

BIOMIMETIC PEPTIDE AND ITS USE AS OSTEOGENIC FACTOR

ABSTRACT

The present invention comprises a peptide with osteogenic capacity, the sequence of nucleotides codifying for this peptide, as well as a genetic construction containing said sequence, a vector containing said construction or sequence, and a host cell containing this vector.

The invention also comprises the use of the peptide, or its pharmaceutical compositions, for bone regeneration or coating of implants and prostheses.

It was developed by researchers belonging to both, the University of Malaga (UMA) and the Biomedical Research Networking Center in Bioengineering, Biomaterials and Nanomedicine (CIBER-BBN).

APPLICATIONS

- Bone regeneration
- Treatment or prevention of bone diseases or lesions such as fracture, spinal fusion, bone re-section, pseudarthrosis, and hypertrophic calluses.
- Coating of implants and prostheses, promoting their ossification and proper integration
- *In vitro* bone formation that, subsequently, can be implanted in patients.
- Production of medicinal compositions or medicaments

DESCRIPTION

The peptide consists of a region capable of binding to collagen type I, and a domain allowing the anchorage of osteoblasts, therefore stimulating bone formation where it is located.

The peptide of the invention can act by itself or linked to a collagen matrix. Therefore, aspects of the invention refer to the following compositions: matrix of type I collagen comprising the peptide of the invention, matrix of type I collagen comprising the peptide and a bone morphogenetic protein (BMP).

Besides, the invention refers to the use of the peptide and these matrices as medicaments or for the elaboration of medicaments for the treatment or prevention of bone diseases or lesions.

This peptide stimulates a cellular increase of osteoblast differentiation marker, alkaline phosphatase.

When ectopically implanted in rats, a great production of bone tissue was observed.

The peptide or the mentioned matrices can be used for the coating of implants or prostheses. Due to these coatings, prostheses and implants present the capacity of regenerating bone, and allow the localized application of the peptide or the matrix, minimizing dispersion and favoring a better effect when used.

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DEVELOPMENT STATUS

Developed
Laboratory tested

IP STATUS

Spanish Patent granted

AVAILABLE FOR

- Exclusive license agreement
- Non-exclusive license agreement
- Further research or development

INDUSTRIAL PROPERTY

Spanish Patent **ES 2417705 B1**

TECHNOLOGICAL OFFER

INNOVATIVE ASPECTS AND ADVANTAGES

- Peptide can be used by itself, since it is able to join type I collagen, a major bone component.
- Peptide links to collagen with scarce dispersion.
- It promotes bone formation by means of osteoblasts anchoring.
- Peptide can be bound to implants and prostheses to stimulate bone formation around them.
- Peptide can be bound to matrices of collagen type I, which can be used by themselves or associated to implants or prostheses for new bone growth.
- When contained in absorbable collagen sponges, their bone production is increased by the peptide
- Effect is localized in the region where the collagen matrix is implanted
- In combination with bone morphogenetic proteins shows higher effect than that produced by the BMP alone.
- Cost and side effects are reduced by reducing the needed amount of BMP, when used together.

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