

# Valorization of fish by-products for sustainable blue economy: nutraceutical, feed, and food sectors



Arena Rosaria<sup>1</sup>, Clément Poulain<sup>2,3</sup>, Frédéric Debeaufort<sup>3,4</sup>, Santulli Andrea<sup>1</sup>, Messina Concetta Maria<sup>1,5</sup>

<sup>1</sup>Laboratory of Marine Biochemistry and Ecotoxicology, Department of Earth and Marine Sciences, DiStem, University of Palermo, Via Barlotta 4, 91100 Trapani, Italy

<sup>2</sup>Université Bourgogne Franche-Comté, ESIREM, Avenue Alain Savary, 21078, Dijon, Cedex, France

<sup>3</sup>Université Bourgogne Franche-Comté, Institut Agro, Université Bourgogne, INRAE, UMR PAM 1517, 21000, Dijon, France

<sup>4</sup>Université de Bourgogne, IUT-Dijon-Auxerre, Department of BioEngineering, 7 blvd Docteur Petitjean, F20178, Dijon, France

<sup>5</sup>Istituto di Biologia Marina, Consorzio Universitario della Provincia di Trapani, Via G. Barlotta 4, 91100 Trapani, Italy

The growing demand for fish products highlights significant challenges for the sustainability of the fish supply chain.



Valorization of fish by-products



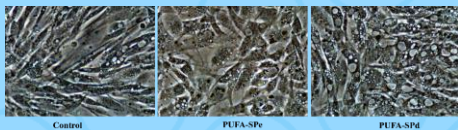
## Nutraceutical Sector

Bluefin tuna processing by-products

Oil extraction and enrichment Short-Path Distillation (SPD)

85% n-3 enriched

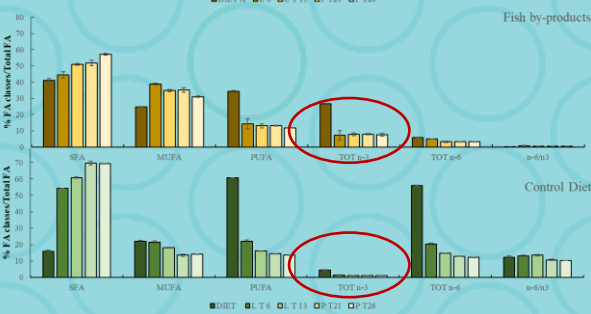
Improving cellular lipid profile and reducing adipogenesis



## Aquafeed Sector

*Hermetia illucens*

Ideal bioconverter



Fisheries and aquaculture by-products



Increase PUFA n-3 *H. illucens* pre pupae

## Food Sector



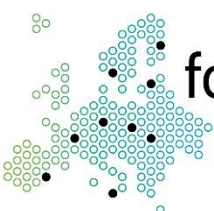
Protein hydrolysates



Incorporation into bio-film for active packaging production

Antioxidant and antimicrobial properties are provided by the biofilms

Active packaging improves the preservation and sustainability of food products



**forthem.**

Fostering Outreach within European Regions, Transnational Higher Education and Mobility

Second Annual FORTHEM conference

FORTHEM - Connecting Worlds of Science and Society

January 29-31, 2025