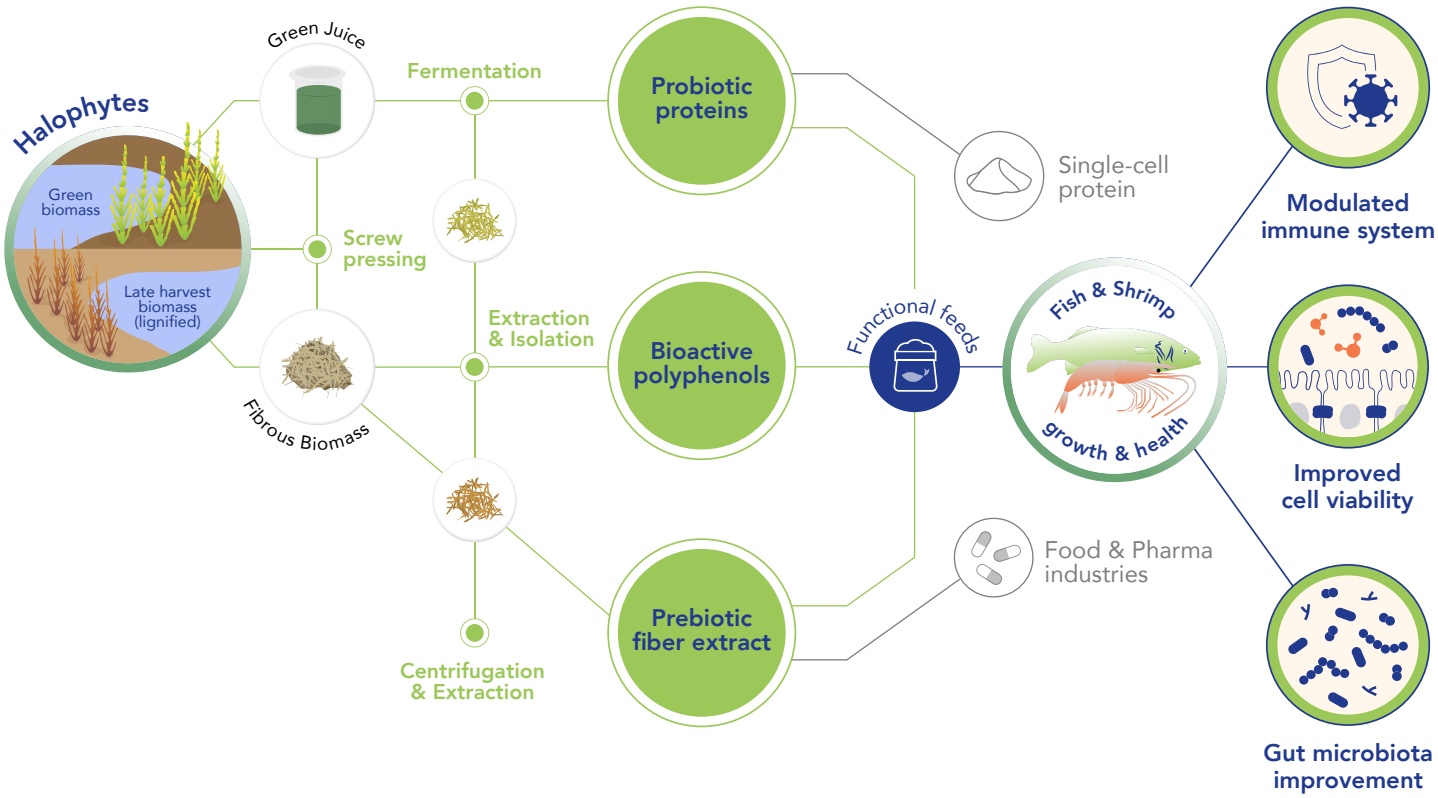
Improving Fish and Shrimp Health and Performance with Halophyte Bioactives

Aquaculture increasingly demands **natural feed ingredients** that can **support animal health and performance while reducing reliance on antibiotics and chemical treatments.** Bacterial diseases, stress, and inflammation remain major challenges in fish and shrimp production, directly affecting welfare, growth and production efficiency.

In IGNITION, **salt-tolerant plants such as purple glasswort (*Salicornia ramosissima*) have been explored as a source of bioactive-rich, sustainable feed ingredients.** Grown on saline or marginal land, they do not compete for freshwater or arable land used for conventional crops, and their biomass can be valorised across different bio-based industries.



