bonds, sulfhydryl groups, and phenolic rings. Therefore, membrane phospholipids, intracellular enzymes, and genomic material are targeted by ozone; these reactions result in cell damage and death of microorganisms. Ozone a few years back has been declared to be GRAS by a panel of food experts established by the Electric Power Research Institute (the EPRI). This allows the unrestricted use of ozone in any food processing application other than meat, dairy, or poultry processing applications

**Keywords:** Ozone, Antimicrobial, Food, Water, Sanitation

#### **Nanotechnology and its applications in food industry**

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Nanotechnology has developed into a multidisciplinary research part with a plenty of potential for different industrial applications such as food industry. It has potential for uses in the food sections are encapsulation, emulsion formation and *etc.* Nano-food means when nanoparticles, nanotechnology techniques or tools are used during cultivation, production, processing, or packaging of the food. Nanotechnology has diverse applications in the sector at the moment and it may likely change the whole agri-food part in the nearest future. Use nanotechnology in agriculture and food systems will lead to great advancements in the food industry. Metal nanoparticles make available antimicrobial properties, which lead to reducing the risk of bacterial sepsis and its antimicrobial properties with the same effect as antibiotic drugs rapidly increases. Nanotechnology may improve food processing and safety and it may enhance nutrition; it may lead to production of more functional foods and therefore result in increased food production and cost effectiveness.





**Keywords:** Nanotechnology, Nano-food, Agri-food, Metal nanoparticles, Food industry.

### The role of oxygen barrier characteristic of edible coatings in promoting the quality of food products

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Oxygen is known as the main factor for developing many degradation processes (such as vitamin loss, microorganism growth, lipid oxidation and enzymatic browning) in foods. The oxidation of fat results in off-color, off-flavor and nutrient loss. The application of edible films and coatings, stand-alone or along with antioxidant agents, on food products can be a suitable and practical method to fix this problem.

Oxygen barrier by edible films and coatings: The protective effect of edible films is strongly related to their oxygen permeability (OP). Films prepared from carbohydrates and proteins are suitable barriers to oxygen because they form a network structure containing tightly packed and ordered hydrogen bonds. The OP of edible films and coatings is affected by many factors, including relative humidity and temperature, thus with an increase in relative humidity of the environment, more water molecules interact with the material, so that the film OP to be decreased. Generally, films produced using hydrocolloids have a higher OP levels than those produced by synthetic polymers.

Edible films and coatings applications in food products: So far, many edible ingredients have been assessed as the protective coating against the deleterious effect of oxygen, both on high moisture (meat, fruit, fish, and vegetables) and low moisture products (nuts). The positive effect of several coatings in extending the shelf-life of nuts has previously reported. It revealed that the lipid rancidity and oxidation in the nuts show decline both with an increase in coating thickness and with a decrease in environmental relative humidity, as a result of oxygen barrier properties of the coating. The continuity and homogeneity of the coatings were also introduced as a key factor to limit the progression of oxidative reactions. Moreover, the films and coatings prevent the enzymatic browning, which is caused by the polyphenol oxidase enzyme that in presence of oxygen converts phenolic compounds into

pigments with a dark color. Incorporating the plant antioxidants to the edible coatings: Antioxidant agents can be incorporated into the edible films and coatings formulation; thus this feature is associated with oxygen barrier properties of edible films and coatings, which in turn improves the product quality as well. The addition of different plant extracts to the coating solutions leads to a decrease in lipid oxidation of food products, including nuts, fish, and meat. The extending shelf-life and quality of food could be acquired using edible films and coatings mainly through two mechanisms, including their oxygen barrier capability and the possibility to add the antioxidant agents to the coating solution. Increasing the water content of film results in a decline in the oxygen barrier properties, while can enhance the effectiveness of the incorporated antioxidants. However, more studies are needed to improve adhesion and durability of coating on the surface (especially hydrophobic surface) of food and to evaluate the sensory acceptance of coated products by the consumer.

**Keywords:** Edible films and coatings, oxygen barrier properties, antioxidant-associated coatings

### An electrochemical biosensor for methanol detection in herbal-distillates

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Methanol is a serious toxic component for humans, which can cause permanent blindness by destruction of the optic nerve. An electrochemical enzyme-based biosensor plane has been designed by the self-assembly technique for determination of methanol in herbal distillates samples, which was composed of self-assembled thiodibutyric acid monolayer and Alcohol oxidase and peroxidase enzymes. The electrochemical methanol biosensor exhibited a linear relationship between target concentration and oxidation current in the range of 25-400 ppm and its detection limit was 10 ppm. We also measured methanol content in several commercially available herbal distillates samples with the biosensor, which showed good agreement with results from gas chromatography.

**Keywords:** Methanol, Biosensor, Alcohol oxidase, Peroxidase, Herbal Distillates



### Progress in Application of Essential Oil in Food Science and Medicine

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Essential oils are complex mixtures of low molecular weight compounds extracted from plants by steam distillation and various solvents. Terpenoids and phenylpropanoids are the major constituents which provide characteristic aroma and biological properties to EOs. Various pharmaceutical and biological activities like, antibacterial, antifungal, anticancer, antimutagenic, antidiabetic, antiviral, and antiprotozoal properties are assigned to them. Essential oils are usually with a strong odor, rarely colored, soluble in organic solvents, and insoluble in water. Plant molecules are well-known for their antimicrobial properties. Especially plant EOs have been shown to exhibit broad-spectrum inhibitory activities against various Gram positive and Gram negative bacterial pathogens. The hydrophobicity of essential oils enables them to partition the lipid layer of bacterial cell membrane and mitochondrion, making the structures more permeable. This leads to leakage of ions and other cell contents. aside from their antibacterial efficacy, essential oils are known to be inhibitive or lethal to fungi. Essential oils have been reported to control molds and various fungi such as foodborne and phytopathogenic fungi which cause different postharvest diseases and animal and human disorders. One of the most difficult challenges in chemotherapy is the treatment of malignant cell growth leading to cancer. Plant molecules like taxol are effective against cancerous cell proliferation. Various types of malignancies like, glioma, colon cancer, gastric cancer, human liver tumors, pulmonary tumors and breast cancer are reported to be lower after treatment with plant Eos. Use of plant EOs for perfumery, additives in food/confectionery as well as for cosmetics is a growing market trend. In fact, the incorporation of essential oils in food preservation and packaging provides a better protection from microbes as well as ensures the consumer satisfaction from the viewpoint of "green" earth concept. Various essential oils provide safety from the most important foodborne pathogenic bacteria like *Listeria*,

*Salmonella*, *Aeromonas*, *Clostridium botulinum*, *Enterobacter*, *Staphylococci*, and their toxins due to their lipophilic action. When added in prescribed amounts, the essential oils improve the organoleptic properties of the foods; the mode of action is not well understood which may open up a new tomorrow of research.

**Keywords:** essential oils (Eos), antibacterial, antifungal, anticancer activities

### An Overview of Using Nano Technology in Milk, Milk Products and Dairy Industries of the World

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Nowadays, according to the increase of demand for freshness, availability, taste, performance, lifetime, safety and quality improvement of dairy products from consumers, dairy producers are forced to accordingly improve. Nano technology has the potential to help the dairy industry to satisfy the needs for quality improvement of the products. Clear information about Nano technology and its usage in the dairy industry does not exist. This article aims to briefly review the existence of Nano technology in milk related products and how it could help this industry to use this technology for biologic improvement and to make everything clear and answer all the vague questions.

**Keywords:** Nano technology, milk, dairy industry

### Probiotics supplementation as an adjuvant treatment for diabetes type 2

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Over the last decades, the incidence of diabetes and obesity has increased dramatically and this unabated increase has converted to a worldwide epidemic. Diabetes mellitus type 2 (T2DM) or non-insulin dependent diabetes is the most common form of diabetes which is a heterogeneous disorder revealed by high blood sugar along with obesity, hypertension, and hyperlipidemia. Two fundamental abnormalities are associated with type 2 diabetes, including resistance to the biological activities of insulin in glucose and lipid metabolism and inadequate insulin secretion from pancreatic  $\beta$ -cells. According to WHO, type 2 diabetes can be prevented mainly through the diet modification. Until now, various treatment options have been studied for T2DM treatment, including the use of food supplements, micronutrients, and lifestyle changes including dietary changes, physical exercise and weight loss and vitamin D. Recently, probiotics also have been suggested for the improvement of T2DM. A probiotic is a microbiota-based intervention defined as 'a live microorganism, which, when administered in adequate amounts, confers beneficial health effects on the host'. Studies have indicated that certain probiotic species have improved insulin sensitivity, inflammatory markers and lipid profiles in obese, type 2 diabetes mellitus and dyslipidaemic subjects. Furthermore, it has been shown that short chain fatty acids (SCFAs) have an important function in T2DM and the numbers of SCFAs producing bacteria were significantly lower in patients with the disease. SCFAs may directly prevent the low-grade inflammatory response, as bacteria actively translocate from the intestines into the mesenteric adipose tissue (MAT) and the blood. Since probiotics are capable of changing the gut microbiota and regulation of inflammatory responses, they can be considered as potential therapeutics in T2DM treatment.

**Keywords:** diabetes type 2, Probiotics supplementation

### **Probiotics supplementation as a tool for treatment of osteoporosis**

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Osteoporosis is a major skeletal disease and a worldwide public health problem associated with aging and postmenopausal conditions. Osteoporosis has been defined as a systemic skeletal disease characterized by low bone mass and micro-architectural deterioration of bone tissue leading to bone fragility and an increased susceptibility to fractures especially of the hip, spine, and wrist. It is estimated that by the end of 2020, more than 60 million men and women will be suffering from osteoporosis. Various treatments have been suggested for osteoporosis management, including consumption of milk and milk products to provide sufficient calcium, hormone replacement therapy (HRT), walking and light running and probiotic consumption. Recent studies have demonstrated that regulation of bone mass by gut microbiota through its effect on the host immune system and as a result regulation of osteoclastogenesis. Different probiotics belonging to *Bifidobacterium* and *Lactobacillus* strains are shown to have positive effects on osteoporosis treatment. Possible mechanisms of action are producing short chain fatty acids and pH increase leading to increasing in mineral absorption, producing antioxidant status, producing phytase enzyme and increasing the mineral availability, reducing pro-inflammatory cytokine levels and hydrolyzing glycoside bonds of estrogenic foods and enhancing the mineral availability. Based on these premises, probiotics can be considered as valuable therapeutic agents in the treatment of osteoporosis.

**Keywords:** Probiotics supplementation, Osteoporosis

### **Health safety of food colorants: Challenges and opportunities**

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The color of food is one of the most important organoleptic properties which directly affects acceptance of consumers. Food colorants can be classified according to origin into natural, identical to natural and synthetic. It was established that synthetic food colorants have the considerable effect on children's behavior and on the respiratory system or allergies.

Although ADI (Acceptable Daily Intake) as a safety factor is a good parameter to control the intake of a substance which has a risk, it may ignore some parameters. There is the summary of evidence on possible detrimental effects of colorant mixes on children's behavior and allergies. The clinical importance of these phenomena depends on the ingested and absorbed amount of the colorant. Usually, it was claimed that almost all of people intake synthetic colorants in the safe range but some evidence was reported opposed to it. There are new studies indicating that children may actually consume more colored foods than expected by the regulatory authorities. Adulterations by synthetic colorants and over using them in food products are another problem which threat health. In addition, the main concern often limiting the use of synthetic colorant is the potential of carcinogenicity occurring after their azoreduction to carcinogenic metabolites by intestinal microbia. Even small doses of azo-dyes absorbed from tattoos were recently suggested to trigger immune responses of the body. Also, the most valid studies evaluate an intake of single colorants and not mixtures, which commonly encountered in the general population. It was revealed that natural food colorants are much effective than the synthetic one, with the subsequent benefits such as being more safety, providing health benefits besides conferring organoleptic features, acting as antioxidants and even preservatives, and could be counted as a functional food.

It is necessary to go toward the natural food due to its health benefit. In addition, controlling and avoiding from the adulteration in food colorant and necessity to insert the warning label about synthetic colorants on the food package should be noticed.

**Keywords:** Natural colorant, Synthetic colorant, Safety, Health benefits

#### Identification and determination of mycotoxins in foods

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Fungal growth and mycotoxin production may occur in the field and/or during storage, under suitable temperature and humidity conditions. More than 300 mycotoxins have been identified, and scientific attention is focused mainly on the mycotoxins that have proven carcinogenic

and/or toxic. In an eight-year study on the occurrence of mycotoxins in feed and feed raw materials worldwide, a total of 56,672 analysis was conducted on 17,316 samples for the determination of AF, ZEA, DON, fumonisins and ochratoxin A. The results showed that 72% of the samples tested positive for at least one mycotoxin, and 38% were found to be co-contaminated with multimycotoxins. Analysis of food and feed to date for mycotoxins contamination is an important process for ensuring quality control and managing any risk of contaminants entering the food chain. Most analyses are conducted using off-site techniques and require the samples to be transferred to an accredited laboratory for testing and confirmation of risks. Monitoring, exposure assessment, official control issue, quality control at production and research are all activities that require appropriate methods, the parameters to be weighed as the required limit of detection/quantification, achievable costs, required time of analysis, number of samples/time and need of a rapid answer. The classification of methods can be performed on different bases. With respect to the reliability and accountability of the results, methods can be: 1) Official 2) Reference 3) Confirmatory 4) Screening. Classification can be also usefully done according to the type of the chemical/biological/physical principle used and the time of analysis: 1. Chromatographic Methods: (HPLC, gas chromatography (GC), thin layer chromatography (TLC), liquid chromatography tandem mass spectrometry (LC-MS/MS). 2. Rapid Methods: (enzyme-linked immunosorbent assay (ELISA), lateral flow device (LFD), dipsticks). 3. Alternative Methods: (Biosensor, capillary electrophoresis (CE), fluorescence polarization immunoassay (FPIA)).

This review investigated the recent research trend towards the possible methods for measuring difference mycotoxins, and interpreting the limitations of them based on the food matrix and the Inherent nature of mycotoxins; as well as preparing samples and cleaning up.

**Keywords:** Mycotoxins, Chromatographic methods, Rapid methods, Alternative methods.

#### Surveying the Effects of Some Plant Ingredients on Antibiotic Resistant Bacteria

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This review is surveying the effects of some plant ingredients on bacteria that are resisted to antibiotic drugs. Antibiotics are the chemicals that make microorganisms interbreed or inhibit their growth and reproduction. Bacteria resistance in antibiotics are usually based on mechanisms such as production of drug degrading enzymes, changes in permeability of bacteria to medication, changes in drug receptors at the bacterial surface, changes in the structure of bacterial cell wall and access to the metabolic pathways which are compensating for the drug-mediated reaction that it takes. Either a spontaneous mutation on genes controlling the sensitivity of bacteria or through the transfer of plasmid, from one to another bacterium. Plants have an unlimited ability to produce antimicrobial substances that include phenols or derivatives of oxygen replacement, most of them are secondary metabolites, which sometimes give rise to a defensive response to plant invasive agents, or in some cases they are such as trypanoids, which create flavor and aroma in plants, or it is possible that some of the ingredients produce color in them, which can be consumed at any time in the production of food or medications. Plant extracts antibacterial mechanisms and list of antibiotic resistance modifying plant extracts against a panel of microorganisms based on different studies have been discussed at this review will be helpful to know how herbal extracts could be useful.

**Keywords:** Antibiotic Resistance, Plant Extraction, Antimicrobial Substances, Phenols, Trypanoids

#### **Extraction methods of barley protein isolates**

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Barley (*Hordeum vulgare* L.) is the fourth most important crop after wheat, rice and corn. Cereal grains though high in carbohydrates, also contain a substantial amount of proteins, thus possessing the potential to provide bioactive peptides in the diet. Protein content in cereals ranges from 10%– 15% of the dry grain. Barley proteins are the second major component of dry barley grains. A big share of this comes from storage proteins. The seed storage proteins in cereals are classified

according to their solubility in water (albumins), dilute saline (globulins), alcohol/water mixtures (prolamins) and dilute acid/alkali (glutelins). The major storage proteins in barley are prolamins, specifically hordeins. Hordeins and glutelins against albumins and globulins are rich in glutamine and proline amino acids and poor in lysine and tryptophan. Sequential extraction procedures using different solvents to achieve complete and separate extraction of the various protein fractions in barley, followed by their quantitation has been conducted.

**Keywords:** Barley, Protein isolate, Extraction methods.

#### **The comparison of the functional foods, food supplements and nutraceuticals: a concise review** Hamed Saberian<sup>1</sup>

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In the most countries, there is no legislative definition of the terms of conventional food, functional foods, food supplement and nutraceuticals and drawing a border line between them is challenging even for nutrition and food experts. Therefore, they are all used interchangeably. A food product can only be considered functional, if in addition to the basic nutritional impact, it has health beneficial effects on one or more functions of the human organism thus either improving the general and physical conditions or/and decreasing the risk of the evolution of diseases. The amount of intake and form of the functional food should as normal food and not be in the form of a pill or capsule. Functional food provides the body with the required amount of vitamins, fats, proteins, carbohydrates, etc., needed for its healthy survival. Food supplements are usually designed to deliver nutrients (normally micronutrients) singly or in combination in a quantified dose form in a non-food matrix. It can be prepared in a variety of forms such as tablets, capsules, pastilles, measured amount of liquid or small sachets of powder. Pharmaceuticals are synthetic substances or chemical compounds formulated for specific indications. The term nutraceutical is a hybrid or contraction of nutrition and pharmaceutical, which may be considered a food or part of a food and provides medical or health benefits, including the prevention and treatment of disease. Nutraceutical is used for anything that is consumed primarily or particularly for health reasons. Therefore, a functional food would be a kind of nutraceutical. On the other hand, nutraceuticals are a product that is prepared

from foods, but sold in the form of pills or powders (potions), or in other medicinal forms not usually associated with foods. When functional food aids in the prevention and/or treatment of disease(s) and/or disorder(s), it is called a nutraceutical. The aim of this review was to highlight the differences between functional foods, food supplements and nutraceuticals.

**Keywords:** Functional Foods, Food Supplements, Nutraceuticals

### **Histological techniques for diagnosing authorized and unauthorized tissues in hamburger products**

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Processed foods of animal origin, such as hamburger have an important role in the diet of people in the world. Because of that, many microscopic examinations have been done on food safety. The aim of this study was to identify the authorized and unauthorized tissue in hamburger products by using histological techniques including the general and specific staining. The 20 hamburgers were obtained with different brands from 14 factories in Mashhad. Three specimens were prepared from each sample hamburger and then stained with Hematoxylin and Eosin, Verhoef Vangeison, Trichrome Masson, Pass/alciane Blue and were studied with light microscopy. In total 240 specimens were collected, the results showed that special staining was significantly detection method for authorized and unauthorized tissue into hamburger products. Tissues were identified in this study, including Salivary gland, cartilage, bone, skeletal muscle, connective tissues, fat, blood vessels, nerve and plant tissues. The histological characteristics of animal tissue authorized and unauthorized products are discussed in detail. Pictures taken from these tissues by specific staining showed that the faster and more accurate diagnosis of tissue in meat products provided. The images taken from different tissues can be a reference in determining authorized an unauthorized tissue in meat products.

**Keywords:** Histology, Hamburger, Authorized, Unauthorized, Specific staining

### **High sugar and breast cancer**

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High sugar foods considered as commonly highly processed, low in dietary fiber as well as low in nutrient value. Moreover, these foods may raise level of serum insulin and serum insulin-like growth factor (IGF-I), which stimulate growth of cancer cell. Over expression, or high amounts of IGF lead to increases tumors in mice. insulin-like growth factor may exert its role by stimulating progression of cell cycle and prevent cells death. IGF-I may promote tumor growth through upregulation of ovarian steroid secretion. Research illustrates a synergistic effect between IGF-I and estrogen and also IGF-I and insulin resistance in breast cancer. A prospective cohort study indicated a significant enhanced risk of breast cancer in premenopausal women who had the highest quartile of IGF-I as compared to women with the lowest quartile. In postmenopausal women, the associations of insulin, glucose, and IGF-I were correlated with breast cancer risk in heavier subjects. Recent studies elucidate that much abdominal fat, high levels of insulin, increased concentration of IGF-I, are associated with increased risk of breast cancer. A significant two fold increased risk of breast cancer was associated with women consuming the highest amount of sugar in the diet. Sugar intake was associated with an increased risk of breast cancer. The Women's Intervention Nutrition Study (WINS) found that a decreased fat intake improves relapse-free survival by 24% in postmenopausal women with breast cancer compared with women following a standard diet. Finally, these findings demonstrate that chronic change of metabolism of glucose is correlates to breast tumor development.

