Method of Preventing Bone Loss and Periodontal Disease

Published date: March 14, 2017

Technology description

Bone homeostasis is maintained by a balance between bone resorption by osteoclasts and bone formation by osteoblasts. The anti-inflammatory system triad composed of RANK, RANK-L, and OPG orchestrates bone homeostasis by selectively activating osteoclasts and osteoblasts in a regulated fashion. In chronic osteolytic inflammatory diseases, such as periodontitis, the failure of endogenous resolution pathways seem to lead to bone loss and tissue destruction. Precise regulation of the RANK, RANK-L, and OPG triad promises a solution to this disease and many others.

Researchers at the University of California, Davis have developed a method to regulate the RANK, RANK-L, and OPG signaling pathway. This method regulates the signaling system to limit inflammation, cancer, arthritic disease, and bone loss while promoting bone growth, remodeling, and regeneration. This method is based on the elevation and regulation of epoxy fatty acid (EpFA) levels, which is accomplished by the inhibition of the enzyme, soluble epoxide hydrolase (sEH). This method has proven effective to reduce bone loss in mice infected with periodontitis. Bioactive compounds are available that can be used topically for periodontal disease and have good pharmacokinetics and high oral availability for oral administration.

A method of controlling mammalian epoxy fatty acids levels in order to regulate the RANK, RANK-L, and OPG anti-inflammatory triad, thereby limiting inflammation, cancer, arthritic disease, and bone loss while promoting bone growth, remodeling, and regeneration.

Additional Information

Additional Technologies by these Inventors

Brown Adipose Tissue Cell Lines Derived from Protein-Tyrosine Phosphatase 1B Knockout Mice Reconstituted with Sumoylation Mutant PTP1B K4R

Improved Dioxin Detection and Measurement

Recombinant Neurotoxin: A More Effective Insecticide

Antibodies: Urea Herbicide Pabs

Antibodies: Triazine Herbicide Pabs

Antibodies: Bacillus Delta Endotoxin PAbs

Antibodies: Bromacil Herbicide PAbs

Dual Inhibitors of Soluble Epoxide Hydrolase and Cyclooxygenase-2
Novel and Specific Inhibitors of p21
Beneficial Effects of Novel Inhibitors of Soluble Epoxide Hydrolase as Adjuvant Treatment for Cardiac Cell-Based Therapy
Novel Neuropathy Treatment Using Soluble Epoxide Inhibitors
Detection System for Small Molecules
Methods and Compositions of Treating Diabetic Nephropathy and Insulin Resistance
A New Pharmaceutical Therapy Target for Depression and Other Central Nervous System Diseases
Multi-Target Inhibitors for Pain Treatment
Antibodies for Pseudomonas (P.) aeruginosa
Chemical Synthesis of Lipid Mediator 22-HDoHE and Structural Analogs

Application area

Subjects having osteoporosis or periodontal disease
Subjects having a bone fracture or broken bone
Subjects who are exhibiting symptoms of bone loss
Subjects who are suffering bone loss
Subjects who may benefit from promotion of bone growth or regeneration

Advantages

Cost effective treatment
Low potential for side effects
Promotes the understanding of a crucial inflammatory system

Institution

University of California, Davis

Inventors

Ahmed Bettaieb
Bruce Hammock
Carlos Trindade da Silva
Fawaz Haj
Bora Inceoglu

联系我们

叶先生

电 话：021-65679356

手 机：13414935137

邮 箱：yeyingsheng@zf-ym.com