Chem Biol. 2007 Jul;14(7):860-9.

A triterpene glycoside from black cohosh that inhibits osteoclastogenesis by modulating RANKL and TNFalpha signaling pathways.

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Abstract

Osteoporosis is a major age-related source of morbidity and mortality. Increased bone resorption mediated by osteoclasts is central to its pathogenesis. Cytokines, particularly RANKL and TNFalpha, are often increased under pathologic conditions, leading to enhanced **osteoclastogenesis**. **Black cohosh** (Actaea/**Cimicifuga** racemosa L), a popular herbal supplement for the treatment of menopausal symptoms, was recently shown to have the beneficial effect of preventing bone loss. Here, we demonstrate that 25-acetylcimigenol xylopyranoside (ACCX), a triterpenoid **glycoside** isolated from **black cohosh**, potently blocks in vitro **osteoclastogenesis** induced by either RANKL or TNFalpha. This blockage of **osteoclastogenesis** elicited by ACCX results from abrogation of the NF-kappaB and ERK pathways induced by either RANKL or TNFalpha, respectively. Importantly, this compound attenuates TNFalpha-induced bone loss in vivo. Therefore, ACCX represents a potential lead for the development of a new class of antiosteoporosis agents.

Comment in

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PMID: 17656322 [PubMed - indexed for MEDLINE] **Free full text**