**Keywords:** sugar foods, insulin-like growth factor, insulin, breast cancer, cell cycle

### **SR-BI as a therapeutic agent's delivery for breast cancer**

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The importance of metabolism of lipoprotein and cholesterol in breast cancer development has been already clarified. In this regard, The SCARB 1 gene which encodes the scavenger receptor class B type I (SR-BI), contributes to create balance of cholesterol exchange among HDL and cells. In addition, Reverse cholesterol transport process recruit hepatic SR-BI to excrete excess cholesterol to the bile and remove it from body. To date, the SR-BI's role in tumor development and malignant process have been illustrated. HDL particles represent a main carrier of circulating cholesterol of plasma and their function as promoting MAPK and AKT signaling pathways (and also initiating immigration in endothelial cells) can carry out through binding of HDL to its receptor (SR-BI). The level of SR-BI receptor in aggressive tumors has been elevated comparing with normal cell. Moreover, new studies have focused on evaluating the SR-BI function in breast cancer and novel therapeutic aims. In a number of tumors including breast cancer, SR-BI becomes overexpressed and interestingly, it is considered as a biomarker of cancer and hence especial target in case of therapeutic agents delivery. Furthermore, the association between the expression of SR-BI receptor and tumor progression has recently been established. Therapies involve administration of HDL-nanomimetic particles have been recently illustrated increase in the level of HDL even up to thirty fold could be tolerated by the cells and then nanoparticles bind to HDL receptor (SR-BI) to exert their metabolic functions favorable for drug-delivery. Data deduced from study on the function of HDL and SR-BI receptor in two human cell lines of breast cancer, MDA-MB-23 1 and MCF7, and growth of tumors revealed the ability of HDL in promoting migration and induces signaling pathways. Moreover, in order to attenuating progression of tumor in the models, the activity of SR-BI and its expression could be regulated. Nanoparticles of HDL evaluated in order to agent delivery mediated by SR-BI including small interfering ribonucleic acid (siRNA), chemotherapeutics.

**Keywords:** SR-BI, breast cancer, signaling pathways, aggressive tumors

### Selenium and breast cancer

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Antioxidants Prevent oxidative damages in body cells. Research indicates a link between oxidant damage and breast carcinogenesis. Antioxidant scavenges free radicals and suppresses damage due to oxidation. Therefore, the appropriate amount of Antioxidant is actually essential for the immune system. Emerging evidence indicates that selenium may decrease the risk of breast cancer. With this regard, selenium inhibits cell proliferation and induces apoptosis. This essential element may interfere and alter estrogen receptors decreasing mammary tumor incidence. In a Swedish cohort study of over 3,000 women diagnosed with breast cancer, dietary selenium intake was inversely associated with breast cancer mortality and overall mortality. Selenium is a precursor to the glutathione (GSH) antioxidant system. GSH is the principal protective mechanism of the cell and is a crucial factor in the development of the immune response by the immune cells. Studies suggest the ratio of selenium to glutathione is lower in breast cancer patients. Research indicates that dietary selenium supplements correct abnormal glutathione turnover. Additionally, the type of selenium may have influential effects. Selenium in the form of selenomethionine or methylseleninic acid may reduce or delay breast cancer metastasis whereas sodium selenite appears to exacerbate cancer growth. Research shows that selenium reduces the incidence of malignant cells in animal models, and enhances the effects of chemotherapeutic drugs, such as taxol and Adriamycin.

**Keywords:** Selenium, Breast cancer, Antioxidant, Glutathione

### A comparative study on antioxidant potentiality of cultivated and wild strains of button mushrooms, *Agaricus* spp.

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While the cultivated button mushroom, *Agaricus bisporus*, is the most commonly grown mushrooms in the world and Iran as well, research has shown that there are many wild types of *Agaricus* spp. Growing wild in various habitats of Iran. The cultivated button mushroom is not considered to be as high in

medicinal value as other medicinal mushrooms; however wild mushrooms are well-known to possess significant Nutraceuticals, particularly among societies of South East Asia, Europe, and Africa. Thus far, very little is known about medicinal properties of Iranian wild mushrooms, including antioxidant activity. Therefore, the current study sought to address differences in the antioxidant capacity among a number of cultivated and wild *Agaricus* spp., including 5 cultivated and 5 wild strains of the button mushroom (*A. bisporus*), a wild strain of *A. gennadii*, and a wild strain of *A. devoniensis*. All the wild strains were collected by us from the regions of North-eastern Iran, followed by molecular authentication using Internal Transcribed Spacer sequence analysis. Methanolic extracts from the tested mushrooms were subjected to chemical and biochemical measurements of antioxidant activities. Both cultivated and wild strains demonstrated DPPH scavenging activities higher than 90% at 10 mg/mL, even though wild isolates 1 and 4 of *A. bisporus* showed remarkable scavenging activities at concentrations as low as 3 mg/mL compared to the rest ( $p < 0.05$ ). Furthermore, wild isolate 4 and cultivated strain U 1 of *A. bisporus* exhibited the highest and lowest values for phenolic contents at 9.6 and 3.5 (mg GAEs/g dry weight), respectively. Among the tested mushrooms, the wild strain of *A. devoniensis* proved to apparently possess high levels of reducing power as well as chelating ability. In conclusion, wild *A. devoniensis* and a wild isolate of *A. bisporus* (isolate 4) ranked the first for having the highest antioxidant capacity compared to the rest ( $p < 0.05$ ). These wild mushrooms may not yet be suitable to be consumed directly in the diet due to having possible side effects (e.g. allergies) and problems with their digestibility, flavor, and texture. However, they could be considered as natural sources for the production of antioxidant bioactive compounds.

**Keywords:** Antioxidant activity, wild mushrooms, *Agaricus devoniensis*, *Agaricus gennadii*, *Agaricus bisporus*, cultivated strains

#### Food application of essential oils nano-emulsion as an antimicrobial agent

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Recently, consumers concern about harmful effects of chemical preservatives on human health. Therefore, many consumers demand foods with no artificial and harmful chemicals, such as antimicrobials and preservatives. Essential oils are added to food for their effects on reduction of microbial growth and undesirable oxidative changes and/or for their effects on sensorial properties of food. Although their application in food is limited due to low solubility in water, high vapor pressure, physical and chemical instability and unfavorable organoleptic affects especially on odor and flavor of food. Antimicrobial effects of herbal compounds such as essential oils and spices have been previously reported such as basil, cloves, thyme, cinnamon, oregano and cumin; therefore they have a good potential to be used as natural food preservatives. Their application in Nano-emulsion form has a significant effect on minimizing their undesirable effects and increasing the half-life of bioactive compounds, due to the smaller size of the particles. In addition, it increases antimicrobial properties by increasing its cellular absorption. Nano-emulsion application of essential oils in food is a new approach in order to extend the shelf life and increase the safety of food. It can also be used as hurdle systems with bioactive coating and films for their synergistic effects; therefore this review aimed to discuss their mode of action, effectiveness, synergistic effects in hurdle systems as well as their future trends as natural antimicrobial agents in food.

**Keywords:** Natural antimicrobials, Foodborne pathogens, shelf life, Nano-emulsion, essential oils

#### Application of Nano-emulsion in food industry and pharmaceutical-A Review

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The Application of Nanotechnology to food, medical and pharmaceutical industries has received great attention from the scientific community. Nano emulsions are kinetically stable liquid-in-liquid dispersions with droplet sizes on the order of 100 nm. Their small size leads to useful properties such as high surface area per unit volume, robust stability, optically



transparent appearance, and tunable rheology. Nano-emulsions are finding application in diverse areas such as drug delivery, food, cosmetics, pharmaceuticals, and material synthesis. High and low energy methods are used to prepare Nano-emulsions. Two important application of Nano-emulsion in food industry include used to encapsulate various lipophilic functional ingredients such as vitamins, flavors, colors, antioxidants, preservatives, and nutraceuticals and advantages in application as delivery systems for bioactive compounds. Antimicrobial activity of Nano-emulsion has been widely reported in the food field to prevent equipment, packaging, or products from contamination for their nonthermal preservation methods, which could reserve the textural properties and nutritional values in the maximum level. It has been confirmed that Nano-emulsions possess a wide antimicrobial activity against various food pathogens. In addition NE has an important role in delivery many kind of drug the formulations were developed to enhance oral bioavailability of hydrophobic drugs. NEs have recently become increasingly important as potential vehicles for the controlled delivery of cosmetics and for the optimized dispersion of active ingredients in particular skin layers. In addition NEs as a prophylactic medication, a human protective treatment, to protect people exposed to bio-attack pathogens such as anthrax and Ebola and NEs are being used to deliver either recombinant proteins or inactivated organisms to a mucosal surface to produce an immune response. A breakthrough nontoxic disinfectant cleaner for use in commercial markets that include healthcare, hospitality, travel, food processing, and military applications has been developed by Enviro Systems, Inc. that kills tuberculosis and a wide spectrum of viruses, bacteria and fungi in 5- 10 min without any of the hazards posed by other categories of disinfectants. In another hand NEs are a new method for the delivery of oil-soluble substances to mammalian cell cultures. The development of NE will be improved increasingly in coming years.

**Keywords:** Nano-emulsion, food science, pharmaceutical

### Effects of low lipid diet in migraine

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Migraine is a headache disorder with pulsative pain which evolves 7- 12% of the population (5- 7 % in men and 18-22% in women) and makes person hypersensitive to light and sound. A systemic analysis which was done to estimate the global burden of diseases in 20 15 mentioned migraine as one of eight chronic disorders that has affected more than 10% of the population of the world, also several reports have shown that it usually occurs in persons with genetic predisposition who were exposed to environmental motivators. Common effective medication in migraine therapy includes nonsteroidal anti-inflammatory drugs (NSAID), triptans, serotonin 5-HT 1B/ 1D receptor agonists; gepants, calcitonin gene-related peptide (CGRP) receptor antagonists and ditans, 5-HT 1F receptor agonists. Some pieces of evidence suggest that the incidence of migraine attacks have increased during last decade due to change in lifestyle, especially in dietary habits. So diet modification could be used for migraine treatment and prevention in completing drug regimen. At a low lipid diet, fat intake would be limited to less than (35-20) % of total calories and the ratio of free saturated fatty acids per unsaturated fatty acids (high level of omega-3 & low level of omega-6) would be reduced. A possible explanation for migraine attacks mechanism is that high level of serum lipid leads to compaction of platelet and cause procedures which lessen serotonin in body fluids and rise prostaglandins. Further studies demonstrate that prostaglandin E<sub>2</sub> (PGE<sub>2</sub>), prostaglandin I<sub>2</sub> (PGI<sub>2</sub>) and prostaglandin D<sub>2</sub> (PGD<sub>2</sub>) have receptors in cranial arteries and bring about vasodilation (an important factor for migraine attacks to begin). Some other studies have indicated that high level of omega-3 in the proportion of omega-6 in diet will increase its derivatives in the blood which perform as a reducer of migraine pains. This study suggests that migraine happens as a result of changes in some biochemical reactions by inducing or reducing production of metabolites which lastly start migraine attack and low lipid diet would decrease the production of metabolites (prostaglandins) which start attacks so it may be an effective way to treat migraine.

**Keywords:** Migraine, low lipid diet, prostaglandin, omega 3

### The use of riboflavin in migraine prevention



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Migraine is a chronic neurologic disorder characterized mainly by recurrent, unilateral throbbing headaches that last for 4 to 72 hours but could be accompanied by other symptoms such as nausea, photophobia, and phonophobia as well. Previous global studies estimated the prevalence of migraine to be about 10% with the higher proportion of adults and affect women nearly three times greater than men. Migraine can be generally categorized into two groups of migraine without aura (common migraine) & migraine with aura (classic migraine) among which the former one is the main cause of the disease by 80 percent. Etiology of the disease is still in dark. Both hereditary and environmental factors are probable. The dominant theory about migraine pathophysiology is abnormal cortex functioning and decreased mitochondrial function in genetically susceptible individuals. Riboflavin (B2) is a precursor for Flavin mononucleotide (FMN) and flavin adenine dinucleotide (FAD) both required for mitochondrial proper functioning. It is inexpensive and well-tolerable agent found in milk, liver, kidney and most of all in yeast. Over the past decades, there has been a dramatic increase in migraine thus it is important to involve prophylactic treatment as well as acute drug therapy. For this purpose, prescribing a high dosage of Riboflavin along with abortive migraine drugs to the patients might be inspiring. Food supplements are demonstrated to cause less adverse events and is more tolerable to patients. Until now, studies are inconsistent and certain conclusion of whether the Riboflavin can decrease the migraine frequency, intensity, and duration is not achieved. In this review article, our mission was to survey all related papers and propose an overview of Riboflavin role in migraine treatment. This study was designed to determine the efficacy of providing migraineurs with riboflavin. Overall, the obtained results recommend that administering a high dose of Riboflavin (400 mg/day) for adults is supportive with low adverse events and is advocated in the

second line of treatment (Level B). Solid Evidence indicating Riboflavin competence in high dosage for children has not been found and is not suggested until further investigations are established.

**Keywords:** Riboflavin, migraine, preventive treatment

### **A comparison of Dietary intakes and anthropometrics parameters in adolescent girls with and without premenstrual syndrome**

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Premenstrual syndrome (PMS) is a common disorder associated with moderate to severe signs and symptoms in the luteal phase of the menstrual cycle, and that considerably interfere with normal life of each woman. This study was conducted to explore possible associations between the PMS and anthropometric and biochemical measures, and dietary intake, using a food frequency questionnaire and food diary. A cross-sectional analysis of 890 adolescents aged 12- 18 in 20 15 was undertaken. Participants completed a validated food frequency questionnaire, additional questionnaires to assess menstrual symptoms and PMS and other health and lifestyle factors, and provided a fasting blood sample for biochemical parameters measurement. A total of 890 participants, 466 (52.4%) were in the group without PMS and 424 (47.6%) were in the PMS group. The two groups did not differ significantly by demographic, anthropometric, physical activity, hematological and biochemical parameters, energy and nutrient intakes, age at menarche, average days of bleeding, duration of the menstruation cycle, menstrual flow. Premenstrual symptoms rates

are high among female students. No significant relationship was found between the presence of PMS and anthropometric, biochemical parameters and nutrient intakes was revealed in this study. Other studies are needed to further evaluate relationship between other variables may be related to PMS.

**Keywords:** Adolescent, premenstrual syndrome, dietary intakes, anthropometric parameter

### **Functional expanded snack based on germinated lentil and corn**

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Extrusion of legume flour with the exception of soy bean is a new subject in the field of food processing. Comparing to cereals, legumes have lower amounts of sulfur-containing amino acids (methionine, cysteine and tryptophan) and higher amounts of lysine. Therefore, legumes and cereals are complementary from nutritional viewpoint. Lentils contain some anti-nutritional factors such as saponins, phytic acid and tannins. Germination process may be used to improve the nutritional value of lentils. Therefore, in this study, germinated lentils were incorporated into the corn snacks formulation. Extruded formula contained 30% of the germinated lentil. A central composite design was employed to investigate the independent or in combination effects of different barrel temperatures (160- 140- 120 °C), screw speeds (180- 150- 120 rpm) and moisture contents (13- 16- 19%) on the colorimetric (L, a and b), structural (density, hardness and expansion ratio) and functional (water solubility, water absorption and oil absorption) properties of extruded germinated lentil-corn snack. Moreover, the optimized conditions in order to improve the structural, functional and colorimetric characteristics of produced samples were calculated by a numerical optimization technique. The results of the optimization process, was concluded to be a temperature of 134.84 °C, humidity of 13% and screw speed of 140.07 rpm, respectively.

**Keywords:** extrusion, germinated lentil, functional properties, structural properties, colorimetric

### **The effects of nutritional status, diet and dietary supplements on autism. A review**

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Autistic spectrum disorder(ASD) or autism is a neurodevelopmental disorder including restricted repetitive behaviours and interests. It encompasses impaired language, social interaction and communication. It is reported by the WHO that 1 in 160 children suffers from an ASD. Epidemiological studies have shown an increase in the incidence of autism which might be owing to the development in the diagnosis of ASD. The early diagnosis of the disorder is of great importance, due to its vital role in improving patients` health. Both environmental and genetic factors are believed to give birth to the development of this condition. Furthermore, expert opinion believes that an adequate diagnosis when appearing the first symptoms of autism is highly important. Conventional treatment is settled on merging dietary and behavioural therapy with pharmacotherapy. Consuming a proper diet for instance, could lead to making the disease less severe, as well as gastrointestinal and psychological symptoms. It has been indicated that pathogenesis of autism may be begun in fetal life. It is one of the dieticians tasks to assess mothers` nutritional status before and during pregnancy in order to make changes in nutrition whenever needed to improve metabolic indicators. Therefore, amending the nutritional status of patients is vital to prevent the onset of gastrointestinal symptoms. Specialists express that it is required to monitor the nutritional status and diet of ASD children prequently. Moreover, it is essential to manage the diet of overweight, obese or wasting autistic patients, caused by inadequate nutrition. However, dietary therapy alone is not sufficient to treat autism effectively. Many studies have shown the need to supplementation of autistic patients with omega-3 fatty acids, vitamins, minerals and medical treatments. Parents and caregivers should consequently be informed about the advantages of appropriate monitoring and nutritional therapy of ASD patients.



**Keywords:** autism, developmental disorders, diet, nutritional status, diet supplementation

### **Application of alginate solution as coating/film in food industry**

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As a kind of natural food additives, sodium alginate has wide application and good application prospects in the food industry. The main varieties of alginates applied in the food industry are sodium alginate, potassium alginate, ammonium alginate and propylene glycol alginate. Alginate has an excellent functionality as a thickening agent, gelling agent, emulsifier, stabilizer, texture-improver (for noodles), to improve the quality of food. Nowadays, based on unique and excellent properties, alginate is applied to numerous kinds of food, such as ice cream, jelly, lactic drinks, dressings, instant noodle, beer, et cetera. Safety of alginate for food applications is certified by FAO/WHO, as one of the safest food additives. Alginate is a salt of alginic acid, a polymer of D-mannuronic acid and L-guluronic acid, and is isolated from brown algae. Alginate has unique colloidal properties and can form strong gels or insoluble polymers through cross-linking with  $Ca_2$  by post-treatment of  $CaCl_2$  solution. Such biopolymer-based films can keep good quality and prolong shelf life of foods by increasing water barrier, preventing microbial contamination, maintaining the flavor, reducing the degree of shrinkage distortion and retarding fat oxidation. Alginate is a GRAS substance (FDA). Coating fish, shrimp, scallop and pork with sodium alginate showed that it can prolong their shelf life, reduce thawing loss, cooking loss, weight loss and maintaining the functional properties during frozen storage. Sodium alginate has a high ability to form a suitable coating or film with the presence of anti-bacterial and antioxidant compounds causing an increase in their storage quality.

**Keywords:** Alginate, Coating, Film, Food, Shelf-life.

### **Study of the Physicochemical Properties and Oxidative Stability of Seed Oils from Two Subspecies of Cucumis Melo in Iran**

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Oils extracted from the seeds of Cucumis melo with two variety of Taleby magasy and Kharbezeh, collected from Neishabour and Mashhad in Khorasan province in Iran, were studied in terms of their fatty acid composition, tocopherols, sterols, phenolic compounds and oxidative stability. The predominant fatty acid was linoleic acid (C 18:2, n-6) representing 53.13 and 54.22 % for Kharbezeh and Taleby samples, respectively. The saponification number for Kharbezeh and Taleby samples were 115.37 and 115.70, respectively. In addition, the unsaponifiable contents of Kharbezeh and Taleby oil samples were not statistically different, which were composed mainly of sterols, ranged from 4.74 to 4.88%. The total tocopherol content of Kharbezeh (639.95 mg kg<sup>-1</sup> α-tocopherol) and Taleby (545.20 mg kg<sup>-1</sup> α-tocopherol) oils was significantly higher than that of Kurdica oil (499.91 mg kg<sup>-1</sup> α-tocopherol). Additionally, total sterol content was 4.15 and 4.01 % for Kharbezeh and Taleby samples, respectively. Total phenolic contents differed significantly between two varieties. The greater concentration was for the kharbezeh oil (62.21 mg.khg<sup>-1</sup> gallic acid), followed by the taleby oil samples (57.46 mg.khg<sup>-1</sup> gallic acid). The wax contents of the oils samples were statistically in the same range, namely 4.87 and 4.92%, for Kharbezeh and Taleby samples, respectively. Refractive index, dynamic viscosity (cP) and density (g/cm<sup>3</sup>) in a respective manner were 1.4689, 15.272 and 0.9196 for Kharbezeh and 1.4695, 15.272 and 0.9165 for Taleby samples. Oxidative stability data including Carbonyl value, Conjugated diene value and Oil Stability Index (OSI) in heating process showed that the Taleby seed oil is far more resistant to the formation of lipid oxidation products than that of kharbezeh seed oil samples.

