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P1.039

Chicoric acid inhibits the production of pro-inflammatory cytokines through inhibition of NF-κB signaling pathway in HMC-1 human mast cells

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Purpose: A great number of people are suffering from allergic inflammatory disease such as asthma, atopic dermatitis, and sinusitis. Therefore discovery of drugs for the treatment of these diseases is an important subject in human health. Chicoric acid is a natural phenolic compound that has been reported to inhibit HIV integrase and to exhibit antioxidant activities. Although these biological effects of chicoric acid have been conducted, no anti-allergic inflammatory effect of chicoric acid has been reported in HMC-1 human mast cells.

Methods: HMC-1 human mast cells were incubated with chicoric acid (μM) and/or phorbol 12-myristate 13-acetate (PMA) plus A23187. Cytokine production and relevant factors expression in activated HMC-1 cells were determined by enzyme- linked immunosorbent assay (ELISA), western blot and quantitative reverse transcription-polymerase chain reaction (qRT-PCR) analysis. Also, the involvement of the mitogen-activated protein kinases (MAPKs) and nuclear factor-κB (NF- κB) in activated HMC-1 cells were studied.

Results: Chicoric acid decreased expression of pro-inflammatory cytokines, such as tumor necrosis factor (TNF)-α, interleukin (IL)-6, and IL-1β. The inhibitory effect of chicoric acid on theses pro-inflammatory cytokines was related with c-Jun N- terminal kinases (JNK), and p38 MAPK, NF-κB. We also found that chicoric acid blocked nuclear translocation of NF- κB inhibiting the phosphorylation of IκBα and suppressed NF-κB transcriptional activity in stimulated HMC-1 cells.

Conclusion: Our results showed that chicoric acid down-regulates mast cell-derived allergic inflammatory reactions by blocking histamine release and expression of pro-inflammatory cytokines. In light of in vitro anti-allergic inflammatory effects, chicoric acid could be a beneficial anti-allergic inflammatory agent. This research was supported by Basic Science Research Program through the National Research Foundation of Korea (NRF) funded by the Ministry of Education (NRF-2014R1A1A2008663).

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P1.040

Water extract of Magnolia officinalis cortex Inhibits Osteoclastogenesis and Bone resorption by Downregulation of Nuclear Factor of Activated T Cells

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Purpose: Magnolia officinalis cortex has been traditionally used to treat stomach and intestine diseases in Traditional Chinese Medicine. In this study, we investigated the effect of water extract of Magnolia officinalis cortex (WEMC) on osteoclast differentiation and function.

Methods: We examined the effect of water extract of Magnolia officinalis cortex (WEMC) in activator of nuclear factor-κB ligand (RANKL)-induced osteoclast differentiation and resorption activity. Osteoclast differentiation of bone marrow-derived macrophages was determined by tartrate-resistant acid phosphatase activity assay. RANKL-related transcription factors and signaling factors were analyzed by Western blot and real-time PCR. Bone resorption function of mature osteoclasts was evaluated by pit formation assay. The in vivo effect of WEMC on RANKL-induced bone destruction model was investigated by bone loss model.

Results: WEMC inhibited osteoclast differentiation of osteoclast precursor cells induced by RANKL, a key cytokine for osteoclast differentiation. Gallic acid and honokiol were identified in WEMC as active constituents contributing to the inhibitory effect of WEMC on osteoclast differentiation. WEMC suppressed RANKL-induced activation of p38 and NF- NF-kappaB pathways and expression of c-Fos and nuclear factor of activated T cells cytoplasmic 1 (NFATc1), key transcription factors for osteoclast differentiation. Ectopic overexpression of a constitutive active form of NFATc1 rescued the anti-osteoclastogenic effect of WEMC. In addition, WEMC decreased bone resorbing activity of mature osteoclasts. Consistent with the in vitro results, WEMC significantly suppressed RANKL-induced osteoclastic bone resorption and trabecular bone loss in mice.

Conclusion: WEMC might have a therapeutic potential to treat pathological bone diseases by inhibiting osteoclastogenesis and bone resorption.

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Phytochemical screening of Pure Chemical compounds by Off-line and On-line Methods Assay

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Purpose: Generally, OMHs is very effective for anti-cancer, anti-inflammat and anti-virus. It also receives much attention