

ABSTRACT

Natural origin polymers from algae and arthropods can be obtained in large scale, and a great effort has been paid to find applications for such high-added value materials. Periodontal disease is frequent in humans and constitutes, together with dental caries, the principal cause of tooth loss in adults. Currently, one of the available treatment strategies for periodontal disease comprises the use of non-resorbable or resorbable membranes as barrier membranes for guided tissue/bone regeneration (GTR/GBR). Such membranes will act as a physical barrier to protect the defect site and to prevent soft tissue to reach the injured area, as well as “guide” the bone regeneration process. Several synthetic and natural membranes are currently being used for GTR/GBR to improve periodontal regeneration but, so far, complete regeneration has not yet been reported. In this concern, BLUETEETH intends to create a pioneering and innovative biocompatible and bioresorbable free-standing (FS) multilayered membrane that would address the limitations of the current ones, in terms of regeneration potential, by promoting an effective GTR/GBR to treat periodontal disease. Such multilayered membrane will have a special design and composition, thus allowing the spatiotemporal control of several parameters, including biocompatibility, biodegradability, mechanical performance, bioactivity and bioadhesion. This project attempts to develop the entire pipeline, bridging the isolation of the marine raw materials up to the final device, with expected improved medical performance and technical characteristics suitable to accelerate market entry.



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Topic:

- Marine origin biopolymers

Marine biomass:

- Crustacea

Source of marine biomass:

- marine biomass processing by-products and waste fractions

Keywords:

Blue biotechnology, Marine environment, Value-added marine origin by-products, Chitosan/Chitosan chemical modification, Bioactive agents, Layer-by-Layer assembly, Bioresorbable membranes, Biomedical applications, Guided bone regeneration, Periodontal disease

Total costs*: € 1.005.000

Funding granted*: € 797.000

Duration: 3 years (2017-2019)

