



# Plant-based Fish Analogues FLOWFOOD

Like a  
**PRO**



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**LIKE-A-PRO is a EU-funded project aiming to facilitate sustainable and healthy diets by mainstreaming alternative proteins and products, making them more available, accessible and acceptable.**

## Benefits of plant-based fish analogues

Plant-based fish analogues offer an opportunity to diversify protein sources and reduce dependence on conventional seafood, whose supply faces increasing pressure from marine resource exploitation and raw material variability. By replicating familiar products such as fish sticks, these alternatives respond to demand for convenient and sustainable food options while providing manufacturers with more predictable production processes and opportunities to expand into the emerging plant-based seafood market.



## Development challenges

Developing plant-based seafood alternatives requires replicating the texture, structure and sensory properties of conventional fish products while ensuring consistent performance during processing and cooking. Manufacturers must also balance nutritional composition, formulation flexibility and production costs, while achieving compatibility with existing industrial equipment and distribution systems.



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## FLOWFOOD's solution

Within LIKE-A-PRO, FLOWFOOD developed structured fish stick analogues incorporating alternative protein ingredients, including fava bean, rapeseed and krill hydrolysate. Using its Twin Booster thermomechanical processing technology, FLOWFOOD optimised formulations to achieve cohesive textures, stable processing behaviour and adaptability to different protein sources.

Importantly, the fava bean formulation was successfully validated at industrial scale through the production of a 300 kg batch using conventional manufacturing equipment, demonstrating the feasibility of integrating the product into existing production lines. The developed solutions offer four key advantages:



### Structured texture and functional performance

Optimised formulations produce cohesive fish stick analogues with consistent texture, firmness and structural integrity. The products maintain stable behaviour during shaping, coating, cooking and handling, while demonstrating suitable performance under refrigerated storage conditions.



### Flexible formulations and nutritional differentiation

Different alternative protein sources enable adaptation of product characteristics and nutritional profiles. All three developed formulations meet the criteria for a "sugar-free" claim, while the krill hydrolysate variant qualifies as a "source of protein" and the fava bean formulation meets the conditions for a "source of omega-3 fatty acids" claim.



### Advanced processing technology

FLOWFOOD's Twin Booster technology enables controlled structuring of alternative protein ingredients using lower processing intensity and controlled temperature gradients compared with conventional high-moisture extrusion. This approach supports consistent product quality, formulation adaptability and the development of structured seafood alternatives.



### Demonstrated industrial scalability

Successful industrial production of a 300 kg batch of fava bean fish sticks confirmed compatibility with conventional mixing, forming, breadings, cooking, freezing and packaging equipment. The trial achieved consistent product quality without major processing difficulties or significant modifications to existing production lines, supporting further commercial development.

FLOWFOOD's fish analogues offer opportunities in the emerging plant-based seafood market, particularly within established convenience categories such as fish sticks, ready meals and foodservice products. Through a B2B approach combining ready-to-use formulations, customised product development and industrial partnerships, FLOWFOOD enables food manufacturers and private-label brands to diversify their portfolios, reduce dependence on conventional seafood supply chains and introduce scalable plant-based alternatives with lower development complexity.

Overall, FLOWFOOD's developments within the LIKE-A-PRO project **demonstrate the feasibility of producing structured fish analogues using alternative protein ingredients and industrially compatible processing technologies**. By combining consistent texture, formulation flexibility and demonstrated industrial scalability, FLOWFOOD's solutions provide a promising approach to next-generation seafood alternatives, supporting more predictable production and new commercial opportunities in the evolving alternative protein market.