



FOODIMAR



Sustainable Blue Economy Partnership

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The FOODIMAR project aims to transform fisheries and aquaculture side-stream biomasses into high-value, sustainable food ingredients, improving resource efficiency and reducing waste.

1 From Waste to Value

FOODIMAR has characterised fish and jellyfish side streams to identify promising raw materials for high-value ingredient production. Building on this, partners developed a rapid, environmentally friendly cascade extraction process to recover collagen, gelatin and peptides while maximising resource efficiency.



Cod head prior to processing – example of rest raw material.

2 Materials Selection

Rest raw materials from cod, saithe, and haddock were assessed for collagen and gelatine extraction after mechanical deboning into protein-rich mince and bone fractions. Despite high mineral content, bone fractions had collagen-related amino acid profiles similar across species and to skin, supporting combined industrial processing, while separate backbone processing could yield a higher-value mince and clean bones for gelatine extraction.

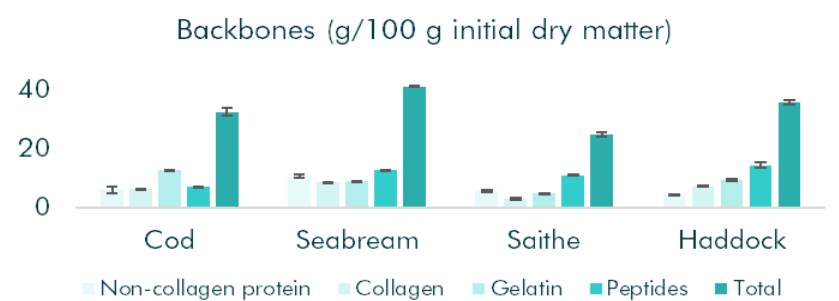


Cod backbones, bone fraction and soft tissue fraction after processing in the belt separator.

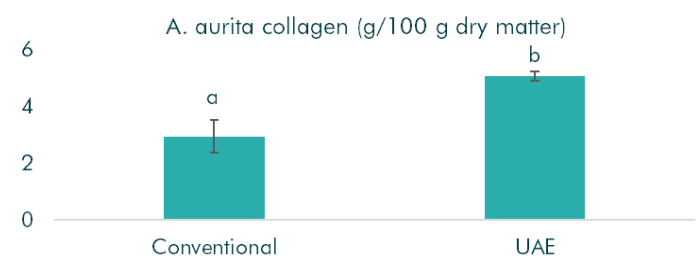
Seabream bone fractions retained high lipid levels after deboning, which may reduce collagen yield and require an added defatting step. Despite this, they showed high collagen-related amino acids, exceeding those in lipid-rich, low-protein seabream skin.

3 High-Yield Extraction

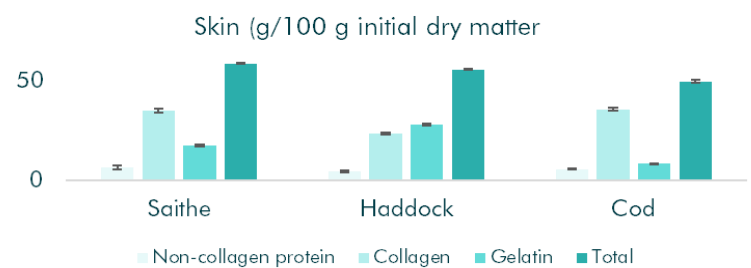
Cascade extraction from **backbones yielded 25-41%** of the initial dry mass. Total **amino acid content exceeded 80% in extracted fractions**, compared to 33-45% in raw material, demonstrating the effectiveness of cascade extraction in valorising bone side streams.



Ultrasound-assisted extraction significantly increased collagen yield from jellyfish, **raising total amino acid levels from 60% to 66%**.



Cascade extraction from **fish skin yielded about 50%** across three whitefish species. Ultrasound-assisted extraction **doubled collagen yield** without altering its structure or composition.



4 Scaling Forward

FOODIMAR continues with functionality testing and product development, supported by market analysis and sustainability assessments.

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