

Figure S1. Molecular structure.
 (a) Chemical basic structure of BPs, (b) Chemical structure of ZOL.

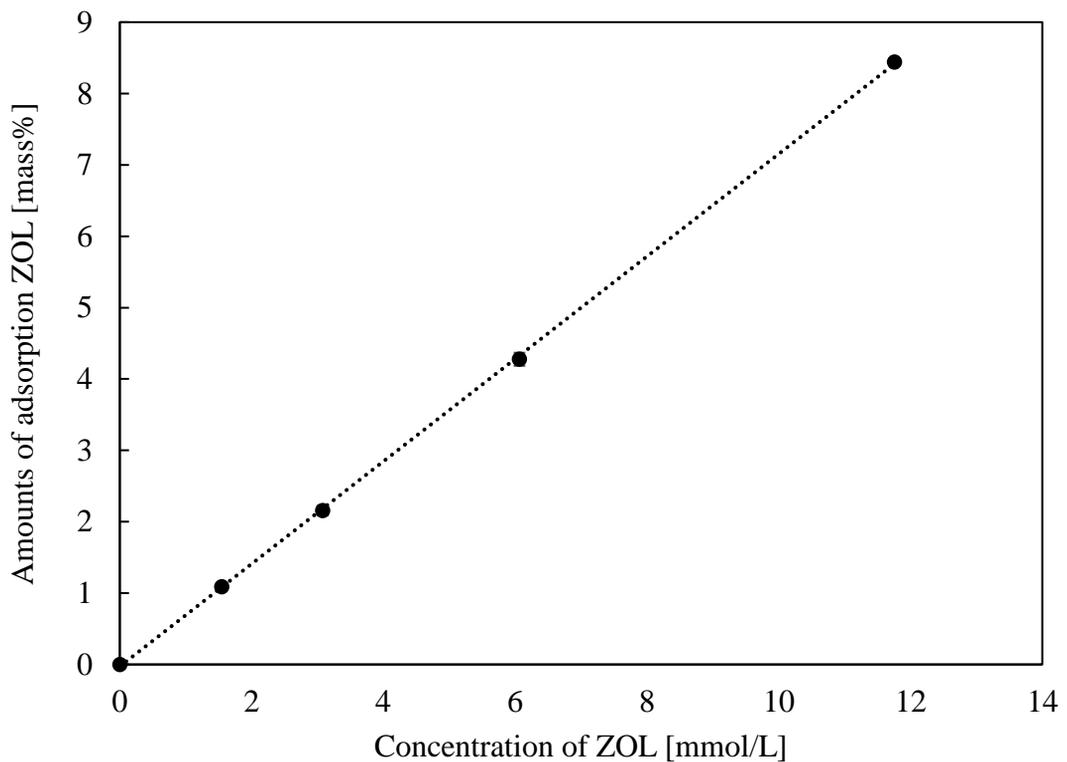
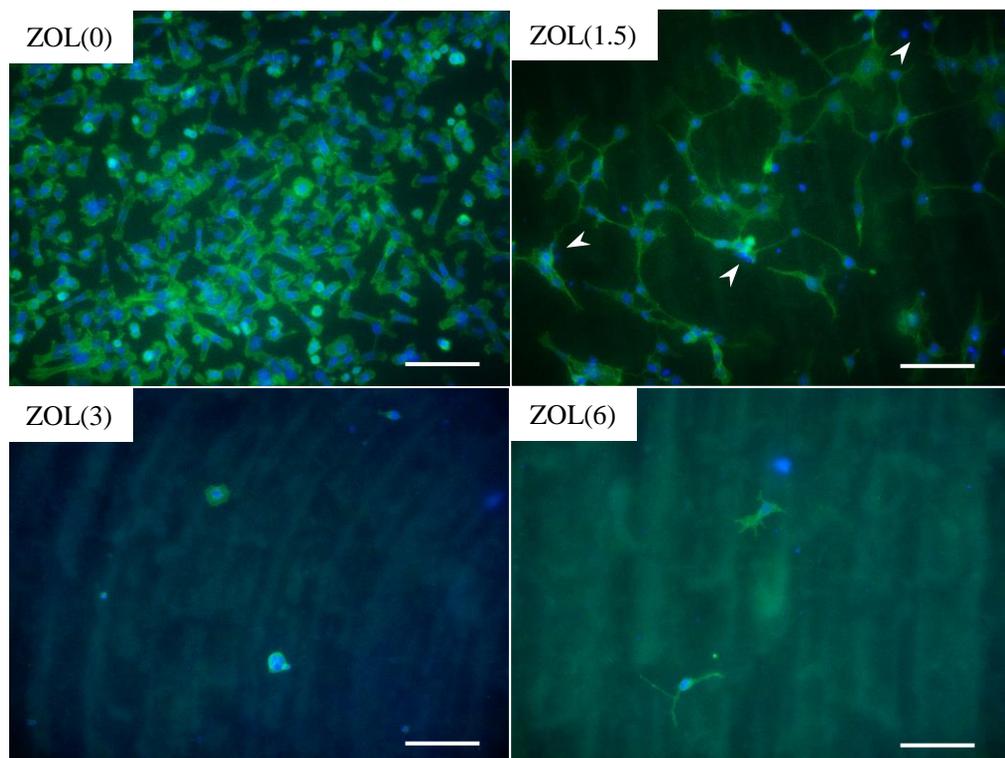


