



ABSTRACT

About 70% of annual shellfish production ends up as by-products. Apart from use in chitin/chitosan, this marine biomass is either used to make fertilizer/low value products or is sent to landfill, incinerated or dumped at sea. BlueShell will address this problem by exploring 3 typical shellfish by-products; shrimp shells, crab shells and defect mussels, for potential (bio)active compounds targeted at the sustainable supply of safe, healthy foods. Research indicates that the abundance of hepatopancreas tissue, the open circulatory system, the filtering nature and the shell structures render crustaceans and bivalves as sources of unique proteins/peptides, unusual fatty acids, pigments and chitin. Applying enzymatic hydrolysis or fermentation will enhance bioactivity through controlled proteolysis, lipolysis and production of low molecular weight compounds. It will facilitate fractionation through lipid-protein disconnections and demineralization/de-proteinisation. Different starter cultures will be tested against a standardized enzymatic hydrolysis as reference. Peptide-, lipid- and chitin-enriched fractions will be explored for (bio)activities relevant to: (i) functional foods development, (ii) food