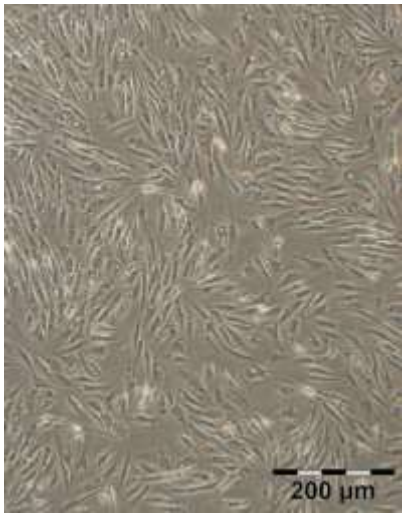


Figure 1. Fibroblast-like shape of BM-MSCs before differentiation at passage 4

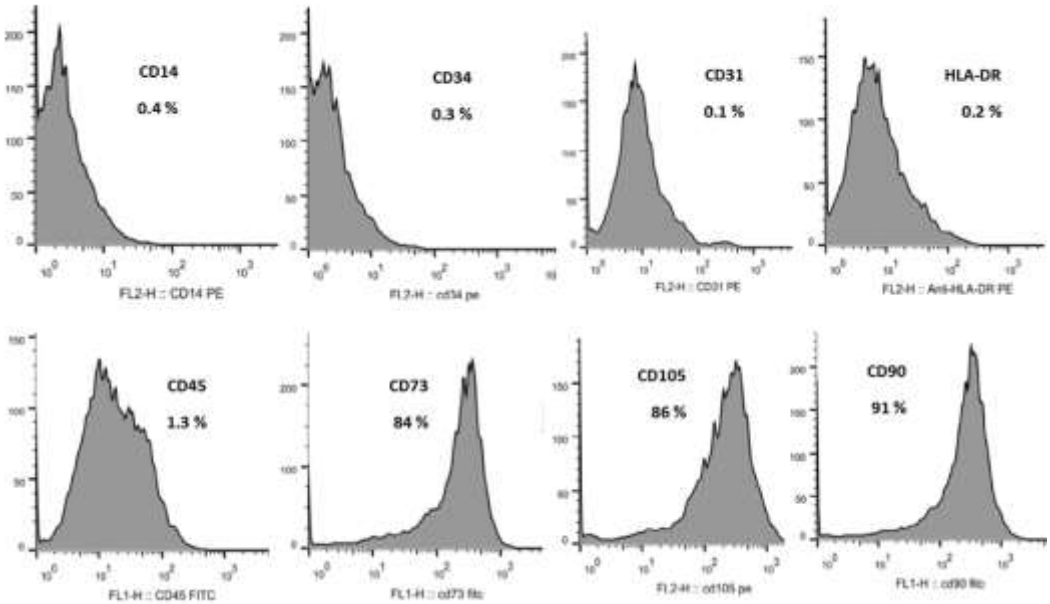


Figure 2. Flow cytometry analysis of superficial markers of BM-MSCs

Histogram plots showed that BM-MSCs are positive (more than 80%) for expression of CD73, CD105 and CD90 whereas negative (less than 2%) for CD34, CD31, CD14, CD45, and HLA-DR. Data were indicated on 10000 events.

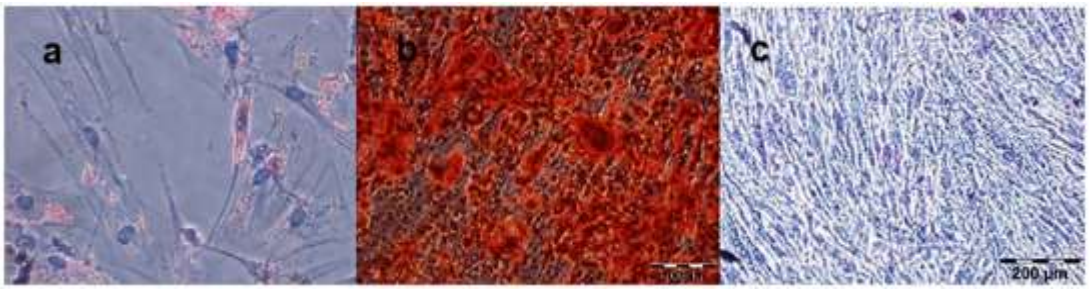


Figure 3. Capacity of MSCs for differentiation into adipocyte and osteocyte was established by specific-cell staining after 21 days remaining in specialized medium. After differentiation of BM-MSCs toward adipocytes, lipid vacuoles were detected using staining with Oil Red O method (a). Mineralization potential of BM-MSCs was detected by appearance of calcium deposits following Alizarin Red staining (b) and alkaline phosphatase staining (c).

