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PHOTOBIOREACTOR KNOW-HOW SUPPORTING MARINE BIOTECHNOLOGY

#bioprocess engineering #algal culture #red algae #macroalgae
#photobioreactor #marine biotechnology

BiotechMarine is a production facility that is devoted to making active cosmetic ingredients acquired through marine biotechnology, as well as by extraction from algae and marine plants. It is a subsidiary of the speciality ingredients manufacturer, Seppic, which is an Air Liquide Healthcare company – the Air Liquide Group being their parent company. In 2020, this renowned manufacturer reached out to Capacités in order to carry out a study concerning the influence of dissolved inorganic carbon (DIC) in the culture medium on the development of a certain strain of red alga.

INVESTIGATING AND OPTIMISING THE CULTIVATION PARAMETERS OF A MACROALGA IN A PHOTOBIOREACTOR

A key player in the field of macroalgae valorisation, BiotechMarine called upon the specialists at Capacités to optimise the parameters of its cultivation process. This manufacturer needed, in particular, to find out whether the concentration of dissolved inorganic carbon (DIC) in the culture medium might have an influence on the development of a particular strain of red alga.

In order to fulfil this request, Capacités's bioprocess engineers began cultivating this strain in an Airlift photobioreactor. This closed and controlled environment facilitates the precise management and reproduction of the physico-chemical parameters of the cultivation process: sterility, temperature, luminosity and pH, as well as the concentration of dissolved inorganic carbon (DIC).

Several sets of parameters were tested in order to compare cultivation conditions and the

quantity of biomass produced. Furthermore, the correlation between the concentration of DIC and the quantity of biomass was very closely monitored during these tests.

Based on the results obtained, the experts were unable to demonstrate a connection between the concentration of DIC and the growth of the red macroalgal strain. However, during the course of this same study, they were able to improve the strain's productivity by modifying other parameters of the process.

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

Expertises:

- Bioprocess engineering
- Macroalgae

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.

