

Newsletter

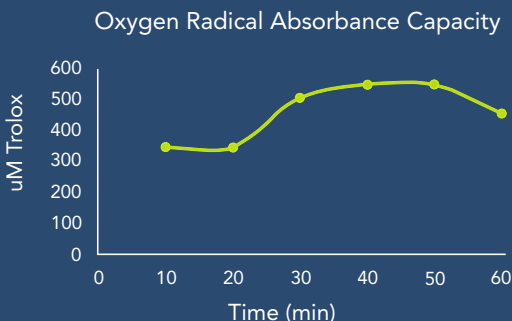
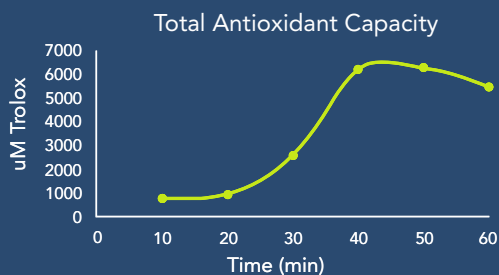
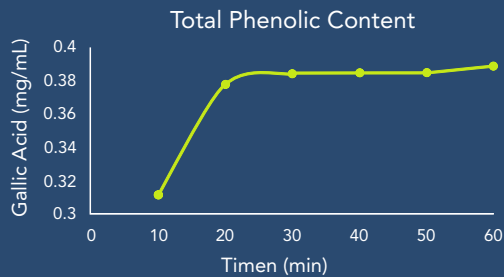
Issue 4, 2025

BLUEWAYSE

blue ways to a sustainable Europe

Green extraction of microalgae oils and bioactives

The University of Valencia investigated green extraction technologies for the optimisation of oil and bioactives' biorefinery from microalgae produced by a4f.



Optimisation of extraction time for ultrasound-assisted extraction of bioactive compounds from *Spirulina* using water as solvent and an ultrasonic bath. The extraction kinetics were evaluated by monitoring total phenolic content (TPC), total antioxidant capacity (TAC) and ORAC (Oxygen Radical Absorbance Capacity) values at different treatment times.

Marine biomass biorefinery

Following the first two years' experimentation and lab tests, during the first part of 2026, Nofima, Seagarden and af4 will upscale the optimised biorefinery processes to larger pilot scale in Norway and Portugal. Salmon head biomass, shrimp sidestreams, and microalgae are transformed into fish hydrolysates, chitosan, and algal biomass and extracts, respectively.

Salmon farming sidestream biomass hydrolysate is further processed to provide the main products of the fish biorefinery, namely the nanofiltration retentates, which will be evaluated as health-promoting ingredients in nutritional supplements along with chitosan and a placebo compound. Part of the secondary sidestream biomass from these processes (fish hydrolysate microfiltration retentate, spent microalgal biomass, and bioactive extracts) will be used to evaluate their suitability as salmon feed ingredients, thereby closing the material-use circle for both algal and aquaculture biomasses.

As the last step in this process, the University of Valencia will evaluate the environmental performance of the BLUEWAYSE technologies, including the symbiosis between algae production and salmon farming.

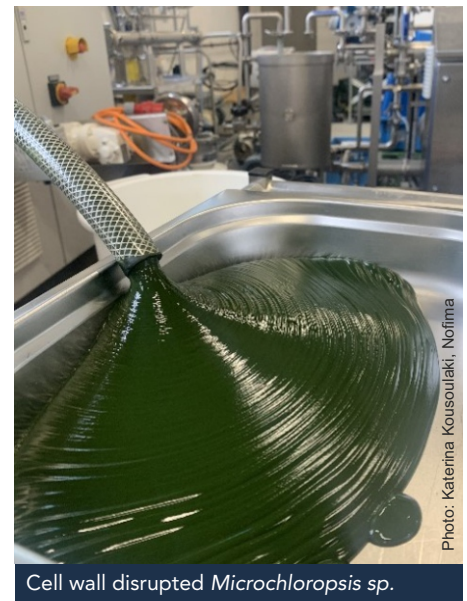


Photo: Katerina Kousouliaki, Nofima



Fish sidestream biomass

Photo: Nofima

Photo: Experimental unit, a4f

AlgaEurope 2025 conference in Riga, Latvia

BLUEWAYSE partners Prof. Anabela Reymundo, Prof. Cristiana Nunes, and their team were featured in a dedicated session presenting their work at the School of Agriculture of the University of Lisbon during the AlgaEurope 2025 conference, held in Riga, Latvia, on 9–12 December 2025.



The ISA group at the AlgaEurope conference.



Nancy Mahmoud presenting BLUEWAYSE results at the AlgaEurope Conference



Communication of the BLUEWAYSE project innovations to the public

The aims and results of BLUEWAYSE were presented at Researchers' Night 2025 at the Foundation for Research and Technology Hellas (FORTH) by the University of Crete (subcontractor of Lund University). The event took place on Friday, September 26th, at FORTH's premises in Heraklion, Crete, Greece, attracting a large audience, especially schoolchildren and families. At the BLUEWAYSE booth, the project's goals and outcomes were showcased. The team created an interactive game where children selected different foods and earned points based on their nutritional value and health benefits, receiving a "certified nutritionist" award at the end. More than 1000 people attended the event, with over 500 visitors at the booth. Information on the health benefits of fish-derived foods and the potential of algae as a nutrient was presented.

List of Publications and other dissemination produced by the project - Open Access

UVEG-Scientific article Liu, Y., Pallarés, N., Ferrer, E., Martínez-Culebras, P. V., Roig, P., Castagnini, J. M., Berrada, H., & Barba, F. J. (2025). Enzymatic hydrolysis enhances antioxidant bioactive sequences and mineral recovery from SC-CO₂ defatted salmon side streams. *Food and Bioprocess Technology*, 18, 7518–7530. <https://doi.org/10.1016/j.jfiset.2026.104445>

UVEG-Scientific article Liu, Y., Pallarés, N., Ferrer, E., Martínez-Culebras, P. V., Roig, P., Castagnini, J. M., Berrada, H., & Barba, F. J. (2026). Selective release of antioxidant peptides and minerals from fermented SC-CO₂-defatted Spirulina. *Innovative Food Science & Emerging Technologies*, 109, 104445. <https://doi.org/10.1007/s11947-025-03897-4>

Nofima-Oral conference presentation Food Chemistry Conference. Title "Upcycling of protein hydrolysates using nanofiltration technology" 14-16. October, 2025, Glasgow, UK.

University of Lisbon-Oral presentation Mahmoud N, Volatier B, Oyarsabal M, Raymundo A, Nunes MC. (2025). Towards innovative functional bakery: impacts of microalgae on the technological, nutritional, and sensory quality of brioche and focaccia. Book of Abstracts of AlgaEurope 2025, p. 157-158. Riga, Latvia, December 9-13

University of Crete-Conference Abstract Pantazi Ioanna, Tone Aspevik, Katerina Kousoulaki, Tsatsanis Christos (2025) Marine-derived nutritional supplements with anti-inflammatory and anti-obesity activity.

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Contact the project coordinator at Nofima AS

Senior researcher Dr. Katerina Kousoulaki mob. phone +47 47910710 e-mail katerina.kousoulaki@nofima.no <https://bluewayse.eu/> BLUEWAYSE| LinkedIn