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Betulinic acid 抑制由 RANK Ligand 所誘導之蝕骨細胞分化
Betulinic acid negatively regulates RANK Ligand induced osteoclast differentiation

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Osteoporosis can occur when osteoclasts dissolve more bone than what the osteoblasts are able to replace. Many studies have proved that some inflammatory cytokines play an important role in the progression of osteoclastic differentiation. Betulinic acid, a main compound of traditionally used Chinese herb Forsythia, has anti-inflammatory activity. Our study found that the betulinic acid markedly inhibited the receptor activator of nuclear factor kappa B ligand (RANKL) induced osteoclastic differentiation from RAW264.7macrophage cells. Tartrate-resistant acid phosphatase (TRAP) staining demonstrated that differentiation of osteoclast-like cells was inhibited in the presence of betulinic acid in a dose-dependent manner.Treatment of RAW264.7 macrophages with RANKL induced extracellular signal-regulated kinases (ERK), p38 and c-Jun N-terminal kinase (JNK) phosphorylation. We found that RANKL-induced ERK, p38 and JNK was attenuated by betulinic acid. Our data suggest that betulinic acid inhibits osteoclastogenesis from macrophage cells via attenuated of RANKL-induced ERK, p38 and JNK activation, which may protect bone loss from osteoclastogenesis.

Keywords: Forsythia, betulinic acid, RANKL, RAW264.7, TRAP, osteoclastogenesis