Electronic Supplementary Material (ESI) for RSC Advances.
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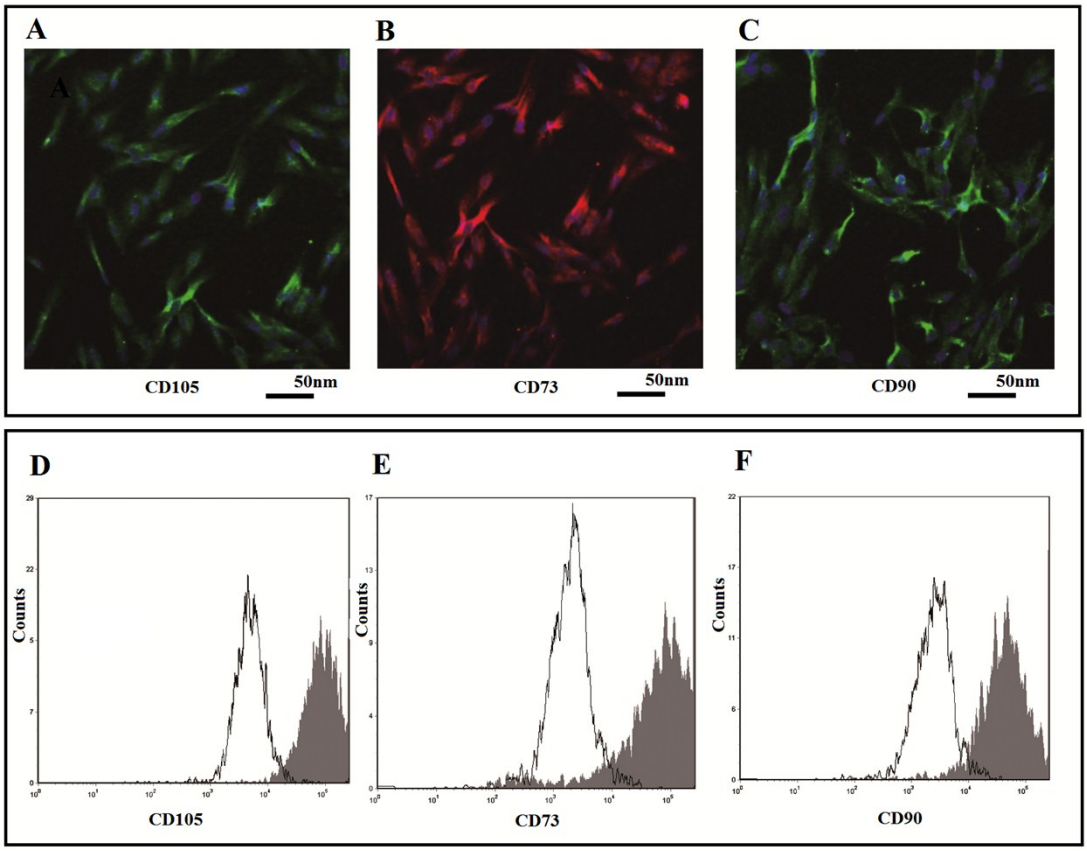
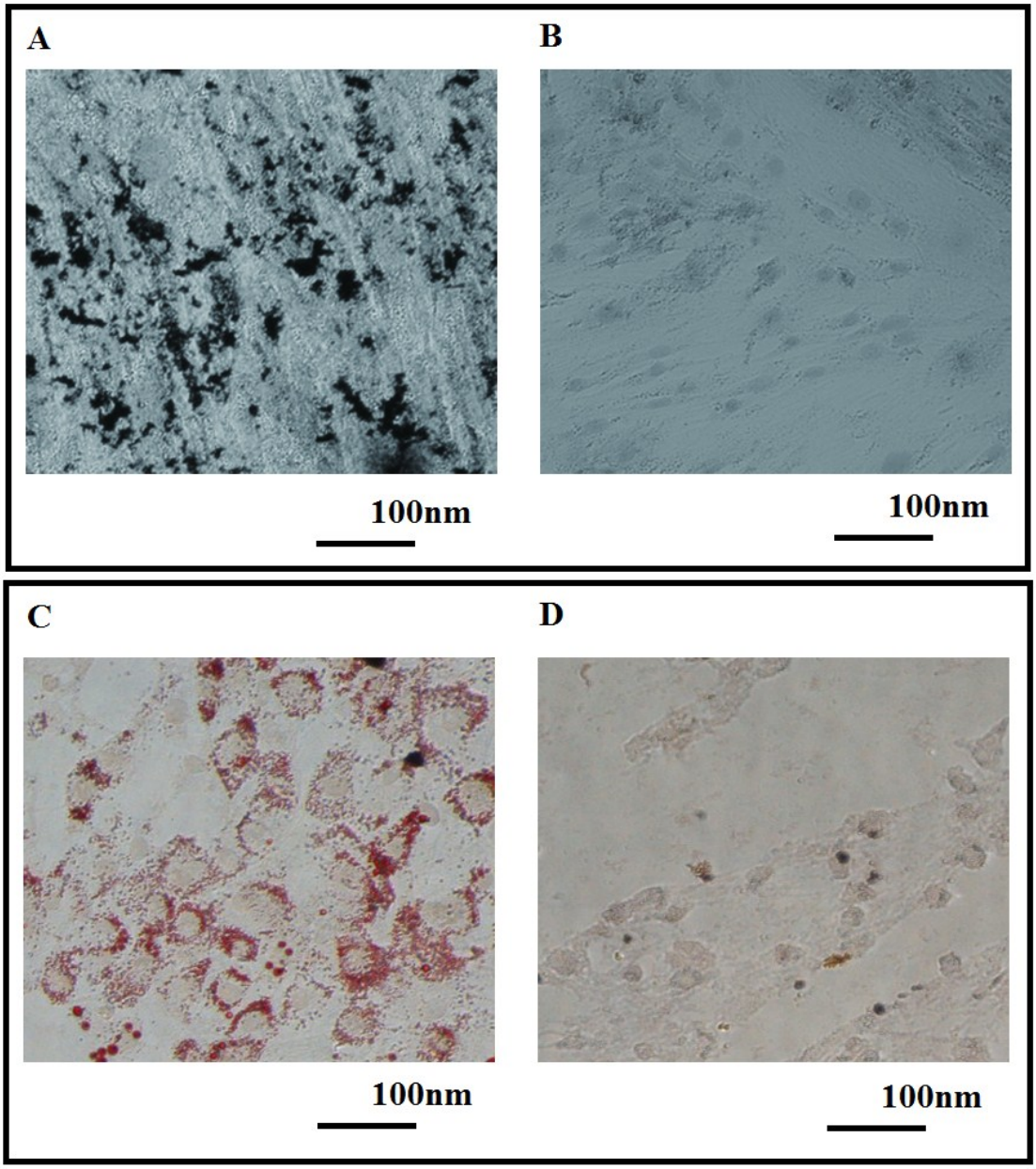
Support Information

