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FCT FACULDADE DE CIÊNCIAS E TECNOLOGIA UNIVERSIDADE NOVA DE LISBOA

Chemistry Department

Value-added microbial biopolymers

Biochemical and Process Engineering Group

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- since 2005 – Post-Doctoral Researcher
- 2004 – PhD in Biological Engineering
- 1995 – Graduation in Applied Chemistry (Biotechnology)
- 18 papers; 3 national and 4 international patent applications

Objectives

- Biological valorization of industrial and agricultural wastes/byyproducts.
- Production of value-added biopolymers, namely, polyhydroxyalkanoates and polysaccharides .
- Development of green procedures for the extraction and purification of microbial polymers.
- Functional characterization of polymers.
- Scale-up and industrialization of bioprocesses.
- Intelectual property development.

Methodology

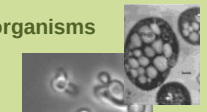
Agro-industrial wastes/by-products (e.g. glycerol, used cooking oil, lignocellulosic materials, etc.) are selected based on their availability and composition in nutrients suitable for the cultivation of different biopolymer-producing microorganisms.

The bioprocesses for the biological valorization of such materials are developed and optimized in bioreactor cultivations, aiming at high productivities and/or the production of biopolymers with increased market value.

The biopolymers are extracted from the cultivation broth, using environmental friendly procedures, and their functional properties (e.g. solution properties, filmogenic capacity, biological activity) are assessed. This knowlegde is used to determine each biopolymer's most promising areas of application.

Wastes/By-products

Microorganisms

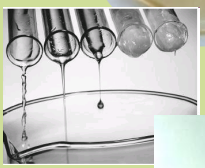


Bioreactor

Expected Results

It is expected to develop cost-effective bioprocesses for the production of innovative biopolymers with suitable for use in different areas, including high-value (e.g. food, cosmetics or pharmaceuticals) and industrial (e.g. oil extraction, paints, paper, etc.) applications. Selected agro-industrial wastes/by-products will be used as substrates for the cultivation of different microorganisms.

All developed bioprocesses will be evaluated for their novelty and patentability. Potentially interested industrial partners will be sought, aiming at the industrialization and commercialization of each biopolymer.



Biopolymers

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