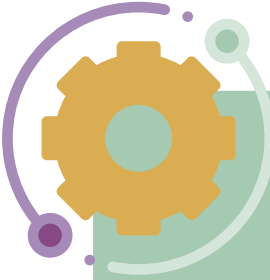


“Osteogenic cementogenin protein, pharmaceutical composition and use”

MX/a/2022/013556


Technology overview



Research and technological development in the regeneration of bone tissue is on an upward trend because it largely depends on global population dynamics, that is, the increase in the geriatric population, the increase in car accidents, plastic surgery, the increase in the prevalence of people with bone cancer and periodontal diseases. have sparked the need to consider the development of new therapies and drugs for all kinds of diseases, injuries, and other bone defects.

Genetic engineering works as an important tool due to the multidisciplinary relationship with other areas of health sciences, such as tissue engineering.

Applications, benefits and uses of the technology




The invention consists of the isolation, identification and expression of a protein called cementogenin (CMGN), as well as the coding gene and the functional peptides derived from it. This protein is designed for application within tissue engineering, mainly in the regeneration of bone tissue, due to its functionality as a promoter of osteogenesis and such applications range from treatments for osteoporosis, dental bone defects, grafts for bone repair, repair of fractures and fissures and prevention of bone resorption.

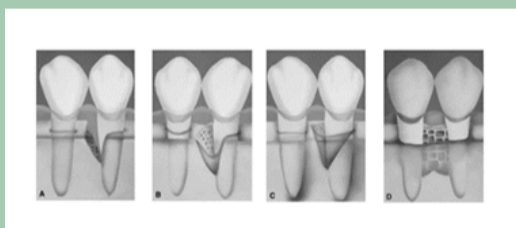
The research and development results of CMGN constitute solid evidence that it is a cement matrix protein with the ability to promote cell proliferation, as well as for cell binding and differentiation and calcium phosphate mineralization.

This technology is very relevant to the following fields of study: biomineralization, periodontal therapeutics and structural biology. Multiple dosage forms can be developed depending on the therapeutic application selected.

Technology maturity level




Critical analytical and experimental function and/or characteristic proof of concept with tests carried out in the laboratory. Considering the above, it is estimated that in this case the *Technology Readiness Level* (TRL) according to the NASA scale is: 3.



Gradual formation of the cementogenin protein

Market information



According to the market research agency Mordor *Intelligence*, the field of tissue engineering shows an upward trend due to the population increase of patients with chronic diseases, traffic accidents and traumatic injuries derived from all kinds of accidents. Therefore, there is a greater number of people who need bone implants or therapies, medications or solutions that allow tissue regeneration. This is reflected in growth at an average annual growth rate (CAGR) of 12.8% by 2025. The market size in 2021 was estimated to be \$12.76 billion and is expected to be \$31.23 billion in 2030. In a regional analysis, *Grand View Research* documents that North America, consisting of Mexico, the United States, and Canada, dominated the tissue engineering market with a 52.4% share in 2019. In Mexico alone, according to the pharmaceutical company AMGEN, osteoporosis affects 1 in 3 women and 1 in 5 men over 50 years of age in the country; according to the American Academy of Periodontology, 70% of the Mexican population has periodontal disease, which occurs mainly in patients over 65 years of age.