Flow Cytometry Assay for Cell Antigens

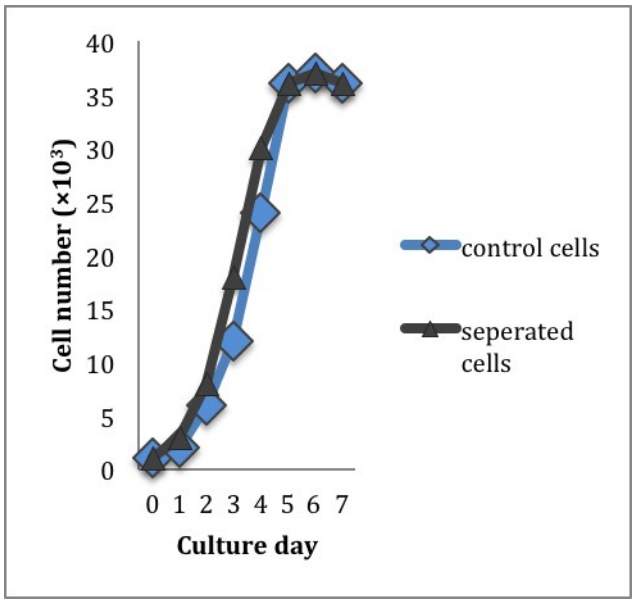
Cells cultured on plastics were trypsinized and fixed with fresh paraformaldehyde (4%) for 20min at RT. For staining of intracellular components, the cells were permeabilized by incubation with 0.5% Triton100 × for 7min in RT. For blocking non-specific binding, cells were rinsed with 5% bovine serum albumin (BSA) in PBS for 60 min at RT on a slowly plane-rotating plate. The cell suspension was then incubated with the following primary antibodies to the different markers: mouse anti-human CD73 (1:10), rabbit anti-human CD90 (1:10), rabbit anti-human CD105 (1:10), the antibodies were diluted to required concentrations with FACS buffer containing 1% BSA þ 0.01% sodium azide in PBS. For their assay, the cells were incubated with the following secondary antibodies: Alexa Fluor 488-conjugated goat anti-rabbit (1:100) or Alexa Fluor 647 conjugated goat anti-mouse (1:100), diluted in FACS buffer on a slowly plane-rotated plate for 45 min at RT in darkness. Rinsing–washing of the cells between different steps was carried out by short microfuge centrifugation. Cells were suspended in 400 ml FACS buffer and then filtered through a mesh sieve of 50–90mm into 5 ml FACS tubes. From each sample, 10 000 cells were analyzed with FACScan (BD Biosciences, Franklin Lakes, NJ, USA).



