

**Supplementary Table 1 Primer sequences used for real-time quantitative polymerase chain reaction**

Gene	Forward primer (5'-3')	Reverse primer (5'-3')
BMP-2	CCATCAGGAGAAGTTGATCTCCGT	GACATCTGAGGGATTATGCGTCAC
TGF- $\beta$ 1	GACCTGCGAAGCGAAGCCACAGTT	GTCAATCCGCTGCCTGATAG
VEGF	GTACCTCCACCATGCCAAGT	AATAGCTGCGCTGGTAGACG
GAPDH	AGCTGTTCAAACGCATCTCG	GACACCAGGTCATTCATGTTGC

RT-qPCR: Real-time quantitative polymerase chain reaction; BMP-2: Bone morphogenetic protein 2; TGF- $\beta$ 1: Transforming growth factor-beta 1; VEGF: Vascular endothelial growth factor; GAPDH: Glyceraldehyde 3-phosphate dehydrogenase.

**Supplementary Table 2 Comparison of the protein expression levels of stromal cell-derived factor-1 and transforming growth factor-beta 1, chemokines related to mesenchymal stem cell migration, and vascular endothelial growth factor at 2 wk post-fracture**

	Normal saline	$2.5 \times 10^6$	$5.0 \times 10^6$	$10.0 \times 10^6$
SDF-1 (fold change)	1	$1.29 \pm 0.14^a$	$1.34 \pm 0.03^{a,b}$	$1.34 \pm 0.02^{a,b}$
TGF- $\beta$ 1 (fold change)	1	$1.20 \pm 0.06^a$	$1.46 \pm 0.08^{a,b}$	$1.45 \pm 0.12^{a,b}$
VEGF (fold change)	1	$1.09 \pm 0.09$	$1.19 \pm 0.05^{a,b}$	$1.25 \pm 0.04^{a,b}$

<sup>a</sup> $P < 0.05$  vs normal saline group.

<sup>b</sup> $P < 0.05$  vs  $2.5 \times 10^6$  group.

MSCs: Mesenchymal stem cells; SDF: Stromal cell-derived factor; TGF- $\beta$ 1: Transforming growth factor-beta 1; VEGF: Vascular endothelial growth factor.

**Supplementary Table 3 Comparison of the mRNA expression levels of bone morphogenetic protein 2, transforming growth factor-beta 1 and vascular endothelial growth factor at 6 wk post-fracture**

	Normal saline	2.5 × 10 <sup>6</sup>	5.0 × 10 <sup>6</sup>	10.0 × 10 <sup>6</sup>
BMP-2 (fold change)	1	1.19 ± 0.23 <sup>a</sup>	1.23 ± 0.01 <sup>a,b</sup>	1.23 ± 0.02 <sup>a,b</sup>
TGF-β1 (fold change)	1	1.16 ± 0.02 <sup>a</sup>	1.25 ± 0.03 <sup>a</sup>	1.27 ± 0.06 <sup>a,b</sup>
VEGF (fold change)	1	1.20 ± 0.01 <sup>a</sup>	1.30 ± 0.05 <sup>a,b</sup>	1.31 ± 0.03 <sup>a,b</sup>

<sup>a</sup>*P* < 0.05 *vs* normal saline group.

<sup>b</sup>*P* < 0.05 *vs* 2.5 × 10<sup>6</sup> group.

BMP-2: Bone morphogenetic protein 2; TGF-β1: Transforming growth factor-beta 1; VEGF: Vascular endothelial growth factor.

**Supplementary Table 4 Comparison of the protein expression levels of bone morphogenetic protein 2, transforming growth factor-beta 1 and vascular endothelial growth factor at 6 wk post-fracture**

	Normal saline	2.5 × 10 <sup>6</sup>	5.0 × 10 <sup>6</sup>	10.0 × 10 <sup>6</sup>
BMP-2 (fold change)	1	1.17 ± 0.06 <sup>a</sup>	1.29 ± 0.06 <sup>a,b</sup>	1.37 ± 0.10 <sup>a,b</sup>
TGF-β1 (fold change)	1	1.22 ± 0.15 <sup>a</sup>	1.43 ± 0.09 <sup>a,b</sup>	1.44 ± 0.03 <sup>a,b</sup>
VEGF (fold change)	1	1.08 ± 0.05	1.22 ± 0.06 <sup>a,b</sup>	1.29 ± 0.09 <sup>a,b</sup>

<sup>a</sup>*P* < 0.05 *vs* normal saline group.

<sup>b</sup>*P* < 0.05 *vs* 2.5 × 10<sup>6</sup> group.

BMP-2: Bone morphogenetic protein 2; TGF-β1: Transforming growth factor-beta 1; VEGF: Vascular endothelial growth factor.