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Sustainable Seaweed Technologies

Cultivation, Biorefinery, and Applications

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Abstract

The aptitude of human tissues for self-repair is limited, motivating the arising of Tissue Engineering and Regenerative Medicine (TERM). TERM aims the establishment of new biological constructs to repair tissues and restore normal functions, after an injury or degenerative disease. In the last decade, seaweeds have been broadly used to provide sustainable polysaccharides for TERM and other areas, such as food and cosmetic, due to their intrinsic biological and mechanical properties. This chapter provides an overview based on recent literature about several biomaterials comprising seaweed polysaccharides envisaging biomedical applications. In detail, some general biological characteristics of the main biopolymers extracted from seaweeds, the most relevant properties required to design new scaffolds, the current techniques available and the multi-combination alternatives to develop these biomaterials will be addressed, highlighting the recent in vitro and in vivo studies for each specific human tissue.