



MARKET CHALLENGES

Bone grafting procedures are undergoing a gradual shift from autologous and allogeneic bone grafts to synthetic bone graft substitutes. The emergence of new biological or synthetic materials to facilitate regeneration of damaged or diseased bone can increasingly minimize the usage of autograft in surgeries. The bone graft substitute market is expected to be largely driven by expanded utilization of synthetic bone substitutes in the following years; the enhancement of their osteoconductivity property will be one of the top-priority challenges from orthopedic companies. Newer generations of synthetic bone substitutes involve the addition of collagen to enhance product performance and long-term bone reconstitution.



INNOVATIVE SOLUTIONS

In an attempt to bring a solution to the challenges encountered by orthopedic companies, our synthetic bone substitute was designed to reach top mechanistic and osteoconductivity properties. Our collagen-hydroxyapatite bone graft presents a mimetic bone composition, but also a structural bone-like organization. Indeed, in these substitutes, the tridimensional organization of both organic and mineral phases mimics well the structure and composition (collagen, apatite, water) of the natural bone. This presumes a complete and sustainable bone reconstitution within the host bone tissues. The manufacturing process is very flexible and the shape of the bone substitute can be adapted according to the surgeon's needs.



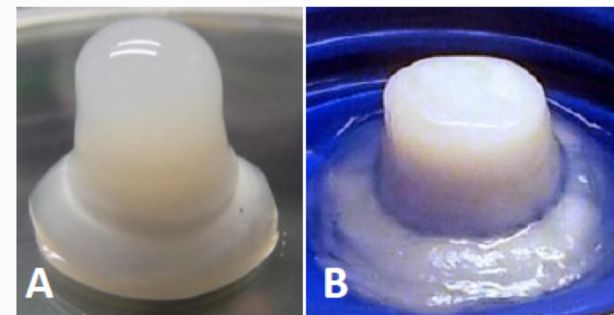
SUGGESTED APPLICATIONS

Filling of bone cavities (i.e. due to previously removed tumors), maxillo-facial reconstruction surgery

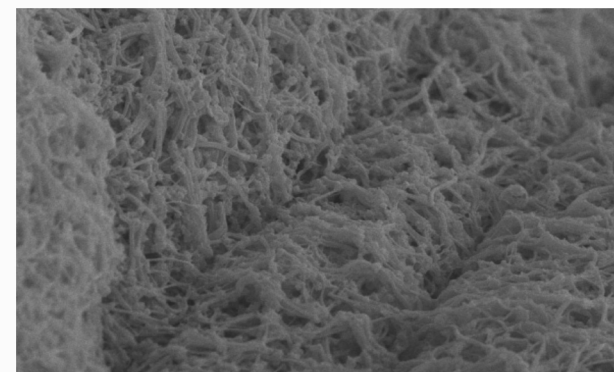


DEVELOPMENT STATUS

Full proof of concept and efficacy study has been conducted in sheep and showed successful integration of the bone substitutes. Analysis is processing; preliminary results show good local reconstitution of bone tissue and successful tolerance (no inflammation in the surrounding tissues).



Dense collagen/apatite matrix from rat tail collagen (A) and bovine collagen clinical grade (B)



Scanning electron microscopy studies of collagen matrix surface



COMPETITIVE ADVANTAGES

- High quality standard bone substitutes mimicking the structure of natural bone tissue
- Better osteoconductivity than marketed bone grafts/synthetic substitutes
- GMP-like protocol of synthesis with no toxic components involved
- Can be molded and cut at will