Novel Matrix Metalloproteinase Inhibitors

Tech ID: 19604 / UC Case 2004-102-0

TECHNOLOGY DESCRIPTION

Matrix Metalloproteinases (MMPs) are zinc containing hydrolytic enzymes that are able to degrade extracellular matrix components such as collagen. MMP's have been implicated in a variety of diseases, including cancer, arthritis, inflammatory disease, and heart disease. Despite intensive research and clinical testing of MMP inhibitors, the only approved MMP inhibitor is a tetracycline for the treatment of periodontitis.

UCSD researchers have developed a novel series of organic compounds that are potent inhibitors of MMPs. While most MMP inhibitors in development are based on small peptide mimetics that chelate the zinc ion using a hydroxamic acid moiety, the UCSD researchers designed a novel class of zinc-binding groups (ZBGs) by rational drug design. The binding mode of the ZBGs was optimized using structural, spectroscopic, and computational studies of the compounds bound to an inorganic zinc model complex for MMP's. These new inhibitors are up to 700-fold more potent than acetohydroxamic acid in MMP binding assays and are expected to have better oral availability and pharmacokinetics when compared with hydroxamate-based compounds. These ZBG inhibitors have commercial applications in drug design against MMP's and other metalloproteins related to human disease, such as histone deacetylases.

PATENT STATUS

Country	Type	Number	Dated	Case
United States Of America	Issued Patent	8,008,510	08/30/2011	2004-102
United States Of America	Issued Patent	7,705,164	04/27/2010	2004-102

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OTHER INFORMATION

CATEGORIZED AS

- **Medical**
  - Disease: Autoimmune and Inflammation
  - Disease: Cancer
  - Disease: Cardiovascular and Circulatory System
  - Therapeutics

RELATED CASES

2004-102-0

ADDITIONAL TECHNOLOGIES BY THESE INVENTORS

- Stimulus-Triggered Metalloenzyme Inhibitors
- New Antibacterial Leads