



REPÚBLICA  
PORTUGUESA

MAR



fundoazul

#### ENTIDADE PROMOTORA

IBERAGAR, SA; INSTITUTO PORTUGUÊS DO MAR E DA ATMOSFERA; SPAROS, LDA.

#### CÓDIGO E DESIGNAÇÃO DO PROJETO

FA\_\_05\_2017\_033 - SMART VALORIZATION OF MACROAGAE

#### DATA DE INÍCIO

2019-09-06

#### DATA DE FIM

2022-05-05

#### CUSTO TOTAL ELEGÍVEL

199.885,94€

#### APOIO FINANCEIRO DO FUNDO AZUL

161.935,94€



## OBJETIVO PRINCIPAL DO PROJETO

This project proposes the valorisation of three different seaweed species: *Ulva latuca*, *Gelidium sesquipedale* and *Phorphyra umbilicalis*. These species were chosen as model seaweeds because they are very common in the Portuguese coast and they have a high protein content.

The valorization of these seaweeds to different end-products will be evaluated, namely: food ingredient, aquafeed additive, bioplastics and ectoines.

The upgrade of seaweed as functional food/ feed is proposed using two different approaches, namely, heat processing and lactic acid fermentation.

After heat processing, seaweeds will be used as food ingredients, while fermented seaweeds will be incorporated as additives in aquafeed.

Cascade biorefinery will take place aiming at the separation of the protein fraction for valorization as feed additives in aquaculture, while the residual carbohydrate fraction will be upgraded for the production of bioplastics.

The SMARTSEAWEED project will tackle the following objectives:

- Valorization of macroalgae species of the Portuguese coast as food, additives in aquafeed, and bioplastics feedstock;
- Determine the biochemical composition, physicochemical properties and nutrient bioaccessibility of the three seaweed species in raw and after heat processing;
- Propose an efficient enzymatic method for extraction of the protein fraction;
- Propose lactic acid fermentation to improve the bioaccessibility of nutrients and the digestibility of seaweed.
- Evaluate the potential use of protein-rich seaweed ingredients in aquafeed and assess its incorporation on seabream growth;
- Evaluate the impact of prior protein extraction on the yield of agar extraction and on its quality;
- Upgrade the residual carbohydrate fraction (insoluble and soluble fractions) to bioplastics (PHAs);
- Inform consumers of the benefits of macroalgae consumption;
- Disseminate project results to the scientific community, general public and the macroalgae value chain;
- Transfer knowledge to the industry sector;
- Patent preparation.