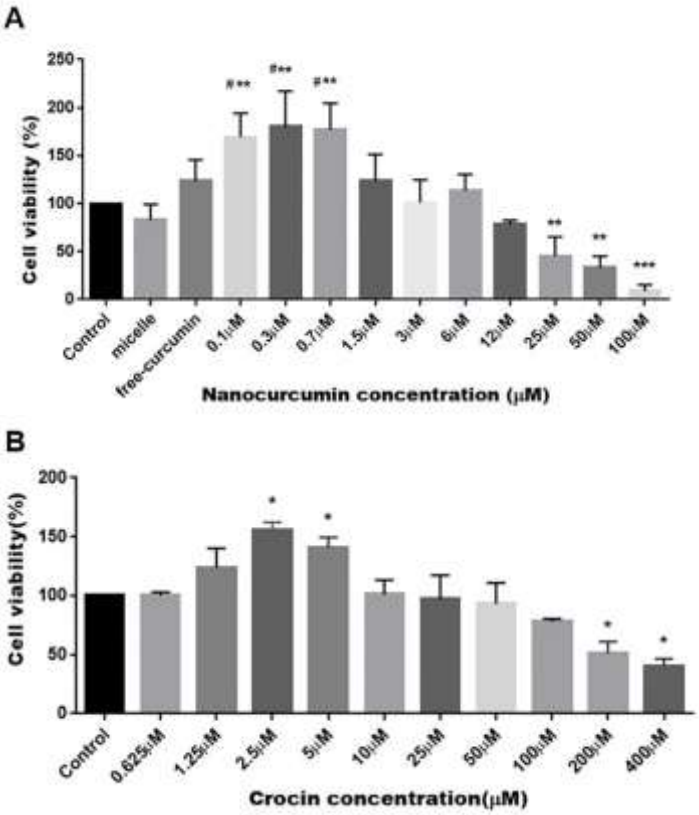


Figure 4. A) Rate of MSCs proliferation after incubation with increasing doses of nano-curcumin (0-100 µM) for 48h
Data were analyzed using One-way ANOVA followed by Dunnett's *post hoc* test. Nano-curcumin at very low concentrations (0.1, 0.3, 0.7 µM) stimulate MSCs proliferation significantly compared with control groups (un-treated cells). But at higher concentrations (25-100) indicate inhibitory effect on MSCs expansion compared to control groups. * Significant vs un-treated cells. ** Significance vs un-treated cells ($P \leq 0.01$), *** Significance vs un-treated cells ($p \leq 0.001$) # significance vs free curcumin. ($P \leq 0.05$), Mean values ±SD are presented, (n=5). B) Rate of MSCs proliferation after incubation with increasing doses of crocin (0-400 µM) for 48h. Cell expansion was evaluated using 3-(4,5-dimethylthiazol-2-yl)-2,5- diphenyl tetrazolium bromide (MTT) assay. * Significance vs un-treated cells (control), the values are expressed as mean± standard deviations (SD) of triplicate determinations (n=5). Significantly defined as $P \leq 0.05$. *

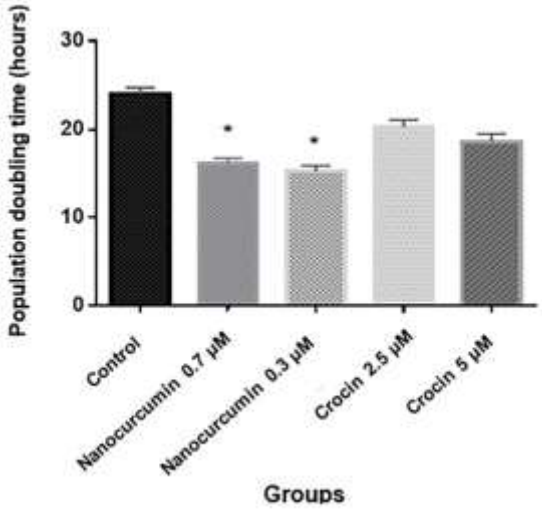


Figure 5. Population doubling time (PDT)
Data were analyzed using One-way ANOVA followed by Dunnett's *post hoc* test; *Indicates significant PDT of 0.3 and 0.7 µM nanocurcumin-treated cells compared with that of untreated cells ($P<0.05$).

