

A microscopic view of numerous green, rod-shaped microalgae cells. The cells are elongated and have a textured, slightly wrinkled surface. They are scattered across the frame, with some in sharp focus and others blurred in the background. The overall color palette is a vibrant green with some yellowish highlights, suggesting a bright, natural light source.

EU project to improve cultivation and extraction of microalgae

David Border

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A €5 million project has been set up by the European Commission to improve extraction and cultivation techniques for microalgae.

The project - part of the EU [Horizon 2020](#) program - is intended to reduce the cost of producing algae-derived food, nutraceuticals and cosmetics. The project is called *Valuable Products from Algae Using New Magnetic Cultivation and Extraction Techniques* ([VALUEMAG](#)) and started in April 2017..

The participants are:

- [UNIVERSITA DEGLI STUDI DELLA CAMPANIA LUIGI VANVITELL](#) - Italy
- [ENEA](#) - Italy
- [NOMASICO LTD](#) - Cyprus
- [THERACELL ADVANCED BIOTECHNOLOGY LTD](#) - UK
- [FYZIKALNY USTAV SLOVENSKEJ AKADEMIE VIED](#) - Slovakia
- [PNO INNOVATION](#) - Belgium
- [IRIS](#) - Spain
- [EXERGY LTD](#) - UK
- [VERTECH GROUP](#) - France
- [ECODUNA PRODUKTIONS GMBH](#) - Austria

EU project to improve cultivation and extraction of microalgae

The Coordinator is the [NATIONAL TECHNICAL UNIVERSITY OF ATHENS](#) - Greece

Algal cultivation and harvesting are carried out by using magnetic nanotechnologies.

Microalgal cultivation

Superparamagnetic iron oxide nanoparticles (SPAN) are introduced into microalgae protoplasm to give them magnetic properties. The magnetic microalgae (MAGMA) are then immobilised onto a soft magnetic conical surface (SOMAC) and covered with a thin layer of continuously circulating water. This process is carried out in a greenhouse to provide sunlight, minimise contamination, and provide relatively predictable temperatures and humidity. These innovations allow optimum cultivation, enhance biomass production and lower production costs.

Microalgal extraction

Biomass is directly used to produce pharmaceutical products, nutraceuticals, food additives and cosmetics. These products will be extracted by supercritical CO₂ extraction, while a new selective magnetic separation method for precise selection of value-added products will be also developed. Carbon dioxide and water are recirculated.