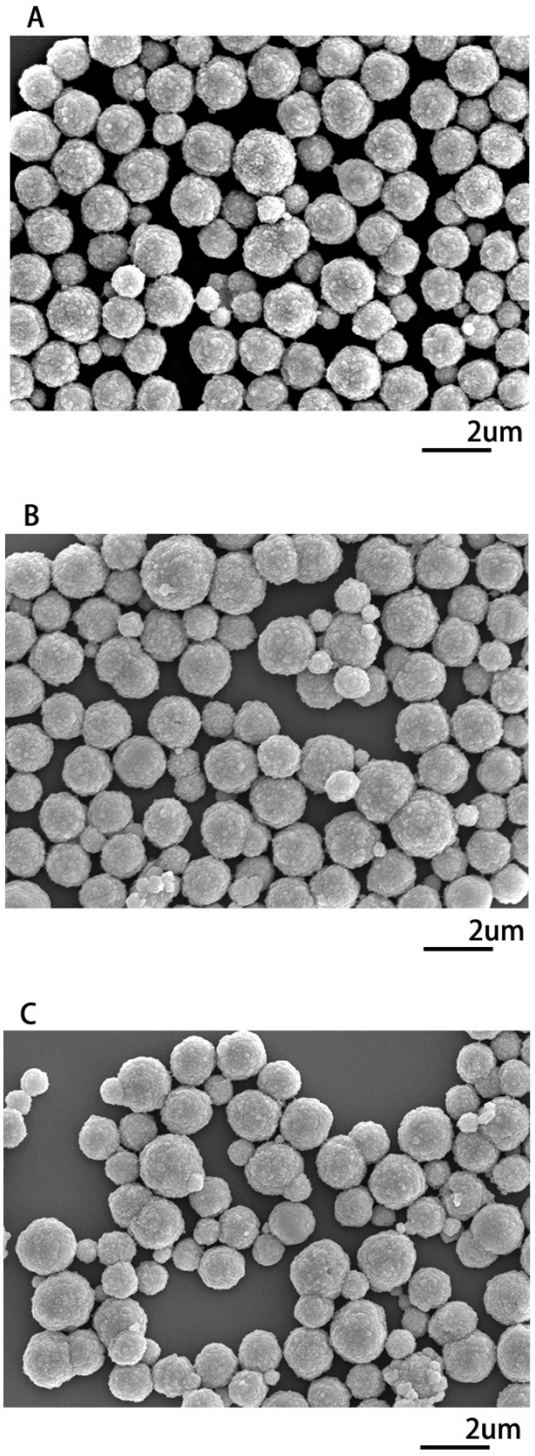
Supplement Figure 1. MSC-specific marker expression by flow cytometry assay and Immunohistochemistry staining. Sorted MSCs were stained with Alexa Fluor 488 or Alexa Fluor 647 -conjugated antibodies against the indicated markers: CD105, CD73, CD90.



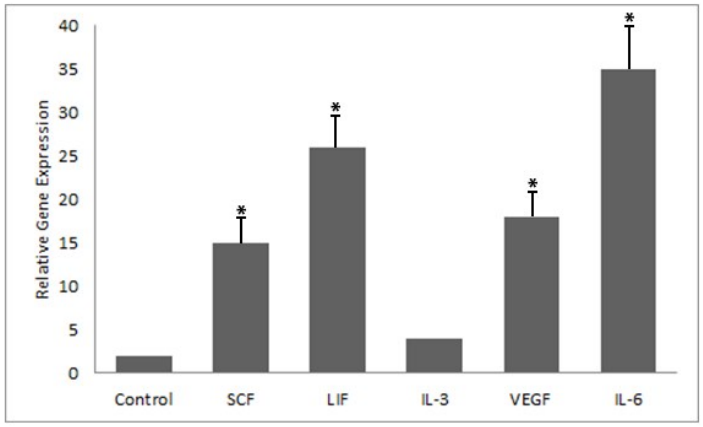
Supplement Figure 2. Osteogenic and adipogenic differentiation of Sorted MSCs. Cells were investigated for their osteogenic and adipogenic differentiation capacity as stemness potential. Osteogenic differentiation was examined by von Kossa staining (A) after cells were cultured in the osteogenic differentiation medium for 21 days. Adipogenic differentiation was examined by Oil red O staining (C). Cells were cultured in the growth medium as negative control (B, D).



Supplement Figure 3. The viability of separated cells. MSCs cultured with normal cell culture method were used as control cells.



Supplement Figure 4. The size of the magnetic beads had no change before (A) and after (B) alginate modification. And there is no change after staying in TBS buffer for 12 hours (C).



Supplement Figure 5. Gene expressions of the markers of mesenchymal stem cell including stem cell factor (SCF), leukemia inhibitor factor (LIF), interleukin-3 (IL-3), interleukin-6 (IL-6) and vascular endothelial growth factor (VEGF) after culture for 20 passages relative to control medium (normalized to 1). The differences in gene expressions between reported method and explant culture method were not statistically significant. (t-test, $p < 0.05$). The data are mean and standard deviation values.