



GEODBONE

A new particle for bone regeneration



DEPARTAMENTO DE INGENIERÍA
MECÁNICA Y METALÚRGICA



INDUSTRIAL SECTOR
HEALTHCARE



DEVELOPMENT LEVEL
TRL 4

PROBLEM



Bone defects can result from trauma, fractures, surgery, tumor resection, tooth extraction, and certain diseases such as osteoporosis and arthritis. The gold-standard treatment is autologous bone grafting. This method, however, has important limitations, including limited availability of transplantable material, inflammation, and resorption of the implanted bone. Other alternatives, such as allografts or synthetic grafts, also have limitations, creating an opportunity for new treatments that can serve as alternatives or adjuncts to promote bone regeneration.

SOLUTION



Geodbone is a biomaterial that promotes both cellular regeneration and bone repair, improving the prognosis particularly for large wounds. Its constituent particle features an innovative design with porous surfaces and concave/convex curves. It can be used to fill bone defects following tooth extraction or in surgical treatments, or to increase the height of an atrophied area in any bone in the body.

MARKET



The technology is intended for treating bone defects in dental, trauma, and veterinary applications. The global bone-regeneration materials market was valued at USD 2.15 billion in 2020 and continues to grow due to population aging, accidents involving traumatic injuries, the incidence of bone defects, and demand for dental implants.



Professor
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Intellectual property
Patent application filed in Chile
and PCT application filed.

Development status
Rat studies produced satisfactory results, and the particle's biomechanical properties were optimized. Comparative studies with other particles and bone tissue from different sites are currently underway, together with in-vitro studies in large animals to demonstrate performance in large defects.

ADVANTAJES



Accelerates the proliferation of cells deposited on the material, promoting bone regeneration.



Creates a scaffold with large, randomly shaped spaces and curved walls that facilitate the growth of newly formed blood vessels from the walls of the bone defect toward the center of the filling, helping prevent necrotic centers.



Creates stable structures that fill the defect beyond its original boundaries, gaining 1 or 2 mm in height, which is essential for certain implants.