**Keywords**—Chemical composition, Cucumis melo, Oxidative stability, Seed oils

### **Prevalence of *Listeria monocytogenes* in raw milk and dairy products of Iran**

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*Listeria* is a gram positive, spore-free, rod-shaped bacteria and consists of 10 different species. Among all *Listeria* species, *Listeria monocytogenes* is considered to be one of the most important pathogens at public health level, which caused listeriosis in humans and animals through contaminated foods. This bacterium is present in a wide range of foods and can be grown under various conditions in terms of salt, moisture, pH and heat. One of the most frequent sources of listeriosis is the production of raw milk, industrial dairy products, and traditional dairy products. Prevalence rates depending on the number of animals in the fields, season, geographical characteristics of the area, the lack of cow clearing, the inadequate quality of silage used for feeding livestock, inadequate management, sampling method, laboratory diagnostic procedure, non-compliance with health during milking and transmission and pasteurisation inappropriate varies. Although pasteurization has been effective in eliminating it, there are reports of its presence as secondary contamination after product pasteurization or inadequate pasteurization of the products. Although the prevalence of *L. monocytogenes* has been studied among different foods in different countries, there is no comparative study of the prevalence of *L. monocytogenes* in different parts of Iran. Therefore, the aim of this study was to determine the prevalence of this bacterium in milk and in dairy products in different parts of the country. *Listeria monocytogenes* was detected in most provinces of Iran, including the southern part of Iran, Nourabad, Mashhad, Tehran, Chaharmahal and Bakhtiari, Isfahan, Shahrekord, Kerman. The highest amount of *L. monocytogenes* among raw milk is in Nourabad and Kerman, because distribution in that area is normal so it was 5%, among other traditional dairy products, Chaharmahal and Bakhtiari is with a rate of 2.7% and in industrial dairy products in Isfahan Bank is 19%. Most studies show prevalence of cow's milk was higher than sheep and goat milk, and among dairy products, dough and yogurt due to high acidity (pH <4), so played a more significant role in the inactivity of this bacterium. Also, the addition of starter after the pasteurization stages has the lowest risk.

**Keywords:** *Listeria monocytogenes*, Prevalence, Raw milk, Dairy products

### Physical and sensorial properties of a low fat dairy dessert: a comparative study

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There has been a growing interest within the food industry in the development of reduced calorie products with desirable sensory attributes. Desserts consist of sweet and creamy food and, consequently high in sugar and fat. But reducing calorie mostly decrease product sensory qualities and seeking a solution for this problem is one of the researchers field of interest. In this study the optimized low fat dairy dessert formulation has been developed and compared with common samples in the market. Apparent viscosity of the melted dessert was  $97.66 \pm 2.57$  cp, which had no significant with one of the samples and was less than others. Hardness, springiness and cohesiveness of low fat dessert were,  $604 \pm 48$  g,  $0.9967 \pm 0.0050$  and  $0.92 \pm 0.006$ , respectively. Sensory characteristics were acceptable and price was reasonable and competitive, thus successful industrial production of this low calorie dessert seems to be possible.

**Keywords:** Dessert, sensory properties, low fat, low calorie

### Fortification of orange juice with bioactive components; an approach for enhancing nutritional health

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Vitamins and minerals are essential for growth and metabolism. The World Health Organization estimates that more than 2 billion people are deficient in key vitamins and minerals. Food fortification is one of the strategies that has been used safely and effectively to prevent nutrients deficiencies. For an efficient fortification the combination of fortificant and food vehicle must be safe, acceptable, and consumed by the target population. Moreover, it should not adversely affect acceptability and stability of the end product. Therefore in this study a comprehensive search was done to identify all available evidence for the fortification of orange juice as a common beverage. Studies were included if orange juice



was fortified with a single, dual or multiple micronutrients and impact of fortification on sensory properties and its health outcomes were also studied. Till now, orange juice was fortified with plant sterols, low calorie prebiotics; Iron, Calcium, Vitamin D, E and C. studies shows that orange juice fortified with plant sterols were effective in reducing LDL cholesterol and could easily be incorporated into therapeutic lifestyle changes dietary regimen. Fortification of orange juice with vitamin D, E and C safely increased the vitamin concentration in human serum. It is important to note that combination of encapsulated vitamins with orange juice did not change its organoleptic characteristics. Iron fortification of orange juice led to increase in haemoglobin and decrease the prevalence of anaemia. The acceptance of fortified juice was excellent and no undesired effect was observed. It can be concluded that the consumption of fortified orange juice is a proper strategy to complements micronutrients intake in society and therefore, to treat and prevent different deficiency anaemia.

**Keywords:** orange juice, fortification, deficiency, nutrients

#### **Replace chemical additives with compounds found in nature for bread industry**

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Nowadays, we're finding out more and more about what's in the foods we eat—and it's not all good news. However, some companies are taking the initiative to replace synthetic additives that customers object to with more natural ones. Raisin and prune concentrate and commercial sorbitol were incorporated into the Barbari bread formulation at different levels and their effects on the rheological, baking properties and shelf life of breads were evaluated. Supplemented dough absorbed more water than control. The presence of sorbitol, raisin and prune concentrate slightly increased dough development time. Firmness of breads decreased about the 15% for bread containing 4% raisin concentrate and 40% for bread containing 4% prune concentrate, and 40% for 1% sorbitol. Addition of raisin and prune concentrate showed

more reduction in water activity in compare with control. Breads containing raisin concentrate, prune concentrate were sensory rated higher than those with sorbitol and control. Results showed that, raisin and prune concentrate could be used as a natural ingredient to prolong the shelf life and improve baking quality of Barbari bread.

**Keywords:** Bread, chemicals ingredients, natural additives, rheology, texture, firmness

#### **Animal cloning and Food Production**

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Somatic Cell Nuclear Transfer (SCNT), or cloning, is likely to be used for the expansion of elite breeding stock of agronomically important livestock used for food. Cloning is a way to control genetic selection by preventing the random distribution of parent genes into offspring that takes place in sexual reproduction and makes possible the use of genomes from validated genitors. Cloning can be used in breeding to accelerate the introduction of desired traits into herds. The first cloned animal, "Dolly the sheep", was born in Scotland. Most commercial cloning is mainly taking place in cattle and pigs in the US. The risk assessment is comprised of two prongs; The first evaluates the health of animal clones, and is referred to as the Critical Biological Systems Approach. The second considers the composition of meat and milk from animal clones. There have been no health effects seen in sexually reproduced offspring of clones and conventional animals. Meat and food products (such as milk from cattle) from clones and their offspring are within the normal range observed in conventional products, and it is unlikely to be any food safety issues consuming such products. Many bodies, including The European Group on Ethics and the Advisory Committee on Novel Food and Processes, express the opinion that products from cloned animals and their offspring should be labelled. Therefore, we conclude that food from the progeny of any clone poses no more risk than food from any other sexually reproduced animal. No additional management measures need to be implemented to safeguard food products derived from clone progeny.

**Keywords:** Animal cloning, Somatic Cell Nuclear Transfer (SCNT), Food Safety, labeling

### **Saffron in the treatment of depression and anxiety: current evidence and potential mechanisms of action**

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Depression and anxiety are two common mental health problems with high economic and social costs. Currently, a number of treatments are available for patients with depression and anxiety disorders such as psychotherapy, electroconvulsive therapy, and antidepressant drugs. Due to safety concerns, adverse effects, low probabilities of remission and low tolerability associated with many antidepressant and anti-anxiety medications, identification of novel agents with less toxicity and the more favorable outcome is warranted. In this regard, several interesting data have been reported about the antidepressant and anti-anxiety properties of saffron, the dried stigmas of *Crocus sativus* L., in several preclinical and clinical studies. In particular, a number of clinical trials demonstrated that saffron and its active constituents possess antidepressant properties similar to those of current antidepressant medications such as Fluoxetine, Imipramine and Citalopram, but with fewer reported side effects. The aim of the current review is to summarize the recent findings regarding the antidepressant and anti-anxiety properties of saffron and to give an overview of the possible mechanisms of action.

**Keywords:** Saffron, Depression, Anxiety

### **Plant Saponins as an ideal opportunity to produce Functional foods**

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The concept of functional foods was formed from observations that showed that some foods or beverages had health effects that could not be

attributed to macronutrients and micronutrients of that food. In fact, functional foods refers to a foodstuff that has effects on human health more than its nutritional value or nutrient content. Consumer interest in the relationship between diet and health has increased the demand for information about functional foods. Studies show that today consumers in many parts of the world prefer to choose their nutritional needs from functional foods. Saponins are glycosides with high molecular weight. They consist of a fat-soluble core, having either a steroid or triterpenoid structure, with one or more side chains of water-soluble carbohydrates (sugars). Saponins have a high surface and interface activity, act as an emulsifier and produce stable foam in water. There are many reports about the biological and pharmaceutical effects of saponins in different plants such as antifungal, antiparasitic, antiobesity, antioxidant, antiulcer, antimutagenic, antiedematous, antipyretic, antiviral, antispasmodic, anti-inflammatory, antiphlogistic, antithrombotic, antigenotoxic, antiallergic, anticancer, molluscicidal, diuretic, sedative, hypoglycemic, neuroprotective, reduction in fat absorption, reduction in ruminal ammonia concentrations, inhibit active nutrient transport, increase permeability of intestinal mucosa cells, effect on absorption of minerals and vitamins, effect on cognitive behavior, effect on morphine/nicotine induced hyperactivity, effect on ethanol induced amnesia, etc. Given the above characteristics, identification of saponins from indigenous plant sources, the study of their potential therapeutic properties and their use in food formulations can be effective in the development of Functional foods.

**Keywords:** Functional foods, Saponins, Indigenous plants, Therapeutic properties.

### **The association between short height and risk of coronary heart disease and stroke mortality**

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Numerous studies have shown an inverse association between height and cardiovascular

disease (CVD). Majority of these studies have involved a relatively small number of late people and also might have been affected by some confounders such as socioeconomics. By contrast, a large number of studies have discovered that not very tall populations in western and conventional societies have very low cardiovascular disease in contrast to taller populations in western areas. This study sets its aim to assess the effect of short height on coronary heart disease (CHD) and stroke occurrence or mortality based on a type of intraethnic and inter-ethnic mass involving much larger late populations in comparison to previous researches. For example, northern Europeans had a double CHD mortality rate in contrast to shorter southern Europeans. Moreover, it is reported that taller groups versus shorter ethnic groups in California had considerably lower mortality rates. Some studies of Indian, Pakistani, Japanese and native American also illustrated shorter people had mortality or stroke incidence and lower CHD compared with taller people within each group. increasing height with the rate of increase in CHD mortality was alike for taller males vs shorter males and for taller males and shorter females.

**Keywords:** Adult, Aged, Body Height - ethnology, Body Height- genetics, Cerebrovascular Accident - ethnology, Cerebrovascular Accident – genetics

***Vibriosis phytotherapy: A review on the most important world medicinal plants effective on vibrio spp.***

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Etiological investigations have involved vibrio, a comma-shaped, Gram-negative and facultative anaerobic bacterium, which is naturally found in marine environment. Vibrios are capable of causing many human diseases and are often associated with food borne gastroenteritis or diarrhea. Most of these foodborne infections are caused by *V. parahaemolyticus* and *V. Cholerae*, and to a lesser extent by *V. vulnificus*. Infection with these species is mostly associated with consumption of raw, under-processed, improperly handled and contaminated seafood like oyster, fish and shellfish. Antibiotic resistance has been described as one of the biggest threats to public health and vibrio species involvement in resistance to large number of antibiotics has been proven. We aimed in this review article to report anti-vibrio effects of

world medicinal plants. The information was obtained using key words such as vibrio, medicinal plants, essential oils or extracts in published articles in scientific databases including Google scholar, Science Direct, Springer, PubMed and Scientific information database (SID). Results of this literature review showed some of the most important plants effective on vibrio spp. including *Syzygium aromaticum* (Clove), *Thymus vulgaris* (Thyme), *Zataria multiflora* (Avishane shirazi), *Zingiber officinale* (Ginger), *Punica granatum* (Pomegranate), *Satureja bachtiarica* Bunge (Bakhtiari Savory), *Mentha spicata* (Spearmint) and *Allium sativum* (Garlic). Hence, phytotherapy can represent a suitable way to overcome the development of resistance to antibiotics.

**Keywords:** Medicinal plants, Essential oils, Vibrio, Antimicrobial.

**Systematic review and meta-analysis shows a specific micronutrient profile in people with Down syndrome: Lower blood calcium, selenium and zinc, higher red blood cell copper and zinc, and higher salivary calcium and sodium**

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Different metabolic profiles as well as comorbidities are common in people with Down Syndrome (DS). Therefore, it is relevant to know whether micronutrient levels in people with DS



are also different. This systematic review was designed to review the literature on micronutrient levels in people with DS compared to age and sex-matched controls without DS. We identified sixty nine studies from January 1967 to April 2016 through main electronic medical databases PubMed, Scopus, and Web of knowledge. We carried out meta-analysis of the data on four essential trace elements (Cu, Fe, Se, and Zn), six minerals (Ca, Cl, K, Mg, Na, and P), and five vitamins (vitamin A, B9, B12, D, and E). People with DS showed lower blood levels of Ca (standard mean difference (SMD) = -0.63; 95% confidence interval (CI): -1.16 to -0.09), Se (SMD = -0.99; 95% CI: -1.55 to -0.43), and Zn (SMD = -1.30; 95% CI: -1.75 to -0.84), while red cell levels of Zn (SMD = 1.88; 95% CI: 0.48 to 3.28) and Cu (SMD = 2.77; 95% CI: 1.96 to 3.57) were higher. They had also higher salivary levels of Ca (SMD = 0.85; 95% CI: 0.38 to 1.33) and Na (SMD = 1.04; 95% CI: 0.39 to 1.69). Our findings that micronutrient levels are different in people with DS raise the question whether these differences are related to the different metabolic profiles, the common comorbidities or merely reflect DS

**Keywords:** calcium, sodium, zinc

#### **Lycopene; a functional natural pigment in food industry**

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Carotenoids are natural pigments, synthesized by plants and microorganisms which are responsible for red, orange, and yellow colors in many flowers, leaves and fruits. Lycopene is one of the carotenoids naturally occurring in many kinds of fruits and vegetables, known as an ultra-specific compound because of its unique biological effects. Lycopene has a bright red color that is responsible for colors of many ripen fruits, vegetables and flowers. It shows great antioxidant capacity because of the conjugated double bonds in its chemical structure, and is also known as a medicine compound. Lycopene prevents mutation for its high antioxidant property and decreases the risk of cardiovascular diseases and different cancers like prostate, lung, stomach, breast and mouth cavity. Tomato,

watermelon, guava and pink grapefruit are the main natural sources of lycopene and it exists in small amount in at least 40 other kinds of plants. Nowadays, lycopene is used in different food products such as margarine, butter, desserts, soft drinks, sauces and etc., as a color additive, flavoring agent and preservative. All other carotenoids can be considered as lycopene derivatives. In this study, we reviewed structure, properties and extraction methods of lycopene from natural resources.

**Keywords:** lycopene, extraction, carotenoids, antioxidant

#### **New packaging techniques in fresh vegetables-A review**

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Increasing demand for healthy diets and devising a proper strategy to reduce the high waste of vegetables requires proper packaging to maintain nutritional value and the importance of these products has become very remarkable. also Protecting food from production to consumption is very important. fresh Vegetable products are subjected to minimal or mild processing, but these treatments (peeling, washing, cutting, etc.) cause negative qualitative effects such as browning, off flavour, tissue decomposition, microorganisms proliferation and Thus reducing the shelf life over the time. Therefore, the use of packaging modern methods can greatly help quality maintain and delay the negative effects of the product and use as a more dynamic way to maintain the product. Today, packaging industry has become a powerful technology to help minimize the activity of bacteria and food corruptors. So that, The advancement in packaging to extend the shelf life of food products is the goal of many companies. Recognition of the modern packaging technologies by the food industry, the development of durable packaging systems, and the increased consumer acceptance for commercial realization of these packaging systems is essential. In this paper, we introduce different packaging systems and their classification, including modified atmosphere packaging, active packaging, intelligent packaging, edible coatings, and researches that have been done on the new packaging of various vegetables.



**Keywords:** Modified atmosphere, Vegetable packaging, Active and intelligent packaging, Edible coatings.

### Quality Changes of Air-Packaged Chicken Meat Stored Under Different Temperature Conditions and Mathematical Modelling For Predicting the Microbial Growth and Shelf Life

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The purpose of the present study was to investigate the changes in bacterial flora including the number of *Pseudomonas* spp., total viable count (TVC), lactic acid bacteria (LAB) and Enterobacteriaceae and to predict the shelf life of air-packaged chicken meat stored at different storage temperatures (0- 15 °C). The correlation coefficient between *Pseudomonas* spp. count, total viable count, total volatile basic nitrogen, sensory evaluation scores and pH showed that *Pseudomonas* spp. is a specific spoilage organism (SSO) ( $R^2 > 0.940$ ,  $p < 0.01$ ). The Gompertz model was fitted well to the experimental data ( $p < 0.001$ ,  $R^2 > 0.989$ ) and the MSE values were relatively small. The specific growth rate of *Pseudomonas* spp. in the chicken meat was 0.096, 0.122, 0.287 and 0.528/h at 0, 4, 10 and 15 °C, respectively. On the other hand, the lag phase was 74.3 h, 25.2 h, 14.8 h, and 2.7 h at 0, 4, 10, and 15 °C, respectively. The Arrhenius equation was used as a secondary model to describe the effect of temperature on the maximum growth rate of *Pseudomonas* spp. in the chicken meat. The activation energy for growth of *Pseudomonas* spp. in the chicken meat was 74.0 kJ/mol. Finally an exponential equation was used for shelf life prediction of poultry meat. The Gompertz model satisfactorily predicted the growth of *Pseudomonas* spp. as the specific spoilage organism in the air-packaged chicken meat stored under different temperature conditions.

**Keywords:** *Pseudomonas* spp.; Poultry; Predictive microbiology; Gompertz model; Arrhenius Model.

### Carbohydrates based fat replacers for low calorie bakery products

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World health organization (WHO) recommended 15-30% fat for daily energy intake. In the same recommendation, they suggested that lower than 10% of daily energy intake should supply from saturated fats. Considering the high energy density of fats, there are published documents indicate that there is a link between high fat diets consumption and chronic disease like cardiovascular problems, type-2 diabete and increased serum LDL. Due to existing public concerns around the risks of high fat diets, there is a demand for low fat, trans-free and low saturated fat products with sensory characteristics equivalent to full fat products. Bakery products includes wide variety of food products made from cereals flours in combination with water, sugar and fat as the main ingredients. Several bakery products such as cakes and cookies are rich in fats and oils. This shows that fat replacement in bakery products is a major topic for researches about fat substitution in food formulations. The most applicable solution to produce low-fat foods is to replace products conventional fats with other food ingredients with lower energy density preferably with beneficial health effects. There are two available categories of biopolymers in order to fat substitution including proteins based and carbohydrates based fat replacers. Between these two, carbohydrates are more diverse, technologically flexible and more cost effective due to the high price of protein sources. Natural and synthetic carbohydrates are widely used in bakery products and its related applications including fillings and frostings. Carbohydrates can absorb and bind water, producing a plastic, creamy texture similar to fats. Also, their bile salts binding in small intestine, is the other health profit, resulting in cholesterol lowering effect. From another aspect, high water absorption capacity of gums and fibers reduce carcinogenic contaminations concentration. In comparison to protein derivatives, most of carbohydrates are not digestible and so is calorie free. Regarding these advantages, using carbohydrates as fat replacers is more desirable than proteins.

**Conclusion:** Due to the capabilities of carbohydrates and their health benefits, in this review, the published works toward using carbohydrates based fat replacers for bakery application has been addressed and compared.

**Keywords:** Fat replacers, Gum, Inulin, Poly dextrose, Starch



### The prognostic value of PI3K/Akt pathway in cervical cancer

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Cervical cancer is a common gynecological cancer and a leading cause of cancer-related death in women globally. There is a need for the identification of prognostic and predictive biomarker for risk stratification. The phosphatidylinositol 3-kinase/ protein kinase B/ mammalian target of rapamycin (PI3K/ Akt/ mTOR) pathway is often dysregulated in cervical cancer, indicating that it may be a potential therapeutic target in the treatment of this malignancy, and could perhaps be used as a novel biomarker in the assessment of risk of developing cervical cancer. The PI3K/Akt/mTOR pathway regulates multiple cellular and molecular functions, which are crucial for tumor initiation, invasion and metastasis. Some studies have shown that activation of PI3K/Akt signaling pathway is critically involved in a wide spectrum of human cancers that include malignancies of the breast, ovary, endometrium, and malignant glioma. Furthermore, activation of the PI3K/Akt pathway is related to incomplete response in cervical cancer. Moreover, the expression of p-mTOR may be implicated as an indicator to predict survival and response to chemotherapy of CC patients. The data provide a proof of concept of its potential value as a prognostic biomarker, although further studies with larger sample population in multi-center setting are needed to explore its value as a prognosticate marker. Indeed, the careful selection of patients based on predictive biomarkers, the utilization of novel combinations of chemotherapeutic, hormonal and immunomodulatory agents, and a greater understanding of resistance pathways and metabolic alterations will allow PI3K pathway inhibitors to be used to their greatest effect.

**Keywords:** PI3K/Akt/mTOR signaling pathway, cervical cancer

### Liposomes as Versatile Carriers in Food Technology

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Nowadays food industry and nutrition-related sciences are revolutionizing by the field of nanotechnology. There are different nanoformulations with potential applications in the food sciences. Liposomes as emerging carrier vehicles have been widely used in the pharmaceutical industries because of their remarkable characteristics including biocompatibility, biodegradability, non-toxicity, small size, and ability to deliver a wide variety of bioactive agents. On the other hand, liposomes as a versatile group of lipid-based encapsulation nanoparticles have received recently much attention among nutritional experts and food scientists because of their potential abilities regarding the improvement of food quality. Extra health benefits of liposomes in food products origin from their roles in the encapsulation, targeted delivery and controlled release of nutrient compounds and thus improving their physical and chemical stability, bioaccessibility, bioavailability as well as efficacy and bioactivity. In this case, there are many different types of functional compounds that liposomal systems could encapsulate and deliver them to their right destination, including antioxidants, vitamins, essential oils polyphenols, flavors, and food antimicrobials. The applications of liposomes in the food industry as an innovative technology is growing day by day and parallel to this, some limitations about using liposome-based systems in the food and nutrition such as susceptibility of liposomes to microbiological contamination, as well as handling, storage, and transport of final liposome-containing food products, must be overcome.

