EXTRACTION, ENCAPSULATION AND CONTROLLED RELEASE OF NATURAL COMPOUNDS

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Biography

Academic degrees (University of Coimbra, Portugal)

- BS degree in Chemical Engineering
- MS in Biomedical Engineering
- PhD in Chemical Engineering

Key publications:

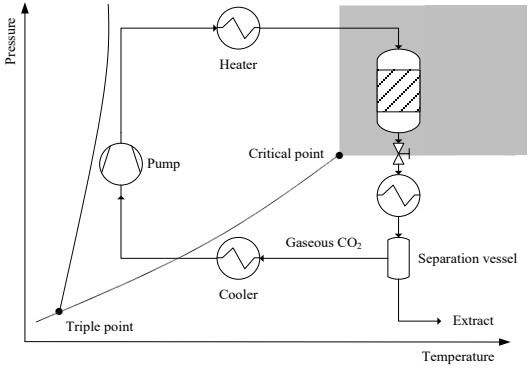
- **I.J. Seabra**, M.E.M. Braga, M.T.P. Batista, H.C. Sousa, Effect of solvent (CO_2/EtOH/H_2O) on the fractionated enhanced solvent extraction of anthocyanins from elderberry pomace, Journal of Supercritical Fluids, 2010, 54, 145-152.
- A.M.A. Dias, M.E.M. Braga, **I.J. Seabra**, P. Ferreira, M.H Gil, H.C. de Sousa, Development of natural-based wound dressings impregnated with bioactive compounds and using supercritical carbon dioxide, International Journal of Pharmaceuticals, 408, 9-19, 2011.
- Marisa C. Gaspar, H.C. de Sousa **I.J. Seabra**, M.E.M. Braga, Environmentally-safe scCO_2 *P. pinaster* branches extracts: composition and properties, Journal of CO_2 Utilization, 37, 74-84, 2020.

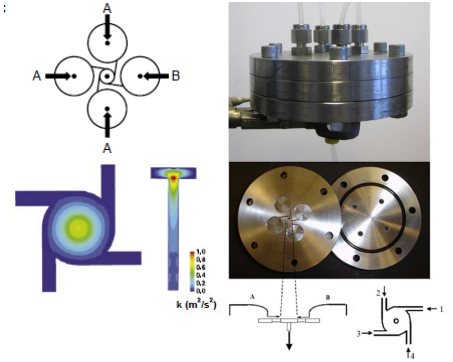
Keywords: Agrifood by-products, Bioactive compounds, Encapsulation, Extraction, Green technologies, Natural sources, Supercritical fluid

Extraction, encapsulation and controlled release of natural compounds

What is the technology being studied?

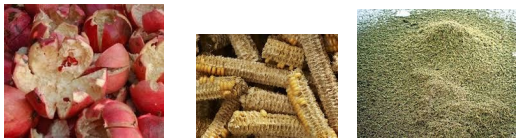
- Supercritical Fluid and Pressurized Liquid Extraction
- Supercritical Fluid Impregnation
- Encapsulation and Controlled Release
- Flash Nanoprecipitation





Why is this topic significant?

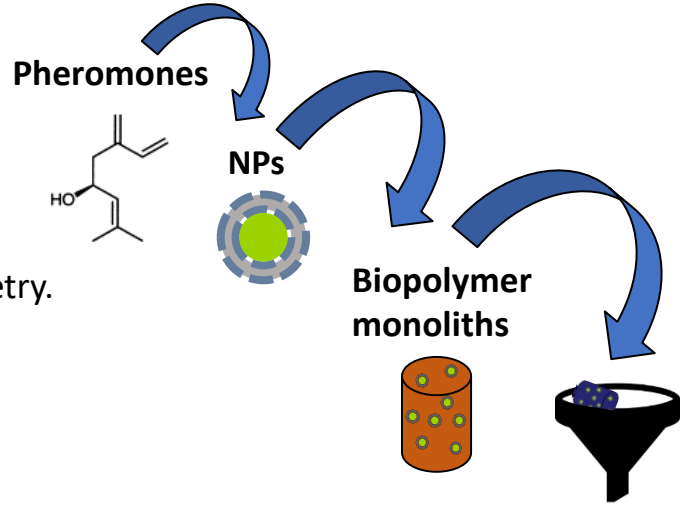
- ***High pressure extraction*:**
  - Offers a propitious method for drug discovery from natural sources.
  - Eco-friendly technology, short processing times, extracts with little or no organic co-solvent.
- ***Encapsulation*:** preserves functional properties and controls the release at desired time and specific target.
- ***Agrifood by-products* use:** in consonance with bioeconomy and circular economy approaches.



Extraction, encapsulation and controlled release of natural compounds

How is the topic studied?

- ***High pressure extraction*:**
  - Different plant matrices.
  - Experimental conditions: pressure, temperature, type of solvent.
  - Chemical analysis of extracts: GC, HPLC, GC-MS, LC-MS, spectrophotometry.
- ***Encapsulation (Flash Nanoprecipitation)*:**
  - Different bioactive compounds.
  - Experimental conditions: solvents, concentrations.



What are the future directions of this research?

- Develop scalable extraction techniques coupled to other processes such as drying.
- Explore Flash Nanoprecipitation to encapsulate natural extracts.

Contact

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