

BIOSEA

Innovative cost-effective technology for maximizing aquatic biomass-based molecules for food, feed and cosmetic applications

Summary

EU society needs new sustainable bio-based feedstocks to meet population growth and reduce dependence on fossil fuels for raw materials; almost 70 percent of the EU's protein needs are imported. Aquatic feedstock offers a potential solution, however its total production volume and market size are still relatively small.

In addition, the algae feedstock market is still relies on immature technologies for production and technologies not specifically designed for the purpose. The BIOSEA project aims to validate and scale up an entire production process of ingredients from the lipid, protein, carbohydrates and minority compounds fractions of four algae, including upstream and downstream steps.

The BIOSEA process will be effective and environmentally friendly and the compounds will be obtained at low cost, leading to the future industrialisation of the process.



<http://www.biosea-project.eu>

Type of Action:
Research & Innovation Action

Value Chain: Aquatic biomass

Start date: 01 June 2017

End date: 31 May 2020

BBI JU contribution: € 2,611,223.01

Objectives

BIOSEA will pursue the following specific objectives:

- Develop and validate innovative, cost-effective and environmental friendly processes or cultivating two microalgae and two macroalgae to produce and extract high value active principles at low cost for food, feed and cosmetic/personal care use.
- Improve the cost effectiveness of the production of ingredients for comparable products by 55 percent over to current routes by using algae.
- Improve the yield per mass unit of the desired compounds vs current routes through the BIOSEA process.
- Develop and formulate new ingredients using the active principles obtained via the BIOSEA process to create improved, high added-value products that comply with EU legislation, including food ingredients such as proteins with a high nutritional content, feed ingredients for obtaining fish feed with immunostimulative properties and swine

Expected impacts

The BIOSEA project expects to deliver the following impacts. It will:

- Establish a new process for extracting separate compounds of interest, or purifying them, at sufficiently high yields and low costs that allow the processes to be scaled up cost effectively.
- Establish innovative mechanisms for obtaining the greatest profitability from aquatic biomass, achieving improved yield per mass unit biomass in the cultivation process, with a predicted 55 percent improvement in cost-effectiveness over existing procedures.
- Improve yield per mass unit biomass-input, or improve cost effectiveness when compared to current approaches to producing comparable products.
- Establish innovative mechanisms for maximising the profitability of aquatic biomass, achieving improved yield per mass unit biomass during the cultivation process.



- Feed with a high protein content in proteins and functional compounds. It will also develop cosmetic and personal care bio-compounds for counteracting skin ageing.
- Develop and validate a microencapsulation process that enhances the stability of bioactive compounds for incorporating them in industrial formulations and to provide a smart controlled-release system for of the active ingredient.

Ensure the economic, technical and environmental sustainability of the BIOSEA process and products.

Project coordination

- Asociación de Investigación de la Industria Textil (Spain)
- Centro Nacional de Tecnología y Seguridad Alimentaria (Spain)
- Fundación Centro Tecnológico de Acuicultura de Andalucía (Spain)
- Vlaamse Instelling voor Technologisch Onderzoek N.V. (Belgium)
- Tabu Cozumleri Danismanlik Limited Sirketi (Turkey)
- IGV Institut für Getreideverarbeitung GmbH (Germany)
- Biopolis SL (Spain)
- Van Loon Chemical Innovations BV (Netherlands)
- Feyecon Development & Implementation BV (Netherlands)
- Complementos de Piensos Compuestos SA (Spain)
- Dibaq Diproteg SA (Spain)
- Soria Natural SA (Spain)
- Henkel KGaA (Germany)

Organisation name: Asociación de Investigación de la Industria Textil (Spain)