Figure S2. ZOL binding affinity to β -TCP powders.
 β -TCP powders were rotated with each ZOL solution (0, 1.5, 3, 6, 12 mmol/L) for 1 h and loaded ZOL. The straight line was showed adsorption level of the ZOL to β -TCP powders. Error bars indicate standard deviation of the mean.

(a)



(b)

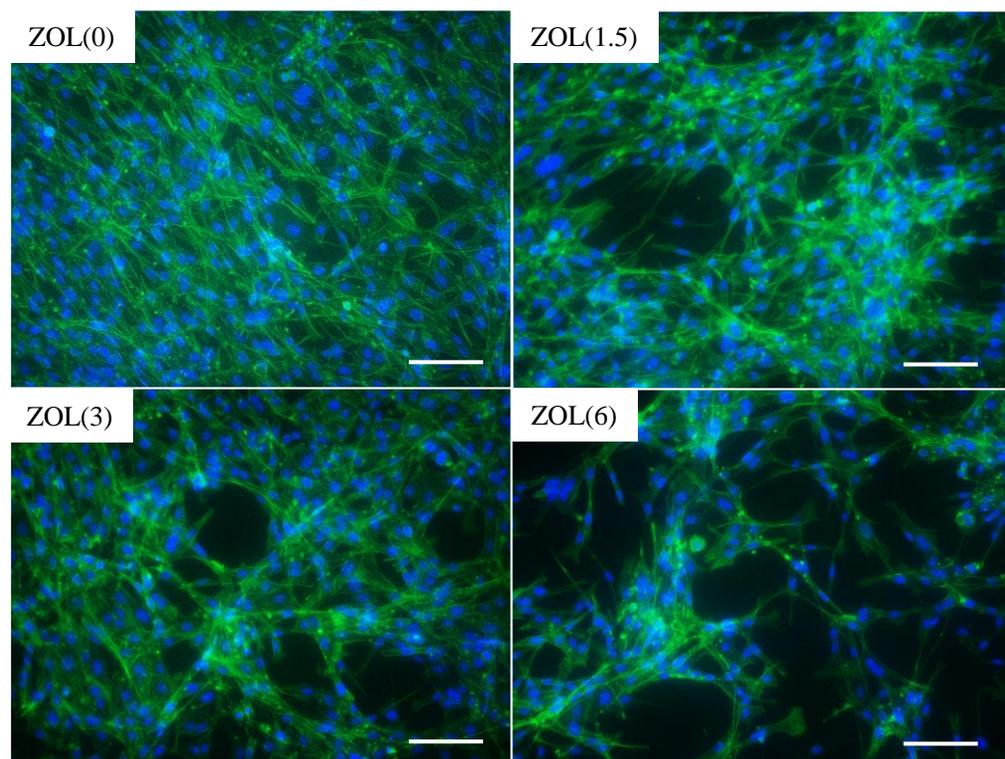
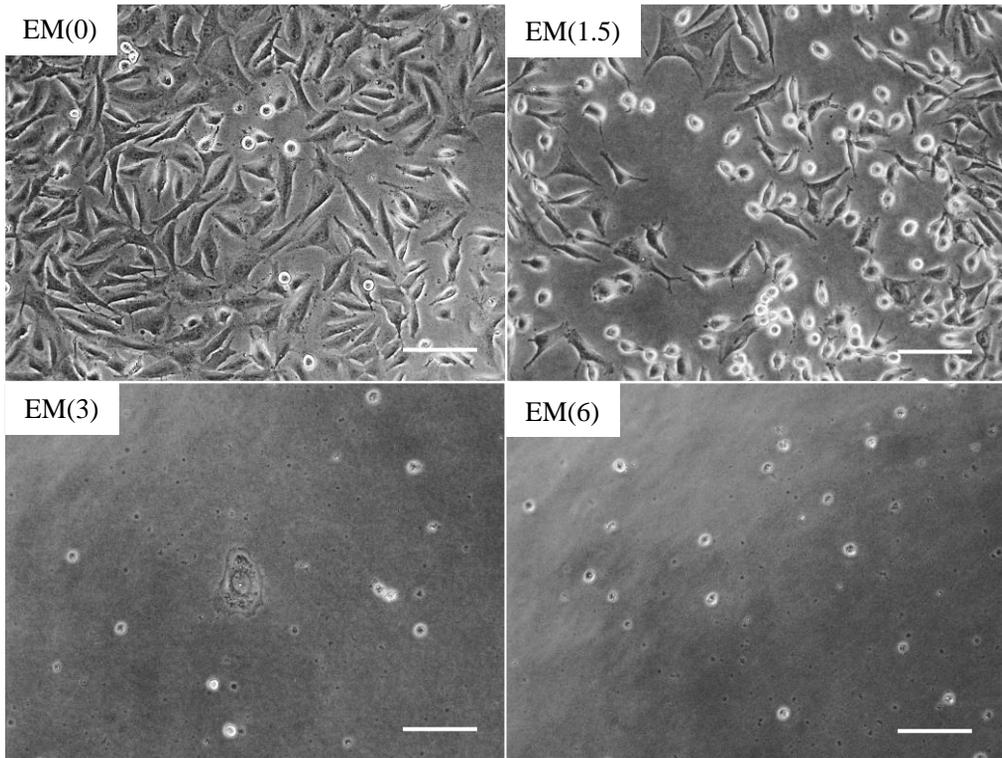