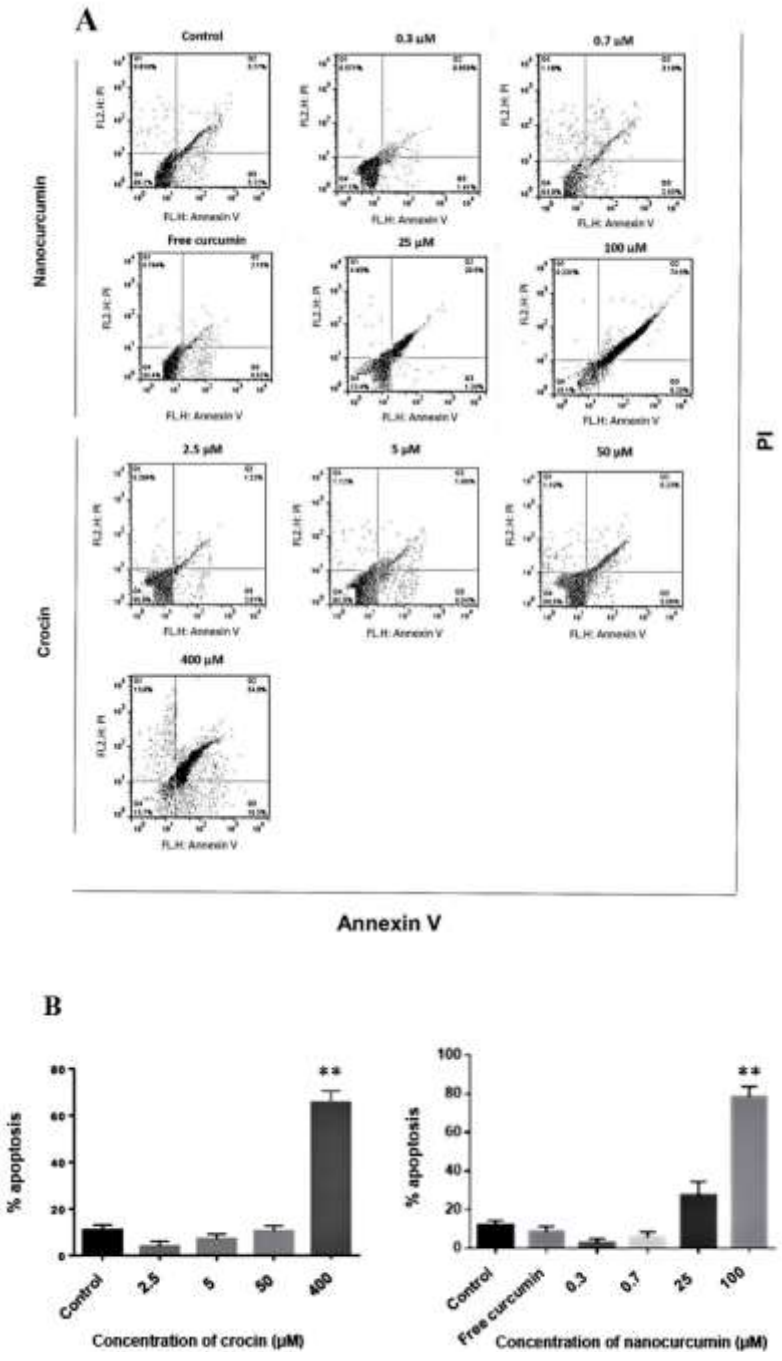


Figure 6. A, B) Flowcytometric analysis of apoptotic cells indicate the percentage of late apoptosis in MSCs after pretreatment with high doses of nano-curcumin and crocin are substantially increased compared with control group ($P \leq 0.01$) whereas low concentrations reduce the percentage of late apoptosis in MSCs respect to control groups. **significantly different from 0 µM (un-treated cell). Data are indicated as mean values ±SD. Flow Cytometry data analysis was done using FlowJo Software, and then data (percentages of apoptotic cells) were analyzed using One-way ANOVA followed by Dunnett's *post hoc* test