**Keywords:** Liposome, nutrition, food, nanoparticle

### The applications of nanotechnology in the food sector

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Nanotechnology is a broad term used to represent an assemblage of processes, materials and applications that span physical, chemical, biological and electronic science and engineering fields. Use of nanotechnology is a relatively new approach and the benefits of these new technology must be weighed against possible adverse effects. Materials and structures are with nanoscale dimensions, usually in the range 1 – 100 nm. Nanotechnology in recent years has developed into a wide-ranging, multibillion-dollar global industry. A cursory look at the new technological developments shows that nanotechnologies offer wide-ranging benefits to the whole of the food chain; including: new tastes, textures and sensations, reduction in the amount of fat, salt and other health-promoting additives, increasing the bioavailability of nutritional components, controlling the release of flavors, longer shelf-lives, delivery systems for nutrients and supplements, better traceability and security of food products through innovative packaging applications. Currently, food packaging applications make up the largest share of Nano-food market, followed by Nano-sized and/or Nano-encapsulated ingredients and additives for food applications. Considering the global nature of food business, and that several companies and research institutions are currently exploring new possible applications in the food and related sectors. It is not unreasonable to expect that Nano-food products will be available to the consumer in an increasing number and variety in the coming years. Nanotechnology applications for food have undoubtedly opened up enormous opportunities for innovation and new developments, but at the same time have also raised new challenges in regard to ensuring the consumer safety. However, only small and most products and applications are still at R&D stage. In this context, the advent of nanotechnology has raised new hopes that it can address many of the industry's needs.

**Keywords:** Nanotechnology, Food, Application, Packaging

### **Nanotechnology in food packaging and its health safety aspects**

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In food production systems nanotechnologies cover different aspects such as food safety, bioavailability, food born pathogen detection and packaging materials. Demand for palatable and safe food products represents crucial challenges for the food-packaging industry with the idea to design and produce novel packaging solutions able to maintain the safety and quality of products. For this purpose, besides the obvious need for an improvement of food quality, packaging technology is played a key role. A recent challenge in the food packaging is "smart packaging", in which the packaging is not a passive container, but it also provides some extra functions. Active packaging materials change the condition of the packaged product to extend shelf-life and improve microbial food safety and sensorial properties. Antimicrobial packaging systems have been found highly effective in killing or inhibiting spoilage and pathogenic microorganisms that can contaminate food products. Nano sensors detect spoilage, bacterial growth and to monitor incorrect storage condition. Metal nanoparticles are nanometric materials exhibiting unique optical and chemical and antimicrobial properties that make them particularly attractive for a wide range of application. In fact, nanotechnology is going to change the fabrication of the entire packaging industry and nanomaterials can be used to make packaging that keeps the product inside fresher for longer. It is widely expected that nanotechnology-derived food products will be available increasingly to consumers worldwide coming years. In this study, we will review the advent of nanotechnology that has proved the way to innovative food packaging materials with enhanced mechanical barrier, safety and antimicrobial properties.

**Keywords:** nanotechnology, food packaging, nanoparticles, food safety

### **Electrospinning nanofiber for food-grade applications**

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Rapidly growing electro hydrodynamic process, namely electrospinning is a facile, cost effective and adaptable fabrication technique that utilize for generating of non-woven fibers with diameters below 100 nm from a wide range of biopolymers (include polysaccharides such as cellulose, chitin, chitosan, and dextrose besides proteins like collagen, gelatin, silk and DNA) and



synthetic polymers (such as polyethylene oxide, poly vinyl alcohol and polyamide). The electro spun nanofibers have been shown to possess several useful structural and functional characteristics due to their significant biological and chemical properties such as high surface-to-volume ratio, nanoporosity, biocompatibility, bioactivity, polycationicity and high safety. This review gives an introduction to the prospective food based uses of electrospinning method. Some industrial applications of nanofibrous films in food processing include: 1) as ingredients if they are composed solely of edible polymers and generally regarded as safe (GRAS) ingredients, (e.g., fibers could contain functional ingredients, for example, nutraceuticals, antioxidants, antimicrobials, and flavors), 2) as active packaging materials, 3) as processing aids (e.g., catalytic reactors, membranes, filters specially for beverage products at high flow rate), 4) as encapsulation of bioactive food ingredients to release control as most important application in food, 5) as enzyme immobilization, 6) food surface coating, 7) as carrier of plant extracts, and 8) as sensors (e.g., Nano biosensors for pesticide residue detection).

**Keywords:** Electrospinning, food-grade, nanofiber

### Food mediated synthesis of cellulose nanocrystals (CNCs) and food storage application

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Cellulose, the most abundant natural biopolymer in the world, can be a good candidate for a wide variety of application, such as food mediated, biomaterials and etc. Cellulose nanocrystals (CNCs) are a suitable choice for food mediated due to their biocompatible and biodegradable nature. The nanoparticles are usually made by treatment or acidic hydrolysis of initial cellulose samples such as rice, wheat, oat, sugar beet pulp at different temperature and following mechanical or ultrasound disintegration. The CNCs have a great utility in biopolymer formulation for food storage that could be used for nanocomposites purposes in made of bioactive utensils and transparent films. These CNC-based packaging materials could be used for

lengthening the self-life of pharmaceutical, food, and drink products. Coating with CNCs can be considered as one of the appropriate solutions for food packaging application. So, we can explain that cellulose and its derivative has affected every facet of human life and has been closely associated with human activities.

**Keywords:** Cellulose nanocrystals; Food storage; Biopolymer; Nanocomposites.

### Aptasensing in food safety monitoring

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As a consumer and regulator call for improved food quality and safety, a sensitive monitoring of contaminants in food, for example, chemical compounds, drug residues, toxins and pathogens is crucial to assess and avoid risks for human health. Traditional analytical techniques to detect these compounds are usually based on separation techniques with different detectors that occasionally are costly, tedious, require highly trained personnel and not valuable for field analyses. To achieve a sensitive monitoring, there still is a high need for sensitive, simple, quick, cost-effective and portable detection methods. Biosensors contain these characteristics and are thus perfect for food monitoring. The biosensor technology may have in delivering analytical methods capable of overcoming many of the aforementioned technical challenges. A recent trend is the emergence of aptamers as detecting elements that has the potential to replace all the above ligands. Aptamers are short artificial single-stranded DNA alternately RNA segments. Targets for which aptamers can be developed are varied and range from small molecules to proteins and even whole cells. In addition to this advantage, aptamer technology offers several other benefits over antibodies (sensitivity, specificity, reusability, stability, non-immunogenicity, cost-efficiency), which can be easily exploited in biosensor technology. Aptasensors are thus basically biosensors based on aptamers as ligand molecules. Here we review the various applications of aptasensors in the food industry. We have clustered aptasensors as indicated by their signal-harvesting methods, including optical and electro-chemical approaches.

**Keywords:** aptamer, biosensor, food safety



### Characterization and Genetic Identification of Lactic Acid Bacteria Isolated From Iranian Fermented Dairy Products

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A collection of 62 LAB isolates were obtained from fermented dairy product samples manufactured by households in different regions of Iran and Azerbaijan. The obtained isolates were tested for antimicrobial and proteolytic activity. Ten isolates showing inhibition of test organisms, such as *Lactobacillus brevis* and *Listeria monocytogenes*, and three proteolytic isolates were obtained and characterized. The ability of strains to grow at different temperature, pH, presence of different concentrations of NaCl, which are conditions occurring during the technological processes of food manufacturing, was tested. Obtained active isolated were identified to species level by 16S rRNA fragment sequencing. The LAB strains isolated and characterized in the present work are potential candidates for application as starters in dairy industry.

**Keywords:** lactic acid, dairy, genetic

### Study of Somatic Cell Count (SCC) and TBC Changes in Dairy Farmers in Birjand, Iran

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Milk and dairy products have a special status in human nutrition as a source of protein and high nutritional value. Important indicators for assessing the quality and health of milk are the number of somatic cells and the total count of germs. Somatic cells are composed of neutrophils, lymphocytes and macrophages, which are used to identify breast infection. For this purpose, sampling was carried out during three consecutive periods in 13 industrial dairy cows in different seasons in Birjand. Samples were sent to the reference laboratory beside the ice. The somatic cell was counted with spectrophotometer. To determine the microbial load, the milk sample was cultured in a medium containing enriched food at 30 ° C for 72 hours, and then counting the number of colonies. The results of this study showed that the mean of somatic cell in Birjand dairy farms was equal to 320000 Cells/ml and the mean of total microbial count was equal to  $1/12 * 10^7$  cfu/ml Based on the results, seasonal variations are significant on

microbial load changes, somatic cell count and somatic cell score. Considering that pasteurization plays a significant role in reducing microbial load of milk, it is recommended using pasteurization methods. Also, hygiene in milking stages plays a major role in reducing microbial load and somatic cells.

**Keywords:** somatic cell count; total microbial count; pasteurization

### Serotonin and Its Association with Obesity

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Obesity is one of the diseases that developing rapidly. It is so critical disease. Because it can be the source of different illnesses such as cardiovascular diseases, diabetes, cancers and.... As the result prevention and treatment of it is so necessary. Obesity is a medical condition in which excess fat tissue is accumulated in the body, so that the BMI is over 30 kg/m<sup>2</sup>. Studies showed that 30% of the people in the world face obesity. Different factors can cause this disease, in this paper we discuss about one of them called Serotonin. Serotonin is a neurotransmitter that secretes by central nervous system and gastrointestinal system. This chemical creates a sense of happiness in the brain. In the last few decades, it has been noted that Serotonin can play an important role in obesity. When the level of Serotonin decreases, the obese person gets a mild depression so he wants to eat; for this reason, if the level of this chemical is high enough, the tendency of obese people to eat reduces. It was first discovered in 1970s that 5HT-receptor gene may play an important role in improving obesity. This gene was injected to the obese mice and due to increased gene expression and increased the level of Serotonin, the weight of mice has reduced. Expression of this gene can reduce the appetite and food intake. Obviously, the nutrition that obese persons consume are important in reducing or increasing the level of Serotonin; for example carbohydrates and alcohol reduce Serotonin.

With these interpretations, perhaps, one of the most definitive ways to treat obesity is gene therapy. In this way, it will be appropriate if we change the gene to keep the level of Serotonin stable which ultimately lead to reduction the appetite and weight loss.

**Keywords:** serotonin, obesity, BMI, carbohydrates

### Genetically Modified Foods



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A genetically modified (GM) food is a result of recombinant DNA biotechnological procedures that allow the genetic make-up of an organism to be modified. This can be accomplished by incorporating genes from other organisms or by rearranging genes already present. These changes can result in the expression of attributes not found in the original organism. Consumer concerns over the safety of GM food products, allergic reactions are the most obvious health concern associated with these products. The FDA has put measures into place to prevent such a scenario by requiring that each producer of a GM food product present scientific evidence that they have not incorporated any allergenic substance into their products. If this evidence cannot be produced, the FDA requires a label to be put on the product to alert consumers. Several applications of GM foods were discovered such as GM technology can be used to inculcate in the plants; resistance to environmental threats; enhancing their ability to grow in extreme conditions, to pathogens and/or to herbicides. The quality of produce can be modified such as increasing the nutritional content; improved taste and improved storage such as delayed ripening or providing more industrially useful qualities or quantities. Implications of enhancing the nutritional quality of the crops can be improved processing characteristics leading to reduced waste and lower food costs to the consumers. Finally, it seems that some countries in the world agree that GM products, like drugs, are a benefit overall, and other countries are either ambivalent or totally opposed. With all the controversy surrounding GM foods, especially in Europe, researchers have been searching for new methods to enhance this production. This product combines traditional genetics and molecular biology in the coming years. The GM foods become a part of agriculture, they cannot be eliminated, and future trade could be adversely affected.

**Keywords:** genetically modified food, label, safety.

### **Lead poisoning and curcumin as Chelation Therapy**

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Lead poisoning has been recognized as a major public health risk, particularly in developing countries. Though various occupational and public health measures have been undertaken in order to control lead exposure, cases of lead poisoning are still reported. Exposure to lead produces various deleterious effects on the hematopoietic, renal, reproductive and central nervous system, mainly through increased oxidative stress. These alterations play a prominent role in disease manifestations. Modulation of cellular thiols for protection against reactive oxygen species (ROS) has been used as a therapeutic strategy against lead poisoning. N-acetylcysteine,  $\alpha$ -lipoic acid, vitamin E, quercetin and a few herbal extracts show prophylaxis against the majority of lead mediated injury in both *In vitro* and *in vivo* studies. Chelation therapy is to inhibit the action of intruding metal by sequestering it through the formation of complexes that are rapidly excreted from intracellular and extracellular spaces of the body. Chelating agents can alter the effects of metal toxicity by mobilizing the toxic metal mainly into the urine. One of the key features of chelation therapy is to have good chelating agents. It has been suggested that an ideal chelator should have high solubility in water, be resistant to biotransformation, have the ability to reach the sites of metal storage, retain chelating capability at the pH of body fluids, Based on findings, dietary strategies are recommended for people at risk of Pb exposure. The application of these strategies is advantageous for both the prevention and alleviation of Pb toxicity, as such supplements can be added easily and affordably to the daily diet and are expected to have very few side effects compared to the chelation therapy. The polyphenolic flavonoid curcumin (CURC) found in turmeric is a yellow curry spice with a long history of use in traditional Indian diets and herbal medicine propanil increased oxidative stress and altered some biochemical parameters curcumin, when added along with lead showed the significant amelioration in all genotoxic and oxidative stress-related indices.

This review indicated that due to alteration in antioxidant defense system; there is an adverse genotoxic effect of lead. On the other hand, curcumin, a potent antidote, can protect chromatin material against lead.

**Keywords:** Lead, curcumin, Chelation Therapy

### Tissue Engineering Possibilities for the Treatment of Diabetes

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The appropriate treatment of diabetes is considered as one of the main challenging issues in the clinical setting. Allogeneic islet transplantation and subcutaneous injection of insulin are recognized as the golden standards for the treatment of type 1 and 2 diabetes respectively. However, there are a couple of complications with these traditional therapies including transplant rejection, pain, local tissue necrosis, and infection. Nowadays tissue engineering-based strategies as novel therapies have opened up new horizons to overcome the aforementioned limitations. Three main components of tissue engineering include cells, biomaterials, and growth factors that together provide the possibility of regeneration and reconstruction of different tissue and organs in vitro. Up to now, a number of tissue engineering-based approaches have been proposed to treat diabetes like beta cell regeneration. Also biomaterials based approaches have gained a lot of interest due to their superior characteristics such as biocompatibility, the ability to freely diffuse insulin, nutrients, and waste products. In this regard, the encapsulation of insulin secreting pancreatic beta cells into different polymer-based structures such as smart hydrogels is under progress. Thanks to tissue engineering, the development of completely artificial pancreas is now available that has provided a number of advantages over biologically based materials for diabetes treatment such as the elimination of immunological responses.

**Keywords:** Diabetes; Metabolic disorders; Tissue engineering; Cell therapy; Biomaterials

### Effect of *Ziziphora clinopodioides* essential oil and nisin on Lipid damage changes of fish Burger

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Nowadays, the consumers demand has increased for new products with natural and functional ingredients. Plants have been used for centuries as flavoring agent or preservative and also treatment of diseases. *Ziziphora clinopodioides* has been used in yogurt as flavoring agent or as sedative and carminative. This study was designed to evaluate the effect of *Ziziphora clinopodioides* essential oil (ZEO) and nisin in free and microencapsulated form on chemical characteristics and lipid damage of trout fish burger during 20 days of storage. Firstly, Different treatments of trout fish burger were formulated using ZEO and nisin, stored in refrigerator and were analyzed for lipid damage analysis including Peroxide Value (PV), Thiobarbituric Acid (TBARS), Free Fatty Acids (FFA), Fatty Acid Composition (FAC) characteristics at 5-day intervals. According to this study the level of TVB-N, PV, TBA and FFA increased during storage. Monounsaturated fatty acids (MUFA) level raised and amounts of  $\omega 6$  fatty acids were more than  $\omega 3$  fatty acids. Results also indicated that combinational use of ZEO and NISIN in microencapsulated form had the strongest effect on preserving chemical quality of fish burger and could prolong its shelf life during storage at 4° C. therefore because of negative effects of chemical compound as the food preservative on human health; they can be replaced by natural additives such as ZEO and NISIN.

**Keywords:** ziziphora nisin, chemical quality, fish burger, clinopodioides.

### An overview of Crimean-Congo hemorrhagic fever of the World





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Crimean–Congo hemorrhagic fever is one of the most important human viral diseases. On several geographic locations, this virus results in different illnesses and it has been mostly observed in some vocations like livestock breeders, butchers, and farmers, which means that it, could also affect consumers of contaminated food. Clear information about Crimean–Congo hemorrhagic fever does not exist in a variety of locations. In case of intervening control group for this disease, there is no unifying standard in the world and an information gap exists. This study aims to briefly review the Crimean–Congo hemorrhagic fever in the world and answer a variety of questions regarding that.

**Keywords:** Crimean–Congo, hemorrhagic fever, virus

### **The relationship between Monounsaturated fatty acids and Polyunsaturated fatty acids with metabolic syndrome in adolescents**

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A growing amount of scientific data supports the idea that visceral fat distribution and insulin resistance represent important markers of MetS in adolescents. This review briefly summarizes the findings from Google Scholar, PubMed, Scopus, and Web of Science, from January 2000 to May 20 16 to assess the relationship between polyunsaturated fatty acids and metabolic syndrome in adolescents. The available evidence in children from both interventional and longitudinal studies indicates that dietary fatty acids play an integral role in the prevention, pathogenesis, and treatment of MetS in adolescents. Our survey shows that adherence to the Mediterranean diet, rich in n-9 fatty acids, and the DASH (Dietary Approaches to Stop Hypertension) diet, rich in n-6 and n-3 fatty acids, may attenuate MetS risk factors in adolescents.

Consuming lower amounts of SFAs and high amounts of PUFAs in childhood has the potential to decrease serum cholesterol in childhood. Among the fatty acids, LCPUFA protects obese adolescents against MetS and its components. It also appears that the impact of EPA in lowering blood pressure is greater than DHA. However, DHA is more influential to improve lipid profile than EPA. These results support the need to engage adolescents in healthy dietary habits to prevent excessive weight gain. Weight control should be recommended as the first-line intervention to decrease MetS in adolescents. Further research is needed to identify early indicators of MetS and to fully define the underlying pathophysiology. Fully elucidating the mechanisms involved in the development of MetS in adolescents could help in the identification of preventive and therapeutic strategies.

**Keywords:** monounsaturated fatty acid, polyunsaturated fatty acid, metabolic syndrome, adolescents

### **The role of Trans fatty acids in the pathogenesis of metabolic syndrome in adolescents**

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The increasing prevalence of childhood obesity is a driving force behind the increase in adolescent's metabolic syndrome (MetS). One food constituent that is associated with MetS is dietary fat. Trans fatty acids (TFAs) are unsaturated fatty acids. Elaidic acid is the major TFA industrially produced in the food supply, and vaccenic acid is the major TFA derived from ruminants. Some studies suggested that the intake of ruminant TFA is weakly inversely correlated with changes in weight, but has no association with changes in waist circumference. Other studies indicated that there was a negative correlation between vaccenic acid and all of the components of MetS in adolescents, but levels of elaidic and linoelaidic acids (hydrogenated vegetable oils) showed a strong association with MetS and most of its components, however, the total amounts of TFAs had no association with MetS or its components. This review briefly summarizes the findings from Google Scholar, PubMed, Scopus, and Web of Science, from January 2000 to May 20 16 to assess the role of Trans fatty acids in MetS in adolescents. Thus, it seems that considering TFA from different food



sources separately is a better approach than considering the total sum. Adolescents should learn to recognize and avoid products containing trans fats, and restaurants and food manufacturers should choose to use alternative fats in food production and preparation.