Figure S3. Morphological observation of cells on each ZOL/β-TCP disc.

HOS and MC3T3-E1 were cultured on each ZOL/β-TCP disc for 3 days. After culturing, (a) HOS and (b) MC3T3-E1 were stained with Alexa Fluor® 488-labeled phalloidin for F-actin (green) and DAPI for nuclei (blue) and observed with fluorescence microscopy. Scale bars: 100 μm, arrow heads; apoptotic-like morphology.

(a)



(b)

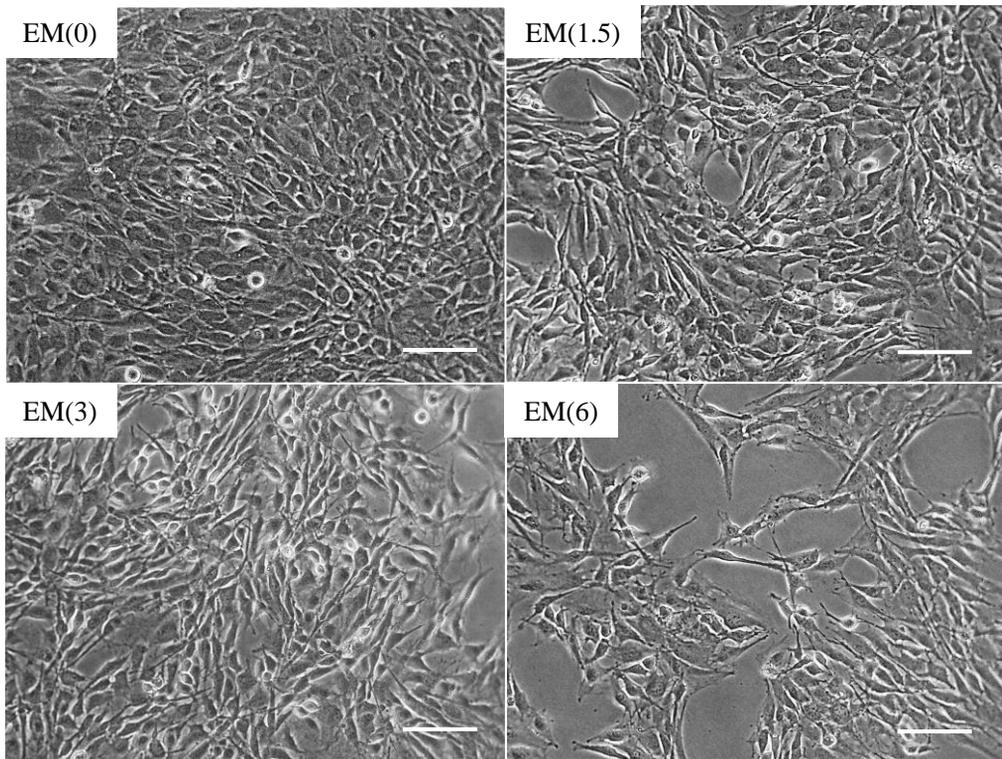


Figure S4. Morphological observation of cells in elution medium of ZOL/ β -TCP.

HOS and MC3T3-E1 were cultured in elution medium for 3 days. After culturing, (a) HOS and (b) MC3T3-E1 were observed with phase microscopy. Scale bars; 100 μ m.

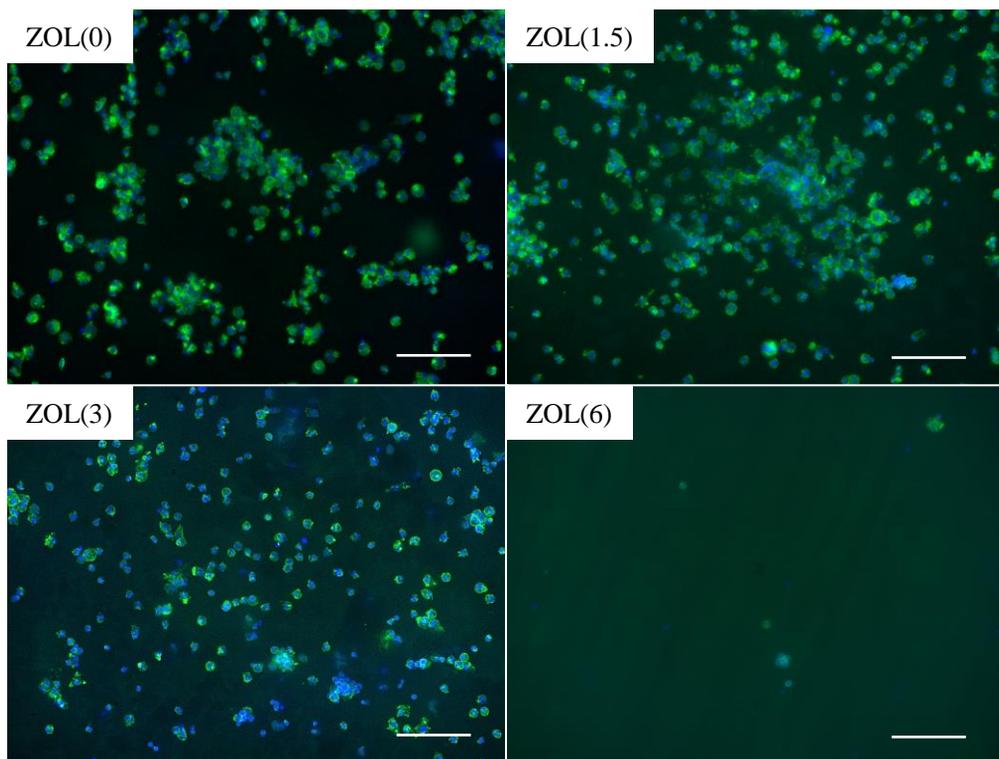


Figure S5. Cells adhesion of mBMSCs on ZOL/ β -TCP disc.

