Algal polysaccharides: Functionality and synergistic interactions

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CV, publications and running projects be seen from **here**

Information about the research group can be seen from **here**

The PhD project focuses on development of novel polysaccharide-based biomaterials with beneficial rheological and biological properties (e.g. can be used as high-value ingredients in food, pharmaceutical or cosmetic formulations).

The main tasks in the project are as follows.

- Extraction of polysaccharides (e.g. carrageenans, agarans) from algal biomasses.
- General characterization and purification of the polysaccharides.
- Modification of the polysaccharides samples by chemical, enzymatic, ultrasonic treatment and characterization of the preparations by structural analysis and chromatographic methods.
- Optimization of the conditions for the preparation of high-value products/polyelectrolyte complexes/biomaterials on the basis of previously obtained polymeric samples.
- Characterization of the rheological and optical properties of the obtained biomaterials and their mixed systems.
- Screening the samples for antioxidant, anticoagulant, anti-inflammatory activities.
- Testing the obtained biomaterials in specific formulations.

The main analytical/instrumental methods used in the project are: dynamic rheometry, viscosimetry, optical studies, spectrophotometry, size exclusion chromatography, HPLC-PAD (pulsed ampherometric detection), NMR, FTIR, FT-Raman, fluorimetry, ultrafiltration techniques, coagulometry.

Keywords: Carrageenans, Agars, Polysaccharides, Rheology, Gelation, Synergistic interactions

More information about Complex Systems in Natural Sciences PhD programme:

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