**Keywords:** Trans fatty acid, metabolic syndrome, adolescents.

### **Functional Properties, Health and Nutritional Aspects of Food Hydrocolloids**

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Recently, the demand for healthy and natural food products has been increased. Hydrocolloids are among the most commonly used ingredients in the food industry and they play a major role on the physicochemical, sensory and nutritional qualities of human diets. They can be used in the food industry as thickeners, gelling agents, stabilizer, bulking agents, and emulsifiers. In addition, hydrocolloids are currently being found to have many increasing applications in the health realm. The Codex definition of a dietary fiber gives regulatory approval for the major commercial important hydrocolloids to be designated as dietary fibers. Among many other uses of hydrocolloids, the beneficial effects of a high-fiber and low-calorie diet have promoted attention for health and nutritional values of hydrocolloids. Nowadays, a wide range of hydrocolloids is thought to possess nutritive effect such as cereal  $\beta$ -glucan, pectin, inulin, gum arabic, psyllium, resistant starches, guar gum, chitosan, carrageenan, among many others. The range of health benefits that have been connected to consumption of food hydrocolloids are numerous and associated with appetite regulation, bowel function, reduction of osteoporosis risk, and prevention of coronary heart diseases, type 2 diabetes mellitus, immune function, weight management, and colonic health. All these characteristics are unique for each hydrocolloid and might also be modified within a specific hydrocolloid depending on the manufacturing process or origin of the raw material. In addition, utilization of fat replacers is necessary for designing reduced fat products that possess sensory qualities like to those of their full-fat counterparts. According to the results of

previous researches, hydrocolloid-based fat replacers involve inulin, pectin, barley beta-glucan, guar gum, okra gum, gum tragacanth, xanthan gum, kappa-carrageenan, sodium alginate, curdlan, locust bean gum, etc. In summary, the rising demands for healthy food products over the last decade have been a great opportunity for the manufacturers and producers of food hydrocolloids to move their products from their traditional applications to a more value added unique products by using new food formulations.

**Keywords:** Hydrocolloid; Dietary fiber; Health benefits; Nutrition.

### **Bioactive dietary carbohydrates**

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Gastrointestinal disorders include such conditions as constipation, irritable bowel syndrome, hemorrhoids, anal fissures, perianal abscesses, anal fistulas, perianal infections, diverticular diseases, colitis, colon polyps, and cancer. Many of these can be prevented or minimized by maintaining a healthy lifestyle, especially healthy diet (Increasing fiber in the diet). Inflammation has been shown to be associated with various pathogenic conditions. One of the key aspects of the beneficial effects of dietary fibers, prebiotics, and indigestible polyphenolic compounds is their ability to induce production of large quantities of short-chain fatty acids (SCFAs) in the colon, which was produced through fermentation of bioactive dietary carbohydrates. They are compounds that increase blood flow to the colon and act as metabolic fuel for the intestinal cells.

Problem solution: Carbohydrates, major sources of energy in the diet, have certain structural properties that enable their use beyond primary nutrition. Resistance to digestion in the gastrointestinal tract (GIT) is the most important structural characteristics of bioactive carbohydrates, because of glycosidic bonds. After pass the upper tract of GIT, they reach the colon and become food for the gut microbiome. Beneficial bacteria in the GIT used carbohydrates

as fuel to grow, multiply and invert them to bioactive compounds. Trehalose (disaccharide), polysaccharides, soluble and insoluble fibers, Resistant and Slowly Digestible Starches, prebiotics, polyphenols are examples of the bioactive dietary carbohydrates. This study reviews and definite bioactive carbohydrates in our diet, focusing on the structural features and their effects on some GIT disorders in our body.

**Keywords:** Bioactive carbohydrates, Dietary carbohydrates, Prebiotics, GIT Inflammation.

### Progress in application of chitosan in food science and medicine-A review

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Chitosan is a modified, natural carbohydrate polymer derived by deacetylation of chitin [poly- $\beta$ -(1  $\rightarrow$  4)-N-acetyl-D glucosamine], a major component of the shells of the crustacean such as crab, shrimp, and crawfish and the 2nd most abundant natural biopolymer after cellulose. The important characteristic of the biopolymer is its ability to degrade by natural enzymes with their immunogenic behavior. Chitosan has several functional properties such as polyoxysalt formation, ability to form films, chelated metal ion, and optical structural characteristics. Recent studies of the chemical modification of chitosan are discussed from the viewpoint of biomedical applications because of their excellent biological properties such as biodegradation and biocompatibility in the human body. These natural biological properties allow them to be valuable biomaterial for both anticancer therapy of human solid tumors and cancer diagnosis applications in various ways. In other hands, many recent studies promoted chitosan-based substances as lead molecules for treatment and prevention of obesity, diabetes, and related complications. In this sense, chitosan prevents the absorption and accumulation of excess calories and is then removed from the body together with lipid substances. Chitosan fiber comes in contact with water and swells in the stomach to form a jelly, which gives a sense of fullness and reduces the sense of hunger; it binds tightly to lipid substances because of the electrostatic force between the positive charge present in the molecule and the negative charge present in the fats. In addition, Chitosan has wide

spectrum an of activity and high killing rate against Gram-positive and Gram-negative bacteria, but lower toxicity toward mammalian cells that this is a good advantage. Chitosan is mostly applied as a food additive or preservative, and as a component of packaging material, not only to retard microorganism growth in food, also to improve the quality and shelf life of food. Chitosan and its derivatives possess various biological activities and have a remarkable potential to be used in several of therapeutic applications and food science.

**Keywords:** application-chitosan, medicine, food science

### Hyaluronic acid as a Nutricidal and multifunctional compound

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In last decade, an increasing number of glycosaminoglycans (GAGs), chitin and chitosan applications have been reported. Their commercial demands have been extended to different markets, such as cosmetics, medicine, biotechnology, food, and textiles. Hyaluronan (hyaluronic acid), a biomaterial, receives special attention among them. Hyaluronic acid (HA) is a polyanionic natural polymer occurring as linear polysaccharide composed of glucuronic acid and N-acetylglucosamine repeats via a  $\beta$ -1, 4 linkages. It is the most versatile macromolecule present in the connective tissues of all vertebrates. HA with a viscous slippery substance is multifunctional glue with immense therapeutic applications such as ophthalmic surgery, orthopedic surgery and rheumatology, drug delivery systems, pulmonary pathology, joint pathologies, and tissue engineering. Although HA has been isolated from terrestrial origin (human umbilical cord, joint synovial fluid, vitreous body, dermis, epidermis, thoracic lymph, urine, serum, rooster comb, bacterial sources, etc.) The breaking down of the cellular structures of the tissue and the extraction of hyaluronan from other polysaccharides complex is achieved by crushing followed by the action of organic solvents, enzymes, and detergents. different alternatives applications and beneficial effects of HA in different industries have reviewed. the literature related to the topic from the database was reviewed. Base on the content of titles and abstracts. Hyaluronic acid has a wide range of applications with its excellent physicochemical properties such as biodegradability, biocompatibility, nontoxicity,



and no immunogenicity and serves as an excellent tool in biomedical applications. Modified HA exhibited a great antimicrobial property on the three tested bacterial species and proved as a potential material to avoid bacterial contamination in various applications such as wound dressings, contact lenses, cleaning solutions for contact lenses, and cosmetics formulations.

**Keywords:** Hyaluronic acid, Functional Applications, Physicochemical properties

### The role of nutrition in decreasing of the atherogenic lipoprotein phenotype

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Atherosclerosis is a progressive disease characterized by lipid accumulation and fibrotic factors in the large arteries wall. Studies show that small and dense Low-density lipoprotein cholesterol (LDL-C) particles are more atherogenic than normal LDL-C. They have known as a new risk factor for atherosclerosis. Hypertriglyceridemia is a key disorder factor that increases the level of these atherogenic particles. Increasing the number of small, dense LDL (sd-LDL) particles which observe in *hyper-beta*-lipoproteinemia has a strong correlation with cardiovascular disease. Epidemiological studies have shown that serum levels of sd-LDL were significantly increased in patients with coronary artery disease (CAD) demonstrated angiography of CAD in compare to the control group. In addition, in diabetic patients usually the activity of lipoprotein lipase (LPL) enzyme decreases, while the activity of the liver lipase enzyme increases. Changing in the activity of these two enzymes causes facilitating formation of sd-LDL particles. Previous studies showed that patients with metabolic syndrome have a higher number of sd-LDL particles than healthy subjects. The low glycemic index is directly

related to increase muscle glucose uptake, reduce levels of triglycerides, decline the synthesis of VLDL, decrease sd-LDL and raise HDL-C concentration. Consumption of soluble fibers (fruits, vegetables, legumes) and insoluble (cereals, especially whole grains) help through the risk of coronary artery disease by improving fat levels, low blood pressure, enhancing insulin sensitivity and decreasing coagulation activity and clotting. Increasing and decreasing of plasma TG and HDL-C levels are usually associated with the presence of sd-LDL particles. These metabolic disorders are associated together and generally, they comprise the atherogenic lipoprotein phenotype (ALP). The prevalence of this phenotype is associated with an increased risk of cardiovascular disease and diabetes. The use of high-protein and a low-fat diet with a lower glycemic index is the most important therapeutic changes for reducing the ALP.

**Keywords:** Nutrition, Atherogenic lipoprotein phenotype, Atherosclerosis.

### Application of biosensors for rapid detection of food-borne pathogens

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Pathogenic bacteria cause extensive illnesses and mortality around the world. Contaminated water and food supplies are major vectors of such infections. The most common foodborne infections are those caused by the bacteria *E. coli O 157: H7*, *Salmonella enteritidis*, *Listeria monocytogenes* and *Campylobacter jejuni*. Appropriate and accurate detection and monitoring technologies are thus of importance in many settings. The food industry requires suitable analytical methods for checking the safety and quality of foods. Conventional methods involve culture enrichment by growth on a nutrient rich medium. These methods still require pre-enrichment to increase bacterial concentration above the detection threshold. But this recent incident highlights the need for rapid, selective and easy-to-use testing of foods for pathogens and toxins of bacterial and fungal origin. The impact of biosensing technology is increasing in all major sectors such as pharmaceutical, healthcare, environment, and food. Food safety is a global issue in the actual





context of the intensive development of agriculture and food industry. Nutrients monitoring and fast screening of contaminants represent some of the key issues in agrifood field for assessment of the food quality. The demand for developing simple, rapid, accurate, low-cost and portable analytical instruments is growing and biosensors fulfill these requirements.

Biosensors are of increasing interest for the detection of bacterial pathogens in many applications such as food and water safety. Biosensors are defined as an analytical device that integrates a biologically derived molecular recognition molecule such as antibodies, phages, aptamers, with a suitable physicochemical transducing mechanism. Biosensors produce an electronic or optical signal proportional to the specific interaction between the analyte and the recognition molecule present on the biosensor. Biosensors transform biological interactions into electronic signals that can be conveniently measured and recorded. Biosensors can detect a wide range of targets from small protein molecules to large pathogens. Compared to the conventional methods, a biosensor is a device for the detection of pathogenic antigens and does not require highly trained personnel for using it. Desired characteristics of biosensors include accuracy, near real-time assay, sensitivity, specificity, reproducibility, robustness, and ease of use. Furthermore; biosensor is highly sensitive and selective and provide results more rapidly than culture-based methods making them ideal for practical and field applications. In this paper, the main aspects of biosensors based on transduction mechanism are discussed. All biosensors use a recognition molecule such as an antibody for detecting specific targets. Among the many transduction methods investigated, three mechanisms dominate the research literature. These are optical, electrochemical and piezoelectric devices which will be dealt in detail.

**Keywords:** Biosensors; food-borne pathogens.

### **Probiotics as a therapeutic intervention for non-alcoholic fatty liver disease (NAFLD)**

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The microbiome in the human gastro intestinal tract (GIT) is the largest body community of bacteria. The microbiome induces the development of regulated pro- and anti-inflammatory signals that elevate immunological tolerance. Moreover, microbial interactions provide cues for supporting metabolic regulations and controlling and regulating GIT inflammation. Failure to regulate inflammatory responses can increase the risk of progressing inflammatory conditions such as Inflammatory Bowel Diseases (IBD). Disruption to the microbiome homeostasis can also affect other end-organs (e.g, liver, kidneys). For example, the liver receives 70% of its blood supply from the GIT, making regulation of the gut-liver-axis vital. Inflammation of the GIT may lead to inflammatory conditions of the liver and the development of diseases such as non-alcoholic fatty liver disease (NAFLD)

The use of probiotics and synbiotics in the prevention and treatment of different disorders has dramatically increased over the last decade. Both probiotics and synbiotics are well known ingredients of functional foods and nutraceuticals and may provide beneficial health effects because they can influence the microbiome ecology and immunity. As one of the major hepatic problems, non-alcoholic fatty liver disease (NAFLD) seems to be influenced by gut microbiome. Recent Evidence suggests that alteration of intestinal microbiome plays a key role in the health of the gut-liver axis. Recent studies have proposed that probiotics may have beneficial effects on the treatment/prevention of NAFLD and other hepatic disorders due to their ability to augment intestinal barrier function, prevent production of lipopolysaccharides (LPS) and modulate the immune system. This study reviews and summarizes the available data regarding the relationship between gut microbiome and hepatic disorders, focusing on the potential of probiotics as a new method of treatment/prevention for NAFLD.

**Keywords:** Probiotics, Synbiotics, NAFLD, Gut microbiome.

### **Evaluation of lactic acid bacteria function during fermentation**

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Enzymatic and microbial conversion of flour components during bread making determines bread quality. Metabolism of sourdough microbiota and the activity of cereal enzymes are interdependent. Acidification, oxygen consumption, and thiols accumulation by microbial metabolism modulate the activity of cereal enzymes. In turn, cereal enzymes provide substrates for bacterial growth. This review highlights the role the metabolism of lactic acid bacteria in the conversion of carbohydrates, proteins, phenolic compounds, and lipids. Heterofermentative lactic acid bacteria prevailing in wheat and rye sourdoughs preferentially metabolize sucrose and maltose; the latter is released by cereal enzymes during fermentation. Sucrose supports formation of acetate by heterofermentative lactobacilli, and the formation of exopolysaccharides. The release of maltose and glucose by cereal enzymes during fermentation determines the exopolysaccharide yield in sourdough fermentations. Peptidase activities of sourdough lactic acid bacteria determine the accumulation of (bioactive) peptides, amino acids, and amino acid metabolites in dough and bread. Enzymatic conversion and microbial metabolism of phenolic compounds are relevant in sorghum and millet containing high levels of phenolic compounds.

**Keywords:** Sourdough, Lactobacillus, Bioactive peptides, Lipid oxidation

#### **Extraction methods and beneficial health effects of dietary fibers**

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The consumption of healthy and low-calorie foods containing dietary fibers has become a growing focus among consumers. Dietary fiber is the common name for all carbohydrate components occurring in foods that are non-digestible in the human small intestine. These compounds have been targeted for their positive effects regarding the treatment and prevention of constipation, the control of serum cholesterol levels, and the reduction of the risk of diabetes and intestinal cancer. Dietary fibers are a heterogeneous group of polysaccharide with varying degrees of water solubility, size, and structure. Soluble dietary fibers have been linked to the lowering of cholesterol in the blood and the decrease in the intestinal absorption of glucose while insoluble dietary fibers have been associated with the absorption of water and regulatory intestinal effects. The water insoluble

fiber fraction include cellulose, galactomannans, xylans, xyloglucans, and lignin, while the water-soluble fibers are the pectins, arabinogalactans, arabinoxylans, and  $\beta$ -glucans. Dietary fibers are found in fruits, vegetables, and whole grains. Some known methods of extracting fiber from plant sources include dry processing, wet processing, chemical, gravimetric, enzymatic, physical, and microbial or combination of these methods.

**Keywords:** Dietary fibers, Extraction methods, Soluble dietary fibers, Insoluble fibers.

#### **Quinoa, a valuable source of protein in diet**

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Today, plant proteins play an important role in human nutrition, especially in developing countries where the average protein intake is lower than the natural needs of the body. An ongoing effort will put due to a lack of animal protein sources, into find new protein sources and to have both their functional properties and their nutritional value. Quinoa seed among plant proteins is considered for its protein content and high nutritional value. This kind of seed, in addition to being compact and very digestible, is a rich source of protein, iron, magnesium, fiber, phosphorus and vitamin B2. It contains 12 to 23 percent proteins and has higher protein content than rice, corn and barley. This plant, in terms of the amount of amino acids, has a better balance to feed humans and livestock, and contains all essential amino acids for the human body. The United Nations has therefore declared the year 2013 as "The International Year of Quinoa", considering the features of this plant and its application for dealing with hunger and malnutrition. Quinoa as a vegetarian protein, in addition to helping to grow body organism, maintains human body temperature and energy; and a perfect and balanced diet for everyone especially vegetarians, because it is high in fiber content, which has positive effects on health. For example, it can reduce the average blood cholesterol level and improve digestive system. Quinoa is an excellent example of functional food



that aims at reducing the risk of various diseases before they ever occur. Functional properties also help human nutrition a lot by minerals, vitamins, fatty acids and antioxidants, especially for protecting cell membrane, which can have good results in neuronal functions of the brain. The purpose of this study is to introduce the quinoa as pseudo-cereal due to its high biological value and review the compounds, chemical, functional and nutritional properties of this valuable seed for use in food products.

**Keywords:** Quinoa; functional foods; human nutrition.

#### **Rice bran oil - A review**

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Annually significant amounts of rice bran are disposed as waste rice production, while having valuable compounds such as protein, oil, vitamins and nitrates, and its usage as a primary raw material for the extraction of high quality vegetable oil, are some points that can be very important from an economic point of view. Rice bran oil has essential fatty acids that help to lower cholesterol and has antioxidant properties due to the presence of gamma oryzanol and phytoestrogens that prevent the formation of free radicals. Rice bran contains 17-23% of oil, that commercially can be extracted and refined. The usage of rice bran oil is in flour products, especially cakes and sweets, shortening and margarine, surface coating of a wide range of products, the preparation of an excellent frying oil without the need for hydrogenation and salad oil. The purpose of this paper is to investigate the application and importance of rice bran oil as the most important product of rice mill waste.

**Keywords:** Nutritional Properties, Rice Bran Oil, Cholesterol, Gamma Orizanol

#### **Therapeutic significance of curcumin and its role in anticancer treatment in esophageal cancer**

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Esophageal cancer, as one of the leading causes of cancer-related death worldwide, calls for identification of novel anticancer agents. The turmeric (*Curcuma longa*) plant, a perennial herb belonging to the ginger family, is cultivated extensively in the south and southeast tropical Asia. The rhizome of this plant, referred to as the "root", is the most useful part of the plant for culinary and medicinal purposes. The most active constituent of turmeric is curcumin. Curcumin has been proved with strong anti-cancer effects in a variety of malignancies via its effects on a host of biological pathways involved in tumorigenesis and cellular growth. Curcumin regulates the gene expression involved in survival, proliferation, angiogenesis, invasion, and metastasis. Curcumin has been proved with strong anti-cancer effects in a variety of malignancies via its effects on a host of biological pathways involved in tumorigenesis and cellular growth. Curcumin regulates the gene expression involved in survival, proliferation, angiogenesis, invasion, and metastasis. This phytochemical also modulates various mechanisms associated with radio resistance, including the downregulating COX-2, MRP, and Bcl-2 inhibiting PI3K/AKT activation, suppressing growth factor signaling pathways, and inhibiting STAT3 activation.

**Keywords:** Esophageal cancer, Curcumin, Anti-tumor effect

#### **Extraction of phenolic compounds from rhubarb roots (*Rheum ribes*) using high intensity ultrasound**

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The use of medicinal plants and its active compounds as natural resources that have antioxidant properties, is considered by researchers. Antioxidant are compounds that effectively and in different ways prevent from reaction of free radicals contain reactive oxygen and nitrogen with biomolecules (such as protein, amino acid, lipid and DNA) and leading to decrease of cell damage or death, cardiovascular diseases and cancers. The project aims to optimize the extraction of phenolic compounds from the roots of rhubarb (*Rheum ribes*) using ultrasonic waves based on the statistical central composite rotatable design (CCD) and examine its role in preventing the oxidation of soybean oil. This study to optimize the ultrasonic bath extraction conditions, the effect of three

variables temperature (in the range of range 20-70°C), extraction time (in the range of 40-5 min) and solvent to solids ratio (ranging from 1:40 to 1:20) on the total phenolic content, antioxidant activity and extraction efficiency were evaluated. According to the results, the optimum conditions for the extraction of phenolic compounds, antioxidant activities and extraction efficiency were: time 28. 10 min, the temperature and solvent to solids ratio of 57.47 and 1:38.84, respectively. In the next phase of research, the extraction of antioxidant compounds based on optimal treatment, with the aim of evaluating the peroxide and thiobarbituric acid number and oxidation of oils at three levels: 200, 400 and 800 ppm, were added in raw formulation soybean oil, then the results were compared to chemical antioxidants BHA and BHT at 200 ppm.

The results showed that the methanol extract 's ability to block the production of primary and secondary products in raw soybean oil at concentrations of 400 and 800ppm, which was more than synthetic antioxidants BHA and BHT. Thus, rhubarb root extract can act as a natural antioxidant, and then further testing may be added to food.

