Design of Biopolymeric Structures

Biochemical and Process Engineering Group

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Objectives

The global goal of this work is the development of polymeric structures, namely, hydrogels, films and micro/nanoparticles based on FucoPol, a bacterial biopolymer. FucoPol is a high molecular weight, water soluble heteropolysaccharide, with a polyelectrolyte behaviour. It is composed of sugar residues (fucose, galactose, glucose and glucuronic acid) and acyl groups substituents (acetate, pyruvate and succinate).

In the cosmetics, pharmaceutical and food industry there is a continued interest in the search for polymers that can be used to produce structures with new or improved properties. In this context, FucoPol, due to its functional properties, holds great potential as the basis for the production of polymeric structures for such high-value areas.

Methodology

Aiming at the development of high-value applications for this biopolymer, the following key activities are envisaged covering both the production process and applications:

•Optimization of FucoPol bioproduction and extraction processes.
•Assessment of FucoPol's physical-chemical characteristics and biological activity.
•Evaluation of the FucoPol's performance in the formation of structures in aqueous environments, namely, hydrogels, as well as its behavior as thickening agent.
•Development and characterization of biodegradable films and micro/nanoparticles based on FucoPol.

FucoPol Production

FucoPol

Expected Results

FucoPol´s show potential for the development of systems for high-value cosmetic, food and pharmaceutical applications closely related to its performance in structures, such as:

•hydrogels

•films

•particles (micro/nanoparticles)

•ability to form viscous solutions.

FucoPol Film

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