

Chemistry Department, CQFB/REQUIMTE

Biological conversion of industrial byproducts/wastes into value-added bacterial exopolysaccharides

Biochemical and Process Engineering Group



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- Since 2012 – PhD student, Sustainable Chemistry
- 2011-12 - BI at BPEG
- 2010 – MsC in Biotechnology
- 2008 – Graduation in Applied Chemistry – Biotechnology
- 2 Papers in international scientific periodicals

## Objectives

The global aim of this work is to develop a process for FucoPol production by the bacterium *Enterobacter* A47 using industrial byproducts/wastes as substrates.

The following specific objectives are envisaged:

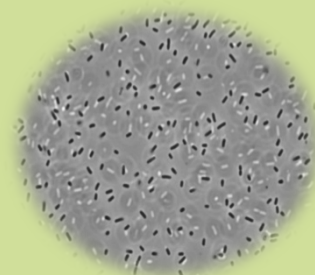
1. Screening of industrial byproducts/wastes.
2. Optimization of FucoPol production.
3. Defining optimal FucoPol recovery conditions.
4. FucoPol's characterization.

## Methodology

- Agro-industrial byproducts/wastes will be characterized and selected as substrates for shake flask experiments to assess the ability to grow and synthesize EPS.
- Bioreactor cultivations will be carried out using the best substrates to optimize the process stoichiometric and kinetic parameters.
- Polymer recovery procedures will be optimized to improve recovery yields and guaranty polymer purity.
- The impact of the different substrates tested will be evaluated by the analysis of the physical-chemical characteristics and functional properties, which will determine the final polymer applications.

## Expected Results

- It is expected to develop an optimized cost-effective bioprocess for the production of FucoPol by cultivation of the bacterium *Enterobacter* A47, using agro-industrial byproducts/wastes as substrates.
- It is also envisaged to assess the polymer's functional properties and its potential applications.



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