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PRODUCING HIGH VALUE-ADDED MOLECULES FROM MICROALGAE

#biorefinery #bioprocess engineering #bead milling
#membrane filtration #microalgae

AlgoSource manufactures products and active ingredients that are extracted from microalgae. They are involved to the European consortium MAGNIFICENT, which aims to develop a new value chain for food, aquaculture and cosmetic ingredients made from microalgae. As part of this project, AlgoSource's mission consist in developing an extraction process chain for three strains of marine microalgae in order to isolate their proteins and lipids in an optimal way. Capacités was entrusted for the implementation of the biorefinery process, as well as scaling it up for routine.

DEVELOPMENT AND SCALE-UP OF THE BIOREFINERY PROCESS

The aim of the European MAGNIFICENT project is to produce microalgae on a large scale and to establish new biorefinery processes in order to reduce production costs and, ultimately, to generate new market opportunities with high added values.

AlgoSource's contribution to the MAGNIFICENT project consists in optimising the extraction and separation of soluble and insoluble molecules from three strains of microalgae. The challenges they face include the implementation of processes involving several individual operations, as well as improving extraction yields for these high value-added ingredients. The company entrusted Capacités's bioprocess engineering specialists with adapting the bead milling and tangential flow filtration parameters for two of the microalgal strains, which were developed on a laboratory scale, in

order to determine: the nature and size of the beads, mill residence time necessary to achieve optimal cell destruction, membrane cut-off threshold and filtration surface flow rates. Once the milling and filtration parameters had been approved, our engineers set up a pilot-scale process. Then, using the pilot bead milling at the AlgoSolis platform in Saint-Nazaire, they extrapolated the results obtained at laboratory scale in order to produce pilot batches to be sent on to the MAGNIFICENT project partners for analysis.

To successfully complete this project, the Capacités'experts benefited from support and technical equipment from the GEPEA, joint research unit of the Université de Nantes, Oniris, IMT Atlantique and CNRS (The French National Centre for Scientific Research). ■

Expertises:

- Microalgae
- Bioprocess engineering

CAPACITÉS

Created in 2005, Capacités is the private engineering and research valorisation subsidiary of the University of Nantes. It employs 90 employees, mainly engineers and PhDs, who work directly with scientists in the research laboratories.

