

Master's Thesis

Isolation of proteins from oilseed press cakes by supercritical CO₂ extraction



Protein deficiency is becoming a serious global problem, affecting both developing and developed countries; therefore, there is a great need for new protein sources. The extraction of plant proteins from agro-industrial waste materials (e.g., oilseed press cakes) represents a promising direction. In this thesis, supercritical carbon dioxide (SC-CO₂) extraction will be investigated as an alternative technology to remove residual oils and associated hydrophobic components (e.g., pigments, off-flavors, and anti-nutritional components) and obtain protein isolates with enhanced functional properties. The operating

conditions of the SC-CO₂ process (pressure, temperature and, optionally, the concentration of co-solvent) will be systematically tuned to favor the extraction of the hydrophobic matrix and generation of high-quality protein isolates. The proposed SC-CO₂ process is expected to replace the two main steps commonly used to obtain protein isolates, i.e., solvent extraction and alkaline protein precipitation.

Methods and devices:

- Supercritical fluid extraction
- High performance liquid chromatography (HPLC)
- Gas chromatography (GC)



Requirements:

The student should be highly motivated, organized, and able to work independently. Prior experience in SC-CO₂ extraction, HPLC, GC, is not required.

Start: Immediately.

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