Results obtained so far indicate bioactive extracts are **compatible with existing feed production and feeding strategies**, have **strong bactericidal activity against key aquaculture pathogens** including *Vibrio* spp., *Tenacibaculum maritimum*, and *Photobacterium* spp., **immune-enhancing and anti-inflammatory properties**, and the **potential to support improvements in production performance.**

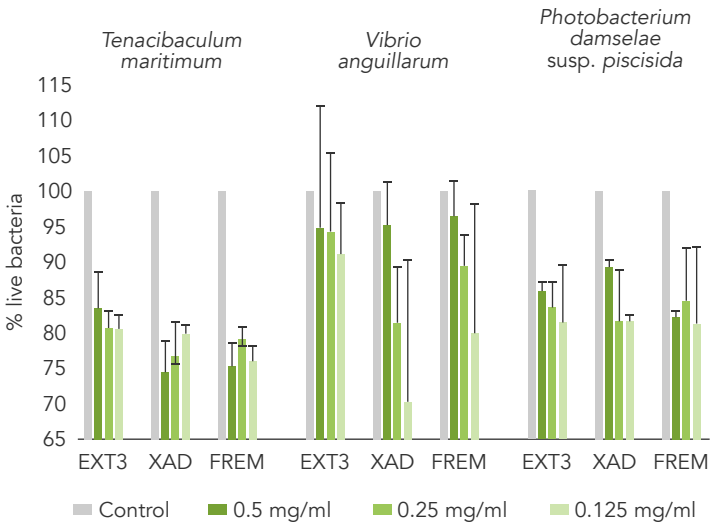
Co-funded by the European Union

UK Research and Innovation

Grant Agreement 101084651. Co-funded by the European Union and the UK Research and Innovation (UKRI). Views and opinions expressed are however those of the authors only and do not necessarily reflect those of the European Union, the Research Executive Agency (REA) or the UKRI. Neither the European Union nor the granting authorities can be held responsible for them.

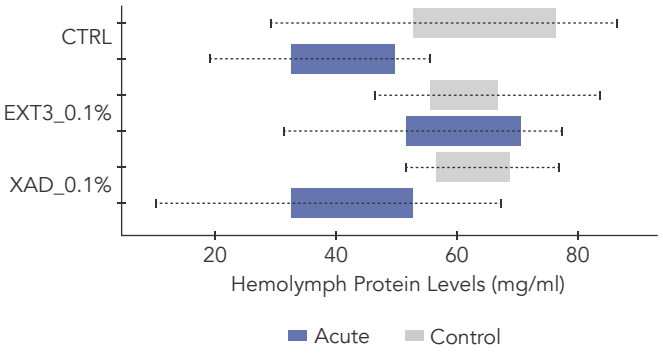
Control of key aquaculture pathogens

Bioactives EXT3, XAD, and FREM consistently **reduced the percentage of live pathogens** at all tested dosages, indicating their potential to **mitigate disease outbreaks** and **support strategies to lower antibiotic and chemical use.**



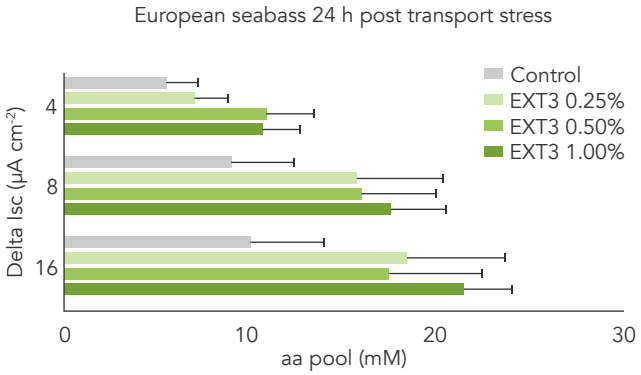
Immune-enhancing potential

White leg shrimp fed diets supplemented with bioactives EXT3 and XAD generally revealed **increased concentration of haemolymph proteins**, which serve critical roles in immunity, including the recognition and killing of pathogens, redox regulation, coagulation, and melanisation, indicating the **immune-enhancing potential of halophyte bioactives, particularly under acute air exposure stress conditions.**

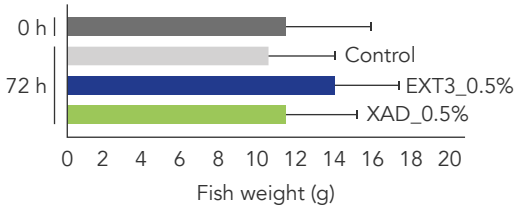


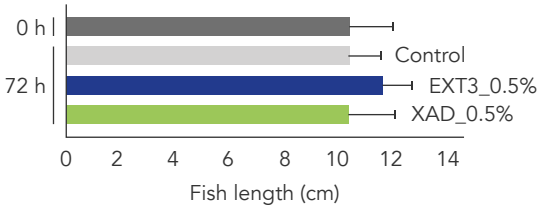
Support for improvement in production performance

Fish fed on diets supplemented with EXT3 and/or XAD and exposed to pathogen infection or transport-induced stress revealed **slight enhancements in growth** (Atlantic salmon) and **intestinal amino acid transport** (European seabass), the latter with relevance for nutrient utilization, indicating the **potential of bioactives for performance improvement or maintenance under stress conditions.**



Atlantic salmon 72 h post *Yersinia ruckeri* infection





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PARTNERS DIRECTLY INVOLVED IN THIS RESEARCH:

ciimar
NORD University
RIASEARCH AQUACULTURE NUTRITION HEALTH
AALBORG UNIVERSITY
sparos I&D nutrition in aquaculture
UCA Universidad de Cádiz
Halorefine