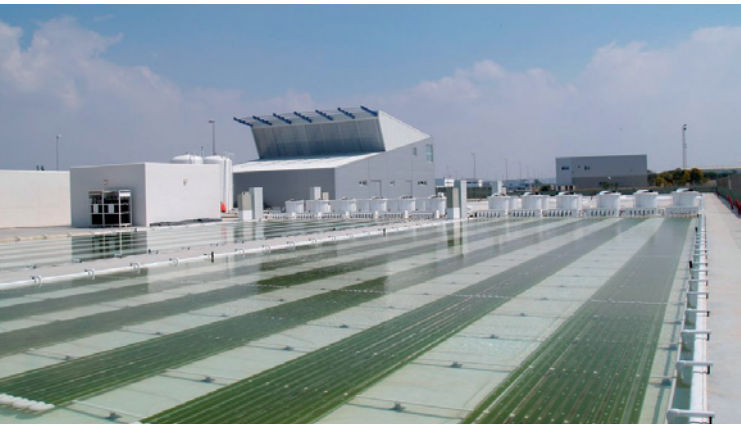
MIRACLES

SPECIALTIES FROM ALGAE

Multi-product **I**ntegrated bio**R**efinery of **A**lgae:

from **C**arbon dioxide and **L**ight **E**nergy to high-value **S**pecialties.



Algae cultivation facilities at Fitoplancton Marino SA (ES)

THE PROJECT

MIRACLES is a 4-year industry driven R&D and innovation project aimed at developing integrated, multiple-product biorefinery technologies to produce specialties from microalgae for use in food, aquaculture and non-food products.

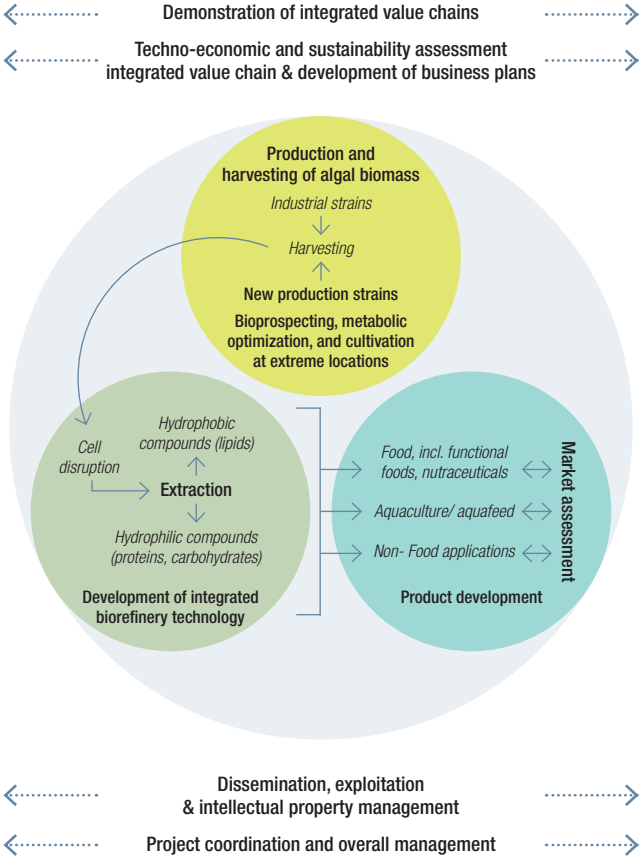
Multi-product Integrated bioRefinery of Algae:

OBJECTIVES AND ACTIVITIES

The aims of the MIRACLES project are:

1. To **improve production and harvesting of algal biomass** to achieve substantial cost reduction through:
   - An innovative technology for concentrating atmospheric CO_2.
   - A novel PhotoBioReactor concept.
   - Development of tools and strategies to optimize levels of target biomolecules in the algal biomass.
   - A novel membrane-based technology for harvesting and medium recycling.
2. To perform **bioprospecting, metabolic optimization and cultivation at extreme locations**.
3. To develop **integrated biorefinery / processing technologies** employing mild disruption, green extraction and fractionation/purification technologies to produce multiple specialty products from microalgae biomass.
4. **Product development and market assessment** of algae products by means of characterization and functionality testing, formulation and performance testing of products on a lab and pilot scale. The aim is to develop:
   - Ingredients for **nutraceuticals and functional food**.
   - Ingredients for **aquaculture** feeds.
   - Selected **non-food applications**.
5. To **demonstrate** integrated value chains to deliver proof-of-concept and **demonstrate techno-economic viability**.
6. To assess the **environmental, social and techno-economic sustainability** and development of **business plans**.
7. To **engage industry and other stakeholders** through dissemination and exploitation activities combined with Intellectual Property management.

from Carbon dioxide and Light Energy to high-value Specialties



The focus is on development and integration of mild cell disruption and environmentally friendly extraction and fractionation processes including functionality testing and product formulation based on established industrial algal strains. The project will also develop new technologies to optimize and monitor valuable products in the algal biomass during cultivation. An innovative photobioreactor and improved harvesting technology combined with medium recycling technologies will substantially reduce the cost of algal biomass production.

www.miraclesproject.eu

PARTNERS

This project has received funding from the European Union's Seventh Framework Programme for research, technological development and demonstration under grant agreement no 613588

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