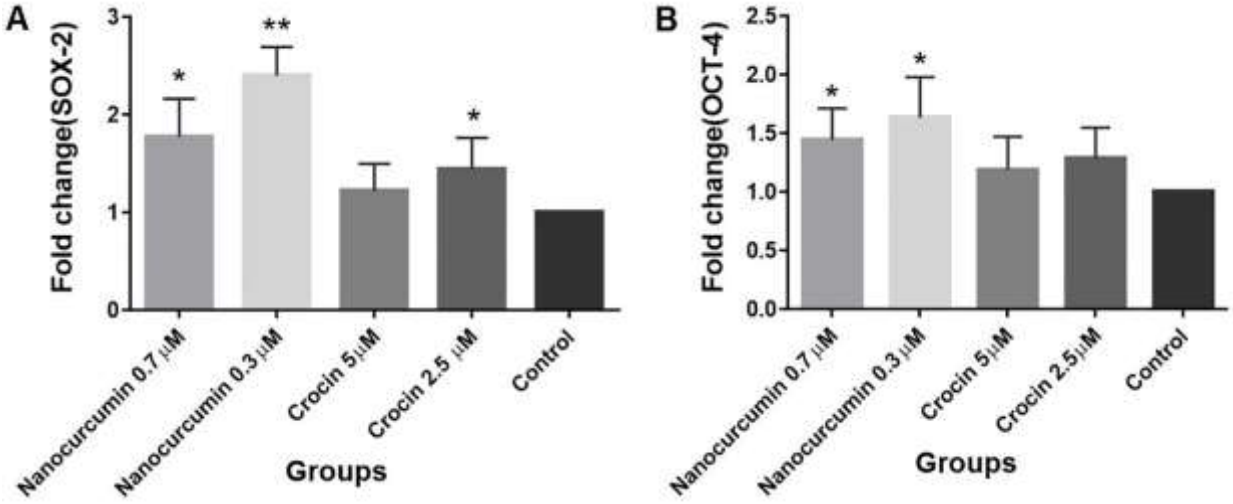


Figure 7. A) Relative mRNA level of SOX-2 following 48-h treatment with different concentration of nanocurcumin and crocin (* *P*< 0.05 compared with control group, ***P*<0.01 compared with control group, n = 5). B) Relative mRNA level of OCT-4 following 48-h treatment with different concentration of nanocurcumin and crocin (* *P*< 0.05 compared with control group, n = 5). Data were analyzed using One-sample t-test.

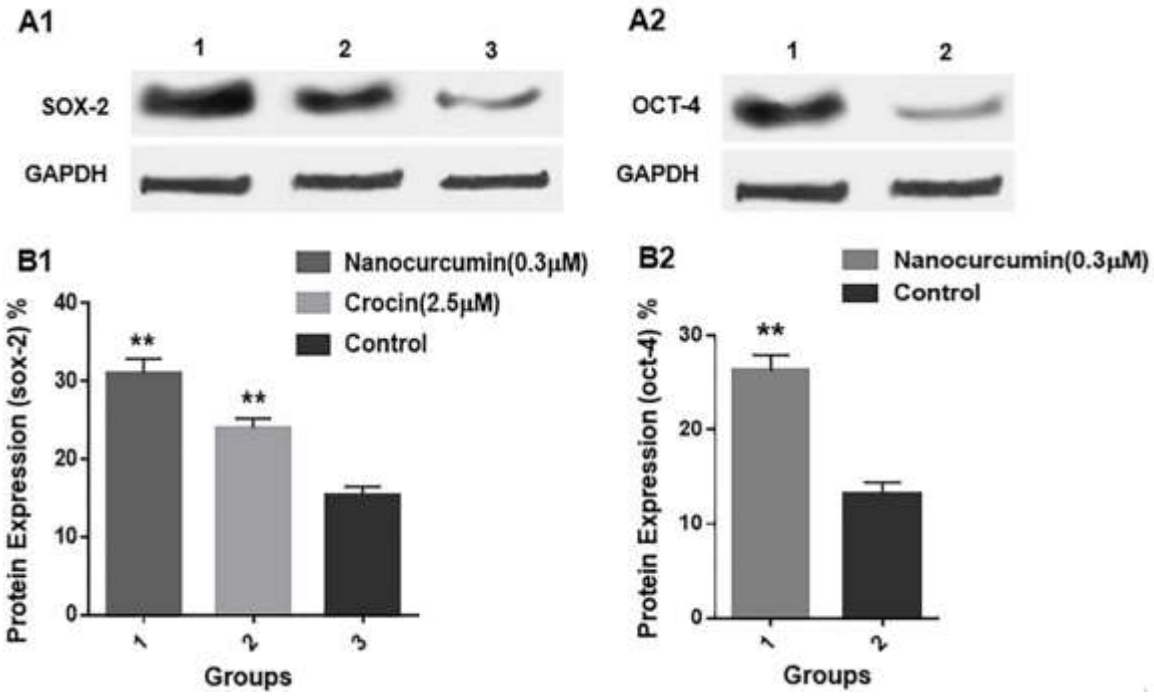


Figure 8. A) Western Blotting. A1) SOX-2 and GAPDH protein expression in BM-MSCs cultured in different treatment groups; lane 1= nanocurcumin (0.3 μM); lane 2= crocin (2.5 μM), lane 3= control. A2) OCT-4 and GAPDH protein expression in BM-MSCs cultured in different treatment groups; lane 1= crocin (2.5 μM), lane 2 = control. B1 and B2) Quantitative analysis of SOX-2 and OCT-4 protein was done using ImageJ software; **: $P \leq 0.01$.