**Supplemental Information**



**Supplementary Fig. 1. GEN had no effect on expression of ALP, RUNX2, OCN, and BMP2 without the osteogenic medium.** BMSCs were cultivated with GEN (0, 10, 20, and 40 μM) without the condition of osteogenic induction for 2 weeks. (a, b) The result of ALP staining and ALP activity. The protein level of Runx2 (c, d), OCN (c, e), and BMP2 (c, f) were measured by Western blot.



**Supplementary Fig. 2. Ovariectomized osteoporosis mice model was successfully constructed.** (a) Body weight and (b) uterine weight were shown in this data. \**P* <0.05 versus Sham group.



**Supplementary Fig. 3.** **GEN had no effect on β-catenin-BMP2 signaling without the osteogenic medium.** BMSCs were cultivated with GEN (0, 10, 20, and 40 μM) without the condition of osteogenic induction for 2 weeks. The level of p-Smad1/5/8 (a, b), β-catenin protein (a, c) were evaluated by Western blot.