ciber-bbn

PATENT

Use of an inhibitor of adrenomedullin for the manufacture of a drug useful in the prevention and treatment of disease that reduce bone density

Market sector: Pharmaceutical, musculoskeletal

Type of opportunity: licensing and/ or co-development

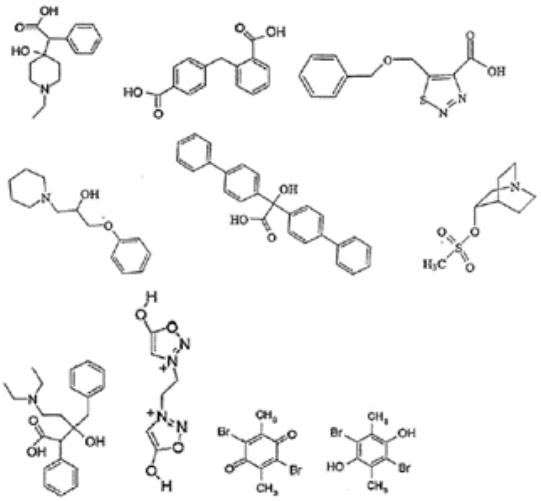
Scope of the problem

Osteoporosis is a serious problem in the elderly population and is characterized by a decrease in bone mineral density (a T scale of mineral density lower than 2.5) and deterioration of bone micro architecture, which can lead to an increased risk of fractures. Osteoporosis is more common among women, especially after menopause. Estrogen deficiency increases the bone resorption process, causing the balance between bone deposition by osteoblasts and resorption by osteoclasts inclined to net bone loss. Many studies have shown that hormone replacement therapy can be used to prevent and/or treat osteoporosis. However, long-term estrogen supplementation has severe risks including endometrial cancer, breast cancer or ovarian cancer, as well as cardiovascular risks, so this treatment is no longer recommended.
Adrenomedullin (AM) is a 52 amino acid peptide originally identified in an extract from a human tumor, but it has subsequently been observed that it is produced in many parts of the body and has numerous functions. This peptide has become increasingly important in recent years, since high levels of it have been described in certain pathologies, which highlights its relevance in the pathophysiology of those disorders and its possible use as a marker of cardiometabolic risk.

Patient need addressed: Osteoporosis

Our innovation:

- Use of inhibitor of adrenomedullin to manufacture a new drug for osteoporosis
- Inhibitor is selected from the group consisting of the fragment of adrenomedullin AM_{22-52} and the compounds of formula described in the figure:
- Or polyclonal antibody, monoclonal antibody, nucleotide, peptide and vaccine.
- Or interference RNA molecule
- *In vivo* studies indicated that AM enhances osteoporosis
- *In vivo* model was treated with a small molecule capable of inhibiting the activity of AM



Competitive advantages: also it can be use in osteomalacia, rheumatoid arthritis, chronic kidney disease, hyperparathyroidism, Cushing's disease, cystic fibrosis, eating disorders, gastric bypass and prolonged immobility. It can be used in a state of weightlessness or in space travel and in far or domestic animal.

Market size/ opportunity: The global osteoporosis treatment market was valued at US$ 11,734.8 Mn in 2016, and is expected to reach US$ 16,512.7 Mn by 2025, expanding at a CAGR of 3.9% from 2017 to 2025 (Research and Markets, 2018).

Intellectual property

European patent EP15382111.1 (Priority date: March 12, 2015)

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