mBMSCs were cultured on each ZOL/ β -TCP disc for 3 days. After culturing, mBMSCs were stained with Alexa Flour[®] 488-labeled phalloidin for F-actin (green) and DAPI for nuclei (blue) and observed with fluorescence microscopy. Scale bars; 100 μ m

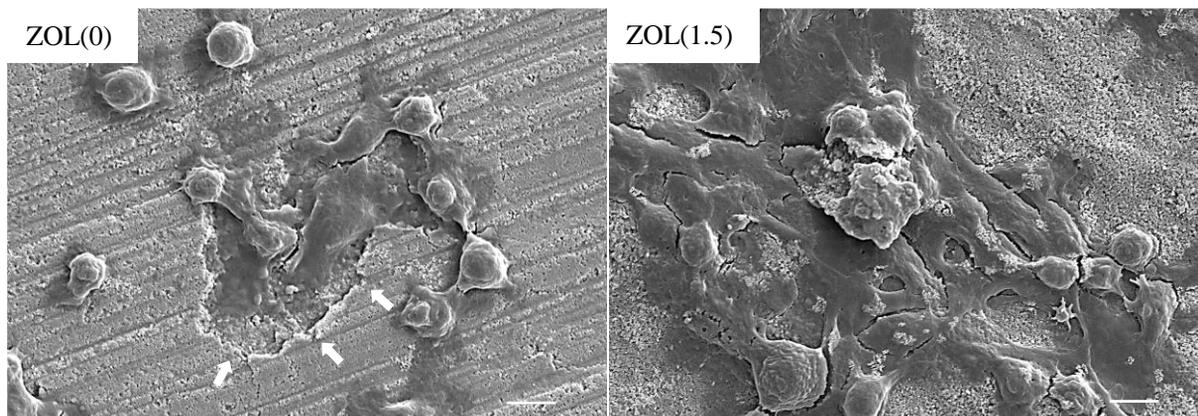


Figure S6. Observation of mBMSCs and pit area.

mBMSCs were cultured on each ZOL/ β -TCP disc for 10 days. After culturing, surface of the ZOL/ β -TCP disc was observed with SEM and confirmed pit area. White arrows; pit area, scale bars; 10 μ m.

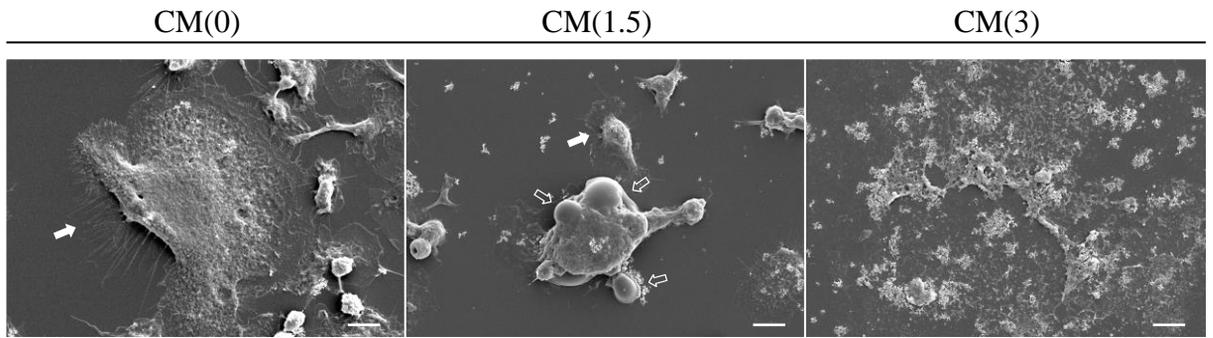


Figure S7. Morphological observation of osteoclasts and apoptotic bodies in osteoclastic conditioned medium. mBMSCs were cultured in osteoclastic (on ZOL/ β -TCP disc) conditioned medium for 3 days. mBMSCs were observed with SEM. Scale bars; 10 μ m, filled white arrows; osteoclasts, open white arrows; apoptotic bodies.