TECHNOLOGY OFFER

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Compositions and methods for the treatment of bone disorders

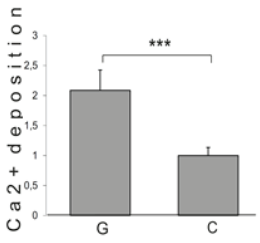
BACKGROUND

Osteoporosis is a chronic bone disease that affects on average every second woman and every eighth man. The consequences of osteoporosis are osteoporotic bone fractures, which constitute one of the most common and costly health problems in people above the age of 50 in industrialized countries (Harvey et al., 2010). In order to complement existing anti-resorptive treatments, there is a special need for novel anabolic treatments that can promote bone formation in patients.

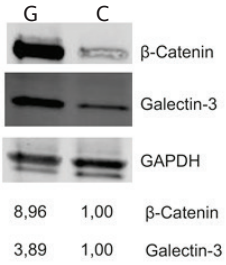
TECHNOLOGY

High levels of Galectin-3 (G) boost osteogenic differentiation capacity of adipose tissue derived mesenchymal stem cells *in vitro* (Fig.A) compared to cells expressing normal levels of Galectin-3 (C) by stabilizing beta-Catenin (Fig.B), a protein essential for the induction of osteogenesis. In particular Galectin-3s Serine 96 phosphorylation site turned out to be critical in order to mediate its pro-osteogenic activity since Serine 96 to Alanine (A) or to Aspartic acid (D) mutants were not able to positively impact on osteogenesis (Fig.C).

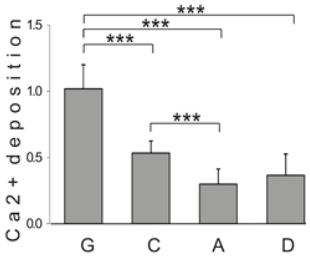
A



B



C



COMPARISON WITH EXISTING SOLUTIONS

The majority of approved anti-osteoporosis medicines act through the inhibition of bone resorption. However, if treatment is started at a stage where structure bone defects have already occurred, the risk of fracture remains substantial in spite of treatment. For these cases, the use of bone-forming agents is a more effective approach.

MARKET POTENTIAL

In total 91 million people in the seven major markets (7MM) were at risk of developing osteoporosis. The market volume for anti-osteoporosis medicines in 2015 is 4.5 billion USD. For 2021 it is estimated to reach 4.9 billion USD due to the aging population in the 7MMs.

DEVELOPMENT STATUS:
Mode of action elucidated
Proof of principle *in vitro*: Improvement of mineralization by 200 %

IPR:
Priority date: 11.10.2013
PCT Application Number: PCT/EP2014/071894 filed
Nationalization aspired in the following markets:
EU, US, Eurasia, Canada, Japan, China, India and Brazil

KEYWORDS:
- Osteoporosis
- Bone disease
- Galectin-3
- Therapeutica

OPTIONS:
Partner for co-development, Preclinical evaluation

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