**Keywords:** Ultrasound, optimization, rhubarb root, peroxide index, the index of thiobarbituric.

### **Association between Nutrient Intake and Metabolic Syndrome in Patients with Colorectal Cancer**

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This review was to evaluate the differences in nutritional status with regard to metabolic syndrome in patients with colorectal cancer. There is now a significant number of epidemiological evidence that the metabolic syndrome increases the risk of colorectal cancer. Metabolic syndrome was defined as the presence of 3 or more of waist circumference, fasting blood glucose, triglyceride, high-density lipoprotein (HDL)-cholesterol, and blood pressure. Although, in most patients over the age of 50 years. Colon cancer is caused by environmental factors such as eating habits, smoking, alcohol and genetic factors. Therefore, it is recommended to reduce the risk of colorectal cancer, smoking bans, alcohol frustration, the use of red meat and adequate food intake. Many studies have shown that food is an important carcinogen and that the risk of colon cancer is

due to its close relationship with dietary factors. The consumption of antioxidant vitamins, green vegetables and animal fat is associated with the development of colorectal polyps. Although there are many studies on dietary factors such as animal fat, sugar, alcohol consumption and fiber consumption. In managing patients with colorectal cancer, confirming the presence of metabolic syndrome and implementing a balanced and appropriate diet is very important. Therefore, studies based on determinants, metabolic outcomes and outcomes of the disease of the metabolic syndrome support the concept that people with metabolic syndrome are at particular risk of developing colon cancer.

**Keywords:** Colorectal cancer, Metabolic syndrome, Diet

### **Role of high-density lipoprotein in breast cancer**

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One of the most important cancers in women is attributed to the breast cancer and is affected by several risk factors such as hormones, radiation exposure, chemicals, and obesity. As comprehensively demonstrated that serum high density lipoprotein (HDL-cholesterol) possesses cardio protective impact, protective effect of HDL-cholesterol on breast cancer has also been approved. Many literatures documented apolipoprotein A 1, a main and abundant protein in HDL, involves in tumor aggressiveness and malignancy. Results from systematic literature and also meta-analysis indicated robust evidences extracted from experimental studies which have shown a significant reliable inverse correlation between HDL-cholesterol and breast cancer risk. when plasma HDL cholesterol is low, enhanced risk for breast cancer is suggested. Using lipid profile and assessing its relationship with breast cancer in population including Obesity is recently considered as a major risk factor related to breast cancer, which is in turn consequence of inadequate exercise and inaccurate dietary intake and lead to impaired lipid profile. Overall, decreased circulating HDL levels may intensively heightened risk of breast cancer by around 3-fold. A meta-analysis study on premenopausal and postmenopausal patients





with breast cancer, illustrated inversely relationship between plasma HDL cholesterol and breast cancer in postmenopausal group. It is often assumed that high levels of HDL-cholesterol associated with breast cancer because of correlation between tumor cell propagation and HDL concentration. Finally, carcinogenesis is affected by HDL-cholesterol especially by inhibition of apoptosis or activation of protein kinase pathway.

**Keywords:** high-density lipoprotein, breast cancer, malignancy, dietary intake

### **Therapeutic potential of novel formulated forms of curcumin as novel anticancer agent in gastrointestinal cancers**

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Curcumin is a natural compound isolated from the rhizome of *Curcuma longa*. Over past few decades, scientists have focused on therapeutic potentials of curcumin because of its pharmacological safety and minimal toxicity. Studies have shown that curcumin poses numerous biological activities. Anti-inflammatory, anti-angiogenesis, anti-oxidant and anti-cancer effects have been reported as its pharmacological properties. There is growing body of evidence showing the protective effects of curcumin in several other tumors, including gastrointestinal cancers. In particular the effect of curcumin in combination with FOLFOX chemotherapy was investigated in patients with inoperable colorectal cancer. Interestingly results showed that curcumin elicits protective functions in subsets of patients when administered with FOLFOX, and is a well-tolerated chemotherapy adjunct. Against this information despite the pleiotropic properties of curcumin, and its ability to modulate several molecular pathways, its pharmaceutical use has been severely limited by its low bioavailability. This is due to its low water solubility at neutral pH, rapid metabolism, high degradation (enzymatic and non-enzymatic metabolism in the kidneys and liver) and excretion. Several

approaches have been developed in order to formulate this agent including co-delivery of curcumin with adjuvants (e.g., piperine), nano crystals, micelles and different conjugates to enhance its bioavailability. Lipid-based nano-micelles or polymer-based nano-formulations are utilized to enhance gastric tract absorption and prolong release of curcumin, respectively. Besides, nano crystals formulations which provide larger surface area are considered to create better response. There are several clinical trials which have explored the chemotherapeutic application of curcumin in cancer therapy. However, administration of its formulations in clinical trials have not become common, yet. In a phase I dose escalation study, safety, tolerability and pharmacokinetics of liposomal curcumin were evaluated in healthy volunteers. In this regard, 50 male and female participants were included in this randomized which dose-dependent increases in the plasma concentrations of curcumin and its metabolite tetrahydrocurcumin (THC) were detected. Short-term intravenous dosing of liposomal curcumin appears to be safe up to a dose of 120 mg/m<sup>2</sup>. Currently, formulations of curcumin have been developed to improve its bioavailability compared to unmodified curcumin. Further clinical trials are needed to investigate the therapeutic potential of this promising agent in treatment of patients with gastrointestinal cancers.

**Keywords:** Gastrointestinal cancer, Curcumin Nanoformulation, Bioavailability.

### **A comparative study on cultivation and nutritional values of commercial and Iranian wild Enoki mushrooms (*Flammulina velutipes*)**

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There is very limited knowledge of cultivation and nutritional values of medicinal mushroom Enoki (*Flammulina velutipes*) growing wild in Iran. In this study, a sample of *F. velutipes* was collected from east-northern Iran and authenticated by Internal Transcribed Spacer sequencing analysis. A commercial strain was also kindly provided by Gyeongsang National University, South Korea in order to serve as a reference. The mushroom strains were then grown on nine different locally available substrates composed of sawdust, wheat bran,



soybean meal, sugarcane bagasse, and wheat straw, supplemented with 2% gypsum and lime. The experiments were conducted in a factorial arrangement based on a completely randomized block design in order to assess different growth characteristics. The findings revealed that one of the substrates composed of wheat straw (62%), wheat bran (18%), and soybean meal (18%) resulted in the highest wild mushroom yield, while another one containing sawdust (40%), wheat straw (40%), and wheat bran (18%) enhanced the biological efficiency substantially (187.66%). Protein contents of the wild and commercial Enoki strains were comparatively analyzed during different mushroom growth stages. The results demonstrated that protein dry matter of the wild strain was 10% more than that of the commercial strain in the harvest stage; however, the differences were not significant ( $p \geq 0.05$ ). Further nutritional analysis showed that the wild strain (similar to the reference strain) contained important nutritional elements that involve in pharmaceutical properties conferred to this mushroom, including calcium, potassium, sodium, magnesium, zinc, selenium, copper, manganese, Iron, etc. In conclusion, this study demonstrated that wild strain of Enoki possesses significant nutritional elements and high amounts of proteins as well. Thus, the findings of this study may suggest the usefulness of this mushroom to be considered as a functional food in further investigations. Apart from nutritional and medicinal values, the findings of this research can be used for mass production of wild Enoki strains. Cultivation of Enoki mushrooms would be important for the efficient bio-conversion of agricultural by-products. Thus, our findings may prove the feasibility of cultivation of nutritionally valuable Iranian wild Enoki mushrooms using low-cost substrates available in the country.

**Keywords:** Agricultural wastes, nutritional values, Iranian Enoki mushrooms, growth characteristics, substrate formulation.

### Biological properties of curcumin and its effect on human health

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Curcumin is a plant compound which is obtained by crystallization of oleoresin as a pigment and the most important biological active substance of the plant (*Curcuma Longa*). Studies show that curcumin provokes positive changes in serum lipid profile and reduces adhesion molecules such as E-selectin, vascular cell adhesion molecule 1 (VCAM-1) and it plays an effective role in reducing atherosclerosis. Oxidative stress is a major contributor to the pathogenesis of chronic diseases such as cancer and atherosclerosis. Curcumin can induce the response of heat shock proteins (HSPs) and the antioxidant system via increasing enzymes of superoxide dismutase, catalase and glutathione reductase (GR). It also improves cardiac function and protects it against ischemia. It prevents changes in the protein's profile under stress conditions. The anti-cancer effects of curcumin in many cancer cells are due to its ability to induce apoptosis and increase the expression of various caspases especially caspases 3, 8 and 9. Curcumin by inhibition of vascular endothelial growth factor (VEGF) and its specific receptor (VEGF receptor) prevents angiogenesis and the formation of new blood vessels in tumor cells and stops their growth. Curcumin is presented as an anti-inflammatory agent via affecting on inflammation enzymes such as protein kinase, glutathione S-transferase, metalloproteinase, lipooxygenase and cyclooxygenase. In fact, this substance affects in reducing inflammation with inhibiting the nuclear factor kappa B (NF- $\kappa$ B) transcription factor which is the main regulator of the inflammatory process and expression of the pre-inflammatory cytokines TNF- $\alpha$ , IL-1 $\beta$ , and IL-6. Curcumin is an inducer of adiponectin and it reduces the risk of diabetes by decreasing triglycerides, gluconeogenesis, fatty acid oxidation and increasing insulin sensitivity. It is a highly lipophilic and easily passes through the blood-brain barrier, which can reduce the accumulation of amyloid beta ( $A\beta$ ) in brain. Therefore, it affects in preventing Alzheimer's disease. Curcumin can play an important role on human health through their biological properties such as antioxidant properties, anti-angiogenic, anti-atherosclerotic, anti-diabetic, anti-tumor and anti-inflammatory. Recently, curcumin



supplements have designed to promote public health.

**Keywords:** Curcumin; Biological properties; Human health

### Detoxification of Foods Mycotoxins

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The following terms are used to describe the outcome of mitigation treatments: removal of mycotoxins from raw materials and/or finished products, transformation (modification of the chemical structure of the molecule), detoxification (transformation which reduced the toxicity), and decontamination (removal or detoxification/inactivation). Effective decontamination should be irreversible, modified forms of mycotoxins should be affected together with parent compounds, the products should be non-toxic, and the food should retain its nutritive value and remain palatable. Processing procedures, agents, and microorganisms must be allowed for use in food. These methods include: Physical, Chemical, and Biological. Physical treatments including irradiation with UV, X-, and gamma-rays have been demonstrated to reduce the levels of AFB<sub>1</sub> in foods, but they have received only limited attention, essentially due to negative consumer perception of irradiated foods. In addition pasteurization and sterilization, were shown to reduce of aflatoxin M<sub>1</sub> in milk. These findings are in contradiction with many others demonstrating the high heat stability of the mycotoxin. Despite this controversy, there is a general tendency to consider that neither pasteurisation nor sterilisation causes an appreciable decline in the amount of AFM<sub>1</sub> in dairy products. Mycotoxin binders are a physical technique used for feed decontamination that principally can also be used in human intervention. As for chemical methods, it should be noted that chemical treatment is not allowed within the EC for commodities destined for human food. The chemicals used fall into the categories of acids, bases, oxidizing reagents, reducing agents, chlorinating agents, salts, miscellaneous reagents and mycotoxin-adsorbing agents. Often chemical

treatments have been used in combination with physical treatments to increase the efficacy of decontamination. Microbial detoxification may become a promising choice, since it can be a specific, effective, irreversible and environmental friendly strategy of detoxification that leaves no toxic residues. Despite the many publications on biological transformation of mycotoxins by microorganisms, their application in practice in detoxification of food and/or feed has been limited.

Complete elimination of mycotoxins from food product by processing can rarely be achieved. Several processing techniques of proven value (mostly physical treatments) have been in use for a long time. These are the only mycotoxin mitigation methods currently applicable to human food. Few chemical and biotechnological techniques reducing mycotoxin content have been approved for animal feed but many promising strategies remain at an experimental stage. In this paper, we comprehensively discussed about mentioned methods.

**Keywords:** Mycotoxins, Detoxification, Physical methods, Chemical methods, Biological methods.

### The Effects of Microwave Exposure and Organic Acids on *Listeria monocytogenes* inoculated onto chicken meat portions

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*Listeria monocytogenes* can be found throughout the environment. It is associated with many foods, primarily with meat and animal products. *Listeria monocytogenes* has become increasingly important as a food-borne pathogen. The aim of this study was to evaluate the effect of microwave irradiation and organic acids treatment of chicken meat portions which were inoculated with *L. monocytogenes*. Each chicken drumette was decontaminated with H<sub>2</sub>O<sub>2</sub> + Ag<sup>+</sup> (Sanosil; Kimiafam, Tehran, Iran), then washed with sterile distilled water to removed the residuals. In this study, 126 drumette samples were divided in Seven groups. Six groups treated using organic acids (acetic acid, lactic acid, citric acid) with two concentrations (2.5 and 5%) and different microwave radiation time (for 0, 10, 20, 30, 40, and 50 s) and One group was treated with distilled water as control group. Following

exposures, viable count and surface temperature were determined. The results indicated that, Gradually, increasing exposures of chicken portions to MW radiation up to 50 sec, which enhances the surface temperature more than 78 °C could eliminate the superficial contamination of chicken meat with *L. monocytogenes*. Spraying organic acids reduced the time of microwave radiation, significantly, And inoculated bacteria were eradicated in less than 50 sec ( $P < 0.001$ ). Logarithm of bacterial count in drumette which were treated with organic acids were lower with lactic acid, then acetic acid and finally with citric acid, respectively ( $P < 0.001$ ). According to our results, to reduce Surface microbial load of chicken meat should be stored in refrigerator, Spraying organic acids ( acetic acid, lactic acid , citric acid ) and short-time MV radiation is recommendable.

**Keywords:** *Listeria monocytogenes*, organic acids, drumettes, microwave

#### **Curcumin Nanoformulations: A Comparison Review of Their Antioxidant Properties**

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Today, the use of a diet containing antioxidants and determination of antioxidant capacity of natural products would be beneficial to human health because oxidative stress is associated with several pathologies like cardiovascular, neurodegenerative, cancer and even aging. Curcumin, as an important biologically active polyphenolic compound, has wide range of beneficial biological and pharmacological activities e.g., antioxidant and anti-cancer, curcumin plays a significant beneficial and pleiotropic regulatory role in various pathological conditions including cancer, cardiovascular disease, Alzheimer's disease,

inflammatory disorders, neurological disorders, and so on. Despite such phenomenal improvements in medicinal applications, the clinical implication of native curcumin is delayed due to it is practically water-insoluble and has low bioavailability. Therefore, many technologies have been developed and applied to overcome this limitation by utilizing an efficient delivery system. Water solubility and bioavailability of curcumin significantly improved by particle size reduction down to the nanoscale. A significant number of nanoformulations exist that can be used for pre-clinical and human clinical trials. In this review, we summarize the recent studies on the design and development of curcumin nanoformulations and their antioxidant properties.

**Keywords:** Curcumin nanoformulation; antioxidant; solubility; bioavailability; clinical trial.

#### **Definition and monitoring the amount and different types of mycotoxin in cow's milk**

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Mycotoxins are a large group of secondary metabolic products from fungi, or molds, which pose serious risks for human and animal health. Fungal growth and mycotoxin production may occur in the field and/or during storage. It is also worth noting that human exposure to mycotoxins may be caused by not only consumption of plant-derived foods contaminated with toxins, but also the carry-over of mycotoxins and their metabolites in animal products, such as milk and eggs. Moreover, mycotoxins lead to huge economic losses annually. More than 300 mycotoxins have been identified, and scientific attention is focused mainly on the mycotoxins that have proven carcinogenic and/or toxic. Thus, aflatoxins (AF), zearalenone (ZEA) and deoxynivalenol (DON) elicit great public health concerns due to their high prevalence, and their teratogenic, carcinogenic, mutagenic and immunosuppressive effects. Cow milk consumption is high because it is important in the diet of all age groups. It provides a number of



important nutrients that are essential for humans. Children are the largest consumers of milk as it is one of the principal food. Given that milk is widely consumed and is a source of nutrients, especially in childhood, a thorough investigation of the occurrence of mycotoxins as well as the adoption of measures to minimize their contamination of milk is essential. Collected data from studies conducted in recent years, evidence the incidence of AFM<sub>1</sub> in milk samples and milk products is relatively lower in European countries, independent of the sample type. In contrast, in studies in Asiatic countries like China, Thailand, and Taiwan were observed frequency of occurrence of mycotoxins in up to 100% of samples. Although aflatoxins are the mycotoxins of greater incidence in milk and dairy products, researched had shown that other mycotoxins, such as fumonisin, ochratoxin A (OTA), trichothecenes, zearalenone, T-2 toxin, and deoxynivalenol (Don), can also be found in these products. Given the extensive occurrence of different types of mycotoxins, it is essential to adopt measures to minimize food contamination by such mycotoxins. Thus, special care should be taken with lactating cow's feedstuff and in increasing the awareness of Good Agricultural and Storage Practices. To considering the importance of the presence of mycotoxins for the above reasons, This review surveys the main mycotoxins associated with dairy products and discusses their health significance, by aggregation of information about type and amount of mycotoxins detected in different sample in countries of the world and Iran, as well as the legal and regulatory requirements deals with this matter.

**Keywords:** mycotoxins, teratogenic, mutagenic, toxic.

### The potential of aptamer-based biosensor for determination of gluten

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Celiac disease is an immune-mediated disorder triggered by foods containing gluten, a mixture of storage proteins in wheat, barley, rye and possibly oat. To date, there is no effective cure, and the only effective treatment consists in a lifelong gluten-free diet. Foods bearing a gluten-free label must not exceed the level of 20 mg gluten per kg product (Codex Standard). A major hurdle in the gluten contents management is the sensitivity of the current available methods. Therefore, intensive efforts are being made to

develop promising and user's friendly method to monitor the gluten content in food samples at levels as low as possible. Current techniques for gluten analysis include ELISA and Mass spectrometry. Although these methods are accurate, but there are intricate and time consuming and also involve cumbersome laboratory procedure which making such approaches impractical. Biosensors are considered to be promising tools for monitoring gluten in the food. Biosensors are rapid, cost-effective, field-portable and high-sensitivity instruments. The latest of the biosensors for detection of gluten are aptasensors, which use aptamer as a reorganization element. aptamers are single-stranded oligonucleotides with high specific recognition capabilities toward a wide range of targets. They are isolated from a combinatorial DNA library by an in vitro process known as SELEX (Systematic Evolution of Ligands by EXponential enrichment). Compared to antibody, aptamers possess outstanding features, such as high productivity, affinity, selectivity, stability, low cost, ease of labeling and lack of toxicity. Herein, we summarized recent advances in aptasensors developed for gluten detection in order to provide an understanding of its improvement and progress. Aptamers provide an ideal alternative for designing biosensors for fast and selective measurement of gluten in foods. The gluten aptasensors were divided into electrochemical and PCR formats. Malvano and coworkers designed an impedimetric aptasensor to detect gluten. Resulting aptasensor could analysis gluten, in gluten and gluten-free food products, showing a good agreement with the results obtained with official R5 ELISA method. Similarly, Amaya and coworkers used electrochemical competitive enzyme-linked assay on magnetic particles for gluten detection. The designed aptasensor has been successfully evaluated by detection gluten in the soya and cake samples. They also developed another gluten aptasensor based on chronoamperometry. In this biosensing method, the target peptide immobilized onto streptavidin-coated magnetic beads in combination with a limited amount of biotin-aptamer in a competitive format, followed by streptavidin-peroxidase labelling of the aptamer that remains bound to the magnetic beads. The enzyme activity onto the beads, measured by chronoamperometry in disposable screen-printed electrodes, is inversely related to the target concentration in the test solution. The range of examples presented here demonstrates that the aptamers have high potential for using in biosensors for rapid, simple, and sensitive

detection of gluten. Despite all developments in gluten aptasensors, there are not commercial products available. Therefore, future research efforts should be focused on use of these reports in construction commercial diagnostic tools.

**Keywords:** gluten, biosensor, aptamer

### **Health promotion wafer biscuits with reduced fat and sugar by replacing maltodextrin and sucralose**

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Wafer biscuit due to favorable sensory properties and high stability, is Popular in society. But because of its high consumption of fat, sugar and calories so high, leading to problems such as weight gain and obesity. In this study the possibility of replacing fat with sucralose and sucrose and maltodextrin were evaluated. For this purpose, sucralose ratios of 25, 50, 75 and 100 percent instead of sucrose and maltodextrin in the ratios of 5, 15, 25 and 35 percent was used as a fat substitute. In this study, a completely randomized design and statistical comparison test Duncan used. Tests were three replications. All statistical analyzes were performed using SAS. Figures were plotted by Excel software. With the increase in the rate of replacement of maltodextrin instead of fat increases the amount of moisture and acidity decreased. With increasing oil change due to the difference in the energetic maltodextrin as a carbohydrate and oil, reduced the amount of energy produced. The sensory evaluation showed that the highest score of the replacement of 25% of the amount of oil maltodextrins, and 50 percent had to replace sugar with sucralose.

The results showed that the most appropriate replacement level of 50% sucralose and maltodextrin is 25%. According to the test results the best example of a low-calorie dish, mix the sample containing sucralose at a level of 50% (as an alternative to sugar) and maltodextrin at 25% (as an alternative to oil) is.

**Keywords:** fat substitute, replacing sugar, sucralose, calories, maltodextrin

### **Menstrual disorders and premenstrual symptoms in adolescents: Prevalence and**

### **relationship to serum calcium and vitamin D concentrations**

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Premenstrual syndrome (PMS) is a major health problem in women. There have been reports evaluating the association between vitamin and mineral status and menstrual disturbance. In the present study, we aimed to assess the relationship between the menstrual bleeding pattern and PMS symptoms with serum 25-hydroxyvitamin D (25OHD), and serum calcium levels in adolescent girls. A cross-sectional study was carried out on 897 high school girls. The prevalence of hypocalcaemia, normal serum calcium and hypercalcemia was 27. 1%, 59.8% and 13. 1%, respectively. Menstrual flow of participants differed significantly between calcium status groups ( $P = 0.005$ ). There was no significant association between symptoms of PMS and serum vitamin D status, or serum calcium concentrations except irritability, as assessed by questionnaire. There is an association between serum calcium and menstrual blood loss and irritability in adolescent girls.

**Keywords:** Adolescent; Menstrual cycle; Premenstrual syndrome; Vitamin D; Calcium; Female

### **The relationship between acne prevalence and intrinsic temperament and distemperaments**

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Acne is one of the most popular skin diseases among young people all over the world. Unusual



treatments have side effects. However, Traditional Iranian Medicine (TIM) believes that every person is born with specific temperament. This temperament would predispose person chance to different diseases. The aim of this study was to determine the relationship between acne prevalence and intrinsic temperament and distemperaments. In this Case-Control survey, 425 volunteers aged 15 to 35 years old were divided into case group (n= 171) and control group (n=254). Acne was evaluated by clinical examination of dermatologist and a validated 49-item temperament and distemperament questionnaire was completed and T-test, chi-square and Exact Fisher,s test was used for to describe temperament and distemperament scores. Intrinsic warmness and intrinsic moisture in case group was significantly higher than control group. The warmness and dryness signs of liver distemperament and warmness signs of uterus distemperament were higher in case group. In the case group, fast food intake was higher and dairy product intake was lower. In conclusion, Humidity and warmness of intrinsic temperament may play an important role in acne incidence. In addition, liver and uterus distemperaments have relationship with acne prevalence.

**Keywords:** temperament, distemperament, Humors, acne.

### **Nutrition and healthy ageing – from calorie restriction to the “MediterrAsian” diet**

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Calorie restriction (CR) has been shown to exert a number of beneficial effects including the prolongation of lifespan. One of the mechanisms by which CR leads to these advantages seems to be the induction of autophagy and endogenous stress response mechanisms. However, little is known about the persistence of CR benefits after return to an ad libitum diet. In this study, male mice were fed 75% of a normal diet for 6 months (CR) followed by 6 months of ad libitum re-feeding (RF) and compared to a continuously ad libitum fed control group. To study the impact of CR and RF on the liver transcriptome, a global gene expression profile was generated using microarray technology. In comparison, the CR group showed lower body weight, triglyceride and cholesterol levels and reduced lipid peroxidation. mRNA transcription and activity of antioxidant and phase II enzymes were increased and autophagy was induced. Shifting from long-term CR to RF abolished the CR-mediated

changes in differential gene expression within 2 weeks and after 6 months of re-feeding all of the previously differentially expressed genes were similar in both groups. These results indicate that CR has to be maintained continuously to keep its beneficial effects. Alternatively, constituents of the so-called “MediterrAsian” diet mimic some of the beneficial effects of CR as far as the transcriptome is concerned. The Asian and the Mediterranean diets are rich in fruit and vegetables, thereby providing high amounts of plant bioactives including polyphenols. Furthermore, oily fish which is rich in omega-3 fatty acids is an important part of the Asian and also of the Mediterranean diets. There are specific plant bioactives which predominantly occur in the Mediterranean (e.g., resveratrol from red grapes, hydroxytyrosol, and oleuropein from olive oil) and in the Asian diets (e.g., isoflavones from soybean and epigallocatechin gallate from green tea). Interestingly, when compared to calorie restriction which has been repeatedly shown to increase healthspan, dietary factors may activate similar molecular targets. We suggest that a so-called “MediterrAsian” diet combining foods and its constituents of the Asian as well as Mediterranean diet may be a promising future dietary strategy in preventing chronic diseases, thereby ensuring health and healthy ageing.

### **The effects of palm oil on blood lipid profile and heart diseases**

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Palm oil (PO) is a saturated fatty acid, which is taken from the mesocarp of the fruit of the oil palms .PO is a great part of the diet of many populations. PO consists of about 50 percent saturated fatty acid (SFA), 40 percent monounsaturated fatty acid and 10 percent polyunsaturated fatty acids. The greatest part of the PO is palmitic acid. Due to the high SFA profile, PO is resistant against oxidation. Several studies about PO has shown its negative effects on blood lipid profile. Po-rich diet in comparison with diets rich in stearic acid, monounsaturated fatty acids (MUFAs) and polyunsaturated fatty acids (PUFAs) indicates higher total cholesterol (TC), LDL-cholesterol, apolipoprotein A-I, HDL-cholesterol and apolipoprotein B, therefore PO is not a proper substitute for stearic acid ,MUFAs and PUFAs and also in comparison with trans-fats consumption shows higher HDL cholesterol,



apolipoprotein A-1 and lower apolipoprotein B, triglyceride and TC/HDL so PO can be a good substitute for trans-fats. TC, LDL, HDL, TG, Apo A-1, Apo B and lipoprotein are blood lipid related markers of heart diseases (coronary heart disease (CHD) and cardiovascular disease (CVD)). In spite of these studies there are some evidences for this hypothesis that PO is neutral and even healthy oil. For example the palmitic acid in PO might be a neutral acid if the linoleic amounts of diet would be sufficient. Evidence is the effect of PO vitamin A profile of PO in reducing ocular disorders and the PO effective action against myocardial ischemia-reperfusion injury. There might be some benefits in PO consumption, but it is claimed in many studies that PO overconsumption increases the risk factors of CVD and CHD. Since the PO consumption is not standardized, the mortality-induced heart diseases increase each day.

**Keywords:** Palm oil, palmitic acid, blood lipid profile, heart diseases

#### **Effect of microbiome on obesity**

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The human gut microbiota is regarded as an 'invisible organ' of the human body and considered an important factor for host health. It is estimated to consist of at least  $10^{14}$  bacteria and archaea, composed of approximately 1,100 prevalent species, with approximately 160 such species per individual that play an important role in human metabolism. The majority of these microbes reside in the colon. There are clear evidence studies that the gut microbiome plays a crucial role in the functioning of the digestive tract and also in harvesting energy from the diet. The microbiome maintains the integrity of the intestinal epithelial barrier thereby offering protection from pathogenic bacterial colonization. In addition, it is essential for metabolizing indigestible polysaccharides and in the absorption of short-chain fatty acids produced by bacterial fermentation and also plays a key role in the regulation of intestinal transit, thereby affecting the amount of energy absorbed from the diet. These and other functions elucidate the crucial role of the microbiome in weight gain and metabolism. The major diseases associated with obesity are hypertension, atherosclerosis, and diabetes and certain types of cancer. Recent studies showed obesity is a risk factor for developing cancers of

the endometrium, breast, cervix, ovary, colon and rectum, esophagus, kidney, pancreas, prostate as well as several hematological malignancies. Obesity is strongly associated with hypertension and cardiovascular disease. Several central and peripheral abnormalities that can explain the development or maintenance of high arterial pressure in obesity have been identified. These include activation of the sympathetic nervous system and the renin-angiotensin-aldosterone system. Obesity is also associated with endothelial dysfunction and renal functional abnormalities that may play a role in the development of hypertension. Obesity has a significant contribution to development of atherosclerosis and consequent cardiovascular disease. Obesity especially visceral obesity causes insulin resistance and is associated with dyslipidemia, impaired glucose metabolism, and hypertension, all of which exacerbate atherosclerosis. Therefore, obesity is a major preventable risk factor in the development of cancer and the gut microbiome is likely to be a major component in future weight loss and prevention of diseases associated with obesity.

**Keywords:** Gut microbiome, Obesity

#### **The role of diet and nutrition in cervical carcinogens**

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Diet is one of the most important factors to cancer risk, but its linked to metabolic and genetic factors. The European prospective Investigation into cancer and Nutrition (EPIC) a study of some of the people indicate the relationship between diet, metabolic and genetic factors and cancer. There is evidence about the role of diet and nutrition on the risk of human papillomavirus (HPV) persistence and cervical cancer. Some of the studies on HPV persistence showed a positive effect of fruits, vegetables, vitamins c and E and antioxidant vitamins B as well as carotene on decreasing the risk of cervical cancer. Antioxidant vitamins are much attention in association to cancer. Because they may prevent free-radical damage to DNA by neutralizing free radicals and oxidants. Some of the studies on case-control indicate an inverse association between increase intake of antioxidant vitamins and decrease risk of cervical cancer.

**Keywords:** diet, BMI, cervical-cancer, nutrition





### **The effect of vitamin E supplements on animals and humans**

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Vitamin E supplementation has long been the focus of many studies, especially in preventing the onset and progression of chronic diseases such as atherosclerosis, cancer, neurodegeneration. The protective effect of vitamin E against chronic diseases has been demonstrated particularly in different animal models. These studies have reported that vitamin E supplementation prevents or slows atherosclerotic disease progression. In cholesterol-fed rabbit models, significant decrease in LDL oxidation and atherosclerotic lesion formation with  $\alpha$ -tocopherol treatment has been observed. Similarly, in a different animal model of ApoE  $-/-$  knockout mouse models fed an atherogenic diet, significant decrease of atherosclerotic lesions as a result of vitamin E supplementation was observed. The protective effect of vitamin E in preventing chronic diseases has been linked to its antioxidant ability; by scavenging reactive oxygen species it would provide protection against oxidative damage as the basis of disease. In addition to its potential antioxidant effects, non-antioxidant activities are present in the molecule, suggesting alternative pathways for disease prevention, for instance by modulating signal transduction events. Although vitamin E supplementation provides significantly protective effects in different experimental animal models, the data obtained from human studies is rather controversial. Some epidemiological studies conducted on small groups supported a preventive role of vitamin E, however meta-analyses of large clinical trials reported no benefit or even negative effects of vitamin E supplementation against cardiovascular diseases, particularly in studies in which patients with advanced disease symptoms supplemented with high doses of vitamin E. Many factors may affect the results of human trials such as the stage of disease, genetic background, selection of subjects, the chemical form of vitamin E and mode of intake. Besides, different individuals may respond differently to vitamin E supplementation and this may result from differences in intestinal absorption, bioavailability and cellular uptake of vitamin E.

### **Vitamin D in Malaysia: Findings from the USM Monsoon Study**

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Vitamin D is once named as vitamin of the millennium. The dominant function of Vitamin D in its hormonal/active form (calcitriol or 1,25-dihydroxyvitamin D) is with the skeletal system. However, it is noteworthy that the vitamin D receptor (VDR) is present in the nucleus of many tissues that are not involved in the regulation of calcium and phosphate metabolism. For example, the VDR has been clearly described in epidermal keratinocytes, in activated T cells of the immune system, in antigen-presenting cells, in macrophages and monocytes, and in cytotoxic T cells. Hence, with the discovery of VDR on non-skeletal tissue systems, lots of research has been focused at the non-skeletal chronic disease outcomes such as diabetes, cancer, cardiovascular disease and metabolic syndrome. Vitamin D is a unique vitamin as the only nutrient that can be activated by non-dietary source which is the sunlight. Despite the presence of abundant sunlight in Malaysia, high prevalence of vitamin D insufficiency has been reported among Malaysian population. This presentation will share current status of vitamin D among Malaysians, findings of the University Sains Malaysia (USM) Monsoon Study and literatures on the association between vitamin D and chronic diseases such as metabolic syndrome.

### **Nutrition in National Development**

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Health, as complete mental and physical wellbeing, is a precondition for productivity and performance of an individual, for which adequate nutrition is a necessary condition. A precondition for adequate nutrition is, in turn, food and nutrition security, which is closely related to economic/social factors. Nutrition has a critical role in human resource development, learning ability and school performance. A well-nourished, healthy workforce is vital for sustainable development. There is evidence that malnutrition, a major impediment to achieve the Sustainable Development Goals (SDGs), leads to low returns in investments in education, health



and other development sectors. For example, iron deficiency anemia (IDA) and iodine deficiency disorders (IDD) cause a reduction of work capacity and productivity by 10- 15% and GDP by 0.5- 1.8%. Economic cost of undernutrition may vary between USD 92 million (3. 1% GDP) in Swaziland and USD 4.7 billion (16.5% GDP) in Ethiopia. Impact of malnutrition on the global economy is estimated at US \$3.5 trillion/year, or USD 500/individual. On the other hand, based on estimations every US\$ 1 spent on implementing nutrition improvement programmes will lead to US\$ 18 gain in economic benefits. According to FAO, an annual investment of US\$ 1.2 billion to improve the micronutrient supply globally through supplementation, food fortification and/or biofortification will result in better health, fewer deaths, and increased earnings of up to US\$ 15.3 billion/year – a 13-to- 1 benefit-to-cost ratio. Investment in nutrition in a country will, directly and indirectly, through improved physical and cognitive ability resulting in improved productivity, efficiency and equity, lead to economic growth and national development. It is for these reasons that the first International Conference on Nutrition (ICN 1) in 1992 recommended national governments to consider nutrition as the centre of socio-economic development plans and strategies. Also, ICN2 in 2014 recommended governments to “raise the profile of nutrition within relevant national strategies, policies, actions plans and programmes” and increase sustainable investment in nutrition.

### **Total Diet Studies: Challenges and Opportunities**

#### **A. Djazayeri<sup>1</sup>**

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Food and nutrition security (F/N security) exists when people have access to, and consume, nutritious and hygienically safe foods or, in fact, diets. In the national food and nutrition policies, then, the main emphasis should be put on total diets rather than individual foods to ensure F/N security. In a total diet study (TDS) chemical contents of foods at the point of consumption – hazardous chemicals, as well as essential nutrients – are determined as part of food monitoring and surveillance. US, Europe, and Japan in early 1960's were the pioneers in TDSs. Food chemicals determined include pesticide residues, radionuclides, persistent organic pollutants, heavy metals, minerals, endocrine disruptors, additives, and some nutrients. The

UN FAO and WHO encourage and support technically member countries to undertake TDSs, now also part of safety evaluation of chemicals and risk assessments by the Joint FAO/ WHO Expert Committee on Food Additives. Harmonizing the TDS methodology in different countries will help comparability at the international level as regards exposure to food chemicals and nutrients, as well as trends over time. In conclusion, a TDS is a good complement to national food monitoring or surveillance programs – a tool for assessing population dietary exposure to potentially hazardous chemicals (food safety aspect) and intakes of essential nutrients (nutritional aspect) from a public health point of view. It is strongly suggested to determine, in addition to hazardous chemicals and beneficial nutrients, also the total dietary antioxidant capacity and dietary inflammatory index in TDSs to be able to better judge the safety aspect and quality of diets as regards nutritional value.

### **The effects of $\alpha$ -tocopheryl phosphate in in vitro and in vivo systems**

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$\alpha$ -Tocopheryl phosphate, phosphorylated at the OH group of the chromanol ring, is a natural and non-antioxidant derivative of  $\alpha$ -tocopherol. It has been detected in biological tissues including liver and adipose tissue and in foodstuffs. In in vitro cell models such as human coronary artery smooth muscle cells, mast cells and in vivo, it can be synthesized from  $\alpha$ -tocopherol. Synthesis must be catalyzed by a kinase, and, to avoid excessive accumulation of the compound, a competent phosphatase must be present in cells. It has been shown that this physiological derivative has cellular functions like  $\alpha$ -tocopherol, but more potent than  $\alpha$ -tocopherol in modulating cellular events such as inhibition of cell proliferation and regulation of gene expression. Current research suggests that  $\alpha$ -tocopheryl phosphate may act as a lipid mediator modulating signal transduction and gene expression. The discovery of the synthesis and hydrolysis of  $\alpha$ -tocopheryl phosphate in tissues and cells and the evidence that  $\alpha$ -tocopheryl phosphate is more potent than  $\alpha$ -tocopherol itself, suggests that  $\alpha$ -tocopheryl phosphate is the



activated and more potent form of  $\alpha$ -tocopherol modulating cellular processes.

### **Changing the future of children's nutrition in the Islamic Republic of Iran**

Will Parks<sup>1</sup>

1. UNICEF Iran Representative, September 20 17

Good nutrition is an investment in the future of children and nations. Nutritious diets fuel children's growth, drive brain development, strengthen learning potential, enhance productivity in adulthood and pave the way to more sustainable and prosperous societies. This presentation considers the child nutrition situation in the Islamic Republic of Iran as well as across the Middle East and North Africa (MENA) Region. We look briefly at the scale and causes of malnutrition as well as at the range of practical interventions available. Many middle-income countries in the region are experiencing a "nutrition transition" – malnutrition caused by the lack of quality foods rich in micronutrients occurring alongside malnutrition caused by the increasing consumption of processed food heavy in added sugar, saturated fat and sodium. Problems of undernutrition, micronutrient deficiency and over-nutrition co-exist in many MENA countries, including Iran. UNICEF and its partners are increasingly using the language of 'all forms of malnutrition' when addressing the complex and interconnected relationship between different forms of malnutrition. If we are equipped with sound knowledge of the sub-national burden, the causal pathways and the interconnectedness of child malnutrition in all its forms; if we are resolute in making the necessary multi-sectoral investments; and if we are willing to work together to design innovative approaches, then nutrition-specific and nutrition-sensitive interventions can benefit all communities and the future of children's nutrition in the Islamic Republic of Iran can be changed for the better. This presentation explores how this might be achieved.

### **Gastric residual volume management in critically ill patients**

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Gastric residual volume (GRV) is higher in patients who has higher Sequential Organ Failure Assessment (SOFA) score, and thereafter higher mortality risk. Many studies concluded that GRVs do not correlate with incidences of pneumonia,

regurgitation, or aspiration. ESPEN guidelines 2016, recommended not to use GRV as part of routine care to monitor ICU patients receiving enteral nutrition. But, for ICU that still routinely measure GRVs, care should be given in the range 200-500mL. However, when GRV > 500 mL, enteral nutrition does not have to stop immediately. Metoclopramide is the medical choice to decrease gastric volume by relaxing the pyloric sphincter and duodenal bulb, and continue to give enteral nutrition with smaller amount. High GRV can be caused by medications, hyperglycemia, electrolyte disturbances, hypoxia, sepsis, increased intra-cranial pressure, and administration of calorically dense or hyperosmolar formulas. Medication frequently used in ICU that cause increase GRV are morphine, NSAID, corticosteroid, etc. Hypoperfusion causes impaired gut motility, thus decrease gastric emptying. The most common of electrolyte imbalance causes high GRV is hypokalemia. Hypokalemia decreases stomach motility, which can lead to ileus. Potassium level 3.5 to 5.0 mmol/L is accepted as a safe range for ICU patients. Hyperglycemia impacts on reduced fundal relaxation and delayed gastric emptying. Maintaining glucose levels between 100 and 150 mg/dL is likely to be associated with the decrease mortality. ESPEN, 2016 recommended a target blood glucose range of 140 or 150–180 mg/dL. Standard formula enteral nutrition is recommended to be given to control blood glucose for ICU patients.

### **Dietary factors, inflammation and cytokines in cardiovascular disease**

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Cardiovascular disease is the most prevalent cause of morbidity and mortality globally and in Iran. Its overall economic impact on healthcare costs is very substantial and is rising. Whilst its major impact is felt in adulthood, its pathological origins are in childhood, starting with endothelial dysfunction, the formation of the fatty streak, fibro-fatty plaque and leading to occlusive arterial disease. Plaque rupture is often the immediate precursor to a vascular end-point, including a myocardial infarction or stroke. Plaques vulnerable to rupture are characterized by inflammation and the presence of a large lipid core. The Seven Countries Study has identified several cross-cultural factors that may contribute to CVD. For example serum total cholesterol and homocystine concentrations. The Framingham



Heart Study (Boston), the MASHAD study (Mashhad) and other cohort studies have identified several modifiable and un-modifiable risk factors. There are interactions between these risk factors. For example obesity is associated with an enhanced pro-inflammatory profile [Azizian M et al (20 16) *Ann Clin Biochem* 53, 663] and impaired glucose tolerance. Serum CRP is an established marker of inflammation and its levels appear to predict CVD risk. Serum MCP 1 and IL-6 in combination also predict coronary disease and mortality [Tajfard M et al (20 17) *Mol Cell Biochem* (in press)].

Dietary factors have been established as important determinants of CVD risk [Yusuf S et al (2004) *Lancet* 364, 937-952], and together with falling rate of smoking and better treatments for dyslipidaemia, may partially account for the falling mortality from CVD [Unal et al (2004) *Circulation* 109, 1 10 1]. Fruit and vegetables have shown a consistent benefit for CVD [Dauchet L et al (2006) *J Nutrition* 136, 2588; Mozaffarian D et al (20 1 1). *Circulation* 123, 2870], although the benefits of fruit juice are less clear [Bazzano L et al (2008) *Diabetes Care* 3 1, 13 1 1]. The total fibre content of the diet appears to be protective against CVD [Threapleton D et al (20 13) *BMJ* 347,f6879]. So are some dietary antioxidants including vitamins C and E, and flavanoids [Rimm E et al ( 1993) *NEJM* 328, 1450; Knekt P et al ( 1996) *BMJ* 3 12, 478]. Curcumin supplements reduce serum pro-oxidant-antioxidant balance (PAB) and IL- 1 $\beta$  and IL-4 concentrations [Mohammadi et al (20 13) *Phytotherapy Res* 27, 374.ung; Ganjali et al (20 14) *The Scientific World J* 89836 1]. However antioxidant supplement trials have been largely unsuccessful [Myung S et al (20 13) *BMJ* 346, 346: f 10]. Dietary fat quantity and quality effect serum lipid concentrations [Mensink R and Katan M ( 1992) *Arterioscler Thromb Vasc Biol* 12, 9 1 1]. Fish consumption and fish oil supplements are associated with a reduction in CVD [DART, GISSI, Chowdhury R et al (20 12) *BMJ* 345, e6698]. Nut consumption is protective [Mozaffarian D et al. *Circulation* 20 1 1; 123:2870] and also reduce serum markers of inflammation [Mazidi M et al (20 16) *Medicine* 95: e5 165]. Probiotics also reduce serum CRP concentrations, fasting lipids, and several serum cytokines [Mazidi M et al (20 17) *Nutrients* 9, pii: E20]. Studies using whole dietary interventions have shown that a Mediterranean diet [De Lorgeril M et al ( 1999) *Circulation* 99, 779] and DASH diet can improve lipid profile and glucose tolerance, and reduce blood pressure and serum CRP [Mozaffarian D et al. *Circulation* 20 1 1;

123:2870]. Several gene loci have been identified as being associated with CVD in genome wide association studies [Wellcome Trust Case Control Consortium(2007) *Nature* 447, 66 1]. Among these is the CDKN2A/B gene locus [Mega J et al (20 15) *Lancet* 9984, 2264]. This locus appears to interact with calorie intake and physical activity to affect lipid profile [Mehramiz M et al (20 17) *Clin Nutr* (in press)].

### **Micronutrient deficiency in Iran: Strategies and challenges**

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Deficiency of four Micronutrients Including Iron, Zinc, vitamin A and Vitamin D is prevalent in Iran. The second national survey on micronutrient status of Iranian population "National Integrated Micronutrient Survey" (NIMS II) was conducted in, 20 12 and the results of this study showed that about one-fifth of the 15-23-month-old children suffer from anemia, zinc and vitamin A deficiencies. The situation is generally better among the other age/gender groups; however, zinc deficiency is quite common in pregnant women. Comparing the results of 2 national surveys (200 1 - 20 12) shows that prevalence rate of Iron deficiency and anemia has been decreased in the studied age groups during 10 years trend. This study shows that zinc deficiency is a serious problem in the country, although there is a significant reduction in zinc deficiency in all age groups during 200 1- 20 12 except for children 15-23 months. The results of NIMS-2 shows high prevalence of vitamin D deficiency among different age groups ranged from 23.2% in 15-23 months old children to 85.3% in pregnant women. It also provides base line data of vitamin D deficiency among children 6 years old (6 1.8%), adolescents (76%) and adults (60.9%). Based on the results of NIMS II in 20 12, around 15% of pregnant women > 5 months and 20% of children 15-23 months are vitamin A deficiency and there is any improvement in vitamin A status in these groups during 10 years trend. Deficiencies of iron, zinc, vitamins A and D to different extents in parts of the country, prompted the authorities to design and implement intervention programs. The existing programs to control the micronutrient deficiencies including public health measures, supplementation, nutrition education, food diversification and fortification are introduced and their impacts are evaluated. Mandatory flour fortification program with Iron / Folic acid and





weekly Iron supplementation for adolescent girls, along with daily iron and folic acid supplementation for children under 2 years and pregnant women through PHC system and free of charge aiming at controlling iron and folic acid deficiencies. The reasons for decrease in Iron deficiency can be widespread supplementation program through PHC system and obligatory national flour fortification program with iron and folic acid. The results of two national surveys show that zinc status of different age groups improved during 10 years but it should be noted that in some parts of Iran up to 20% of children and adolescents and 40% of pregnant women are zinc deficient. In Iran, the proper food to be used, as vehicle is bread as it is consumed as staple food by almost all households. Although there is worldwide experience to fortify bread with iron and folic acid, for zinc fortification of flour, there is a limited experience in the world. Obviously we are aware of fortification limitations. For instance, flour fortification would not be sufficient for under 2 yrs children. Supposing that under 5 yrs children do not consume that amount bread to take adequate level of iron and/or zinc, we propose other strategies such as zinc supplementation for under 2yrs children and for 2-6 yrs highly consumed items such as biscuits may be appropriate for fortification. Regarding VitA and VitD, cooking oils are the proper vehicles as they are consumed by almost all families. Regarding high prevalence of chronic Heart Diseases, some experts are not agree with edible oil fortification, since they believe it may increase consumption of edible oil that is a risk factor of CHD. Milk is the other suitable vehicle to fortify with vitamin D. In Iran milk fortification is optional and from 2002 dairy manufacturer are allowed to fortify milk with vitamin D, but for two reasons this approach did not work because of price of milk and food habits. Based on the results of household food consumption surveys in Iran, we know that consumption of milk is less than recommended level compare with ideal food basket. So, fortification of the other dairy products such as cheese and yoghurt may consider to improve vitamin D intake. Flour fortification with vitamin D, also has been considered since bread is staple food in Iran and subsidies. So, there is no problem for cost or price of bread. Quality Control and Quality Assurance is the other important issue that has to be considered. In the national flour fortification with Iron and folic acid, the process of QC /QA in order to ensure that adequate amounts of micronutrients could reach to population and there is no risk for over fortification has well designed. A simple, fast and low cost method is

being used in mills and labs to evaluate whether fortification with Iron is at standard level or not. For adding vitamin D to flour in addition of Iron and folic acid, one important component is to design an efficient Quality Control and Quality Assurance system. To ensure that the vitamin D content of the fortified bread is adequate and remains stable under storage and distribution conditions, an appropriate test method has to be established considering that flat traditional breads (Taptoon, Barbary, Lavash) are being fortified and more than 90% of population consume this kind of breads. As conclusion, compared to the last decade, the prevalence of vitamin A deficiency has increased among children, while deficiencies of iron and zinc have decreased in some population groups, which may have been a result of implementing the mandatory national flour fortification program and widespread daily supplementation for pregnant women and children 6-24 months through PHC system and also national weekly iron supplementation program for adolescents girls through high schools free of charge as well as nutrition education and campaigns at the national level. On the other hand, vitamin D deficiency is now a serious problem in the country, needing immediate attention; intervention programs to control it have already started in schools. In this program all adolescents' boys and girls are being received one 50,000 IU vitamin D per month at the school level throughout the country free of charge. Also monthly one 50,000 IU vitamin D supplements is being distributed for the age groups above 18 years old through PHC system. Evaluation of this national program and making decision to stop vitamin D supplementation depends on implementing food fortification and technical supports is needed to design QC/QA system at the national level.

### **Nutraceutical Effect of Bioactive Peptides and Antioxidants on Diabetic Complications**

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Nutraceutical is a foodstuff that is held to provide health or medical benefits in addition to its basic nutritional value called also a functional food like bioactive peptides, curcumin; ellagic acid. The bioactive peptides from Persian walnut seed proteins were prepared by different proteases as the excellent antioxidants. The bio-peptides



scavenged the free radicals and inhibited the activity of reactive oxygen species (ROS). ROS is the main factor for induction of diabetes specially type 2 and its complications.

Antioxidant is any factor which scavenged the free radicals and removes them from surroundings. Antioxidants suppress amyloidosis and formation of amyloid structure of protein due to destructive effects of free radicals and ROS species that can be repaired by ellagic acid or curcumin. These antioxidants as the antifibril natural agents prevent or control the diabetic complications.

Our recent studies on walnut peptides proved that have strong antioxidant activity and they also can inhibit the growth of breast and colon cancer cell lines. Furthermore we demonstrated that these peptides can reduce blood glucose level of diabetic rats to normal extent. A direct correlation between antioxidant and anticancer activities of walnut peptides exist and support their potential therapeutic benefit. Therefore, they can be considered as nutraceutical bioactive peptides with medicinal effects.

#### **Antioxidants and brain function**

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The relationship between brain function and dietary pattern have always been proposed as an attractive and rather as a poorly-defined area in nutritional context. Well-established regulators of synaptic plasticity, such as brain-derived neurotrophic factor, BDNF, can function as metabolic modulators, responding to peripheral signals such as food intake. Evidence on specific nutrients/foods such as antioxidants curcumin and vitamin E counteracted the effects of the diet suggests that increased oxidative stress might mediate the effects of the diet on neuronal plasticity. Accordingly, nootropic brain supplements are growing ever more popular. The flavonol quercetin has been shown to reduce learning and memory impairment in rodent model. Dietary supplementation with epicatechin, which has been shown to cross the blood-brain barrier, elevated indices of synaptic spine density and angiogenesis and increased hippocampus-dependent memory in mice. In humans, case-control studies have indicated that elevated zinc status, as a part of antioxidant system, may improve the school performance, cognition and mood states confirmed by better scores in known validated questionnaires. Young

female university students with degrees of depression have shown lower both serum zinc and its dietary intakes. Moreover, riboflavin, as an antioxidant vitamin, promotes the gene and protein levels of BDNF in the CNS in an animal model of multiple sclerosis, suggesting that BDNF mediates the beneficial effect of riboflavin on neurological motor disability. Vitamin D, more newly defined as an antioxidant, has been shown to exert modulatory effects on both anxiety and depression in human studies. On the other hand, the effective dose of antioxidants, their timing of supplementation, the course and severity of diseases, the body response of subjects and also the possible interactions between ingredients are influencing factors that are not well-defined to obtain favorable results. Recent studies imply that antioxidant effects on the brain function might be transmitted over generations by influencing epigenetic events. At present, it seems that we need more reliable evidence to efficiently implement the antioxidants for improving the brain function and its related disease.

#### **Medical Data Mining**

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Data Mining began as an extension of database management and attempted to go beyond the straightforward operations of searching and locating items matching the supplied query. One of the basic reasons for this extension was that a query would be based on known features or patterns and hence would not be capable of highlighting or bringing to notice any unknown feature or pattern. Data Mining also attempted to go beyond what expert systems would do because expert systems were based on the known relationships between the incidence and its consequence. This would an expert system incapable of handling situations where unknown incidences occur. It became clear very soon that the objectives of data mining go beyond the scope of data management and hence are beyond the ability of a database manager to handle and resolve. It also became apparent that some of the intended objectives were already addressed by some of the statistical methods, although in deferent forms and under a deferent terminology. At the same time, statisticians also realised that they would not be able to handle situations where data does not follow ideal patterns required by classical statistical models.



It then became clear that there is a need to extend statistical methods from the classical parametric setup to a non-parametric or a semi-parametric setup. Parametric methods are based on models that involve parameters. When huge data became available that would not fit into a single and simple statistical model, the challenge became that of modelling rather than that of analysis. This is how statistics as a science that handles data got involved in data mining. It is not restricted by the classical mathematical statistics that provides small sample methods and requires independent and identically distributed (i. i. d.) observations, preferably from the family of Gaussian (or, normal) distributions. Data mining is more applied than classical statistics and, at the same time, is more theoretical than database operations.

Medical data arise out of anomalies in health conditions and therefore require methods that are beyond classical statistical methods requiring homogeneous data. In the least, any medical data can be treated as a mixture of samples coming from two populations, where one population pertains to healthy or normal individuals, while the other population represents individuals suffering from an ailment or at least exhibiting symptoms of a disease.

If more health complications get involved, then data would be treated as a mixture of samples coming from several statistical populations. This would render the data heterogeneous and one of the primary tasks would be to identify homogeneous segments (that is, subsets) of data that can be considered to consist of independent and identically distributed (that is, i. i. d.) observations. This shows why data mining often begins with data segmentation, mostly in the form of clustering or association rules mining. Data Mining as a discipline consists of several algorithms. One of the purposes of this talk is to introduce some of the most important and most popular data mining algorithms. Decision trees, support vector machines, frequent itemset analysis, clustering (k-means and hierarchical) EM algorithm, CART, and ensemble learning are among the top data mining algorithms. All of these are useful in analysing medical, health, and nutrition data. Some examples will be used to illustrate how these algorithms can be used in medical data analysis. Emphasis will be given on implementing these algorithms in the R statistical computing environment, although alternatives like Enterprise Miner (of SAS) and Python are available. The main reason for this choice is that the SAS licence is very costly and Python is yet to be established as a suitable alternative for non-programming data analysts.

## Medical Data Mining

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Machine learning is a relatively recent phenomenon that has resulted from the convergence of the disciplines like statistics, computer science, artificial intelligence, and vector algebra through automation of execution. Heterogeneous and heteroscedastic data sets cannot be analysed with help of only classical model-based statistical methods. Several data elements in such data sets defy the classical or traditional data structures like stochastic independence or having a common probability distribution. All observations in such data sets may not even have a common dimension. Some data sets may have a temporal or spatial context, which cannot be handled by classical statistical methods of data analysis. Some data sets may have been obtained from a variety of data generating processes. There can be so many variables in the data that selecting significant or relevant variables may be impractical if undertaken manually. There can often be so many observations that no algorithm can be executed within a reasonable amount of time. Add to this list the fact that all observations do not always deserve the same treatment due to the heterogeneity in data. Some observations can be more informative than some other, and hence have to be treated differently. It then becomes necessary to first detect, locate, and identify different dominant patterns in data and then segregate data according to the different patterns. This allows modelling of every distinct data pattern most appropriately. This is one of the main reasons why machine learning has become the backbone of all analytics.

Medical and health data have their own unique features. Most of the times, they are not obtained from a random sample selected from the entire target population using a classical statistical sampling design. Instead, medical observations are often contributed voluntarily by individuals who feel that they have a health problem of one kind or another. Nevertheless, there is also a practice to conduct health surveys in order to understand the health issues in the population. What can happen is that theoretically recommended sample sizes for such health surveys are prohibitively large, and hence a practical sample size is used that does not satisfy the theoretical sample size requirement. It is also



a common observation that most of the medical data are heterogeneous, with obvious causes of variation. Natural divisions of data in such cases may not be called strata most probably because they may not be internally sufficiently homogeneous. These divisions are called segments of data to indicate that the observations in the available data are divided in to non-overlapping partition sets, called the segments of data. Machine learning has brought out four kinds of statistical analyses. These are (i) descriptive statistics, (ii) statistical diagnostics, (iii) predictive models, and (iv) prescriptive analyses. The first two, namely the descriptive and diagnostic, relate to past data, while the last two, namely predictive and prescriptive, correspond to (still unobserved) future values of the variables of interest. These methods are gaining an increasing degree of importance among data scientists because there is a need for better (that is, more accurate as well as more precise) prediction that can save the potential cost of futile experimentation. Machine learning algorithms are more implementable than theoretical ones, and therefore come mostly in the form of executable code or ready-to-run software packages. It is this reason why machine learning is being discussed in the context of a platform (that is, an operating system) and a system (that is, a programming language or a computing environment). This talk is aimed at explaining the variety of machine learning procedures along with their objectives and suitable data structures. The main contribution of machine learning methodology to analytics is the concept of partitioning the available data in to two parts, called the training data and test data. This concept is used to justify describing these methods as learning methods. Automation of these methods allowed these methods to be called machine learning methods. Machine learning methods are mainly divided in to two broad categories known as supervised learning and unsupervised learning. Supervised learning occurs when the outcome is known so that the relationship between the precedence and consequence can be established using the training data and verified using the test data. Unsupervised learning has no observed outcome and hence treats all variables as the input and attempts to partition the given data in intrinsically homogeneous subsets for further modelling and analysis. There is not need of dividing the given data set in training and test data because there is no outcome variable to relate to the input variables. Resampling or bootstrap methods provide a natural foundation

for robust machine learning methods and generate robust results in the face of uncertainty. Machine learning methods have also brought out a clear understanding of the concepts of uncertainty and risk. Uncertainty relates to occurrences or non-occurrences of events, while risk pertains to consequences of actions. Medical data involve both uncertainty and risk, and it is therefore important to understand and handle them appropriately. This can be done very effectively using machine learning algorithms that can be executed in the R statistical computing environment.

### **New Small Molecular Weight Antioxidants and Pro-oxidants Control Melanoma Cell Proliferation and Spreading *in vitro***

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Melanoma, the most dangerous skin cancer, originates from the melanocytes and has a high tendency to invade neighboring tissues, and metastasize. Both antioxidant and pro-oxidant appear to be involved in modulating melanocyte transformation, melanoma progression and invasion. Consequently, potent antioxidants and pro-oxidant may prevent cell transformation and tumor progression. Skin melanoma the most common malignancy in United States there are 2 million cases diagnosed in US annually. Among the novel therapies there is the use of bioactive compounds, which have proven to show increase response (IRR) and overall survival (OS) rates. In fact Dacarbazine is the only FDA approved chemotherapeutic bioactive compound for melanoma treatment. We have identified eight bioactive compounds with antioxidant and pro-oxidative activities as anti melanoma/ anti invasion agents. They were previously found to posse's *in vitro* antioxidant or pro-oxidant activity, Compounds 1, 2, 3, 4, 5, 6, 7 and 8 were found to be most potent anti-melanoma agent. These compounds are now tested for intracellular free radical quenching and ROS producing role in skin melanoma cells *in vitro*





and their ability to reduce proliferation and spreading.

#### **Lipid Oxidation Products in Health and Disease**

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Non enzymatic and enzymatic oxidation of lipids represents a primary issue in human pathophysiology, with special emphasis to dietary and nutritional-related aspects. Evergrowing attention is drawn by the oxidation of PUFA-3, mainly of marine origin, and PUFA-6. While there is no doubt that eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA), the main precursors of resolvins and protectins, do appear to exert anti-inflammatory, inflammation resolving and immunomodulatory effects in different model systems, on the other hand their oxidation during food storage and cooking as well as during gastrointestinal digestion, could give rise to excessive amounts of aldehydic end-products, quite stable and highly diffusable from the gut into the blood circulation, such as 4-hydroxyhexenal (HHE). Any way, there is no doubt that non enzymatic oxidation of n-6 fatty acids is in principle by far more harmful, since its intermediate and endproducts, for instance 4-hydroxynonenal (HNE) have been recognized as associated to the progression of a number of human diseases. Still, not easy is to achieve and maintain a suitable balance of PUFA-3, PUFA-6 and derived oxidation products in the body and different tissues. Another class of oxidized lipids, of primary pathophysiological importance as well, is stemming from the enzymatic and non enzymatic oxidation of cholesterol: the oxysterols. For many years, these 27-carbon molecules have been mainly considered for their physiological role played, for instance, in bile acid synthesis, steroid hormones biosynthesis, sterol transport, gene regulation. More recently, their potential contribution to the pathogenesis and the progression of those human diseases whose hypercholesterolemia is a primary risk factor, such as atherosclerosis, Alzheimer's disease and Inflammatory Bowel Disease, has been unanimously recognized. In general terms, excessive amounts of lipid oxidation products, mainly of not enzymatic origin might be harmful and favor the progression of major chronic diseases. Correct food supplementation with antioxidants and wise prevention or containment of inflammatory reactions appear valid strategies in this regard. Of note, pharmacological and/or

nutritional interventions should pay attention to limit but not to abolish altogether the endogenous enzymatic formation of oxidized lipids, by this way preserving their physiological effects.

#### **A pilot self-compassion and goal-setting intervention to improve dietary habits**

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Overweight and obesity are significant problems in many countries. There is evidence that non-dieting behavioural approaches that also address psychological factors related to weight management could be beneficial for weight loss and maintenance. This study aimed to investigate the feasibility of a semi-online behavioural intervention that focused on self-compassion and goal-setting for improvement of nutrition behaviours in overweight and obese people. Overweight and obese Australian adults (n= 14) received online weekly self-compassion and nutrition advice and set and monitored goals online over four weeks. To measure the impact of the intervention, participants were assessed for eating behaviours; levels of depression, anxiety and stress; levels of self-compassion, dietary habits and anthropometry at 0 and 4 weeks. To explore the participant's perception about the study acceptability and feasibility, 1: 1 structured interviews with open-ended questions were conducted at 4 weeks. Qualitative data were coded using content analysis methods. Self-compassion levels showed significant improvement over 4 weeks ( $p < 0.001$ ) and scores for two of the subscales of the Eating Disorder Questionnaire (Eating Concerns and Shape Concerns) decreased significantly ( $p < 0.05$ ). A decrease in Depression scores of the Depression, Anxiety and Stress Scale (DASS) approached significance ( $p = 0.084$ ). Other subscales of DASS and anthropometric variables did not show any significant change over 4 weeks. Total energy and macronutrient intakes significantly decreased ( $p < 0.05$ ), and fibre intakes per MJ of energy consumed significantly increased ( $p = 0.02$ ). The majority of participants were satisfied with the program, and findings showed that the most of the participants found self-compassion and goal-setting strategies beneficial in healthy diet adoption. Some of the participants expressed that having an informative, engaging, efficient and simple program which is tailored to individual needs made this study acceptable; while, other



participants suggested that study requires some improvements to provide the stated features. This pilot study showed that an online tool promoting self-compassion goal-setting strategies increased levels of self-compassion; improved nutrition intake; and decreased eating and shape concerns, and depression. The tool was acceptable for the most of the participants, and it is a promising avenue for further research with rigour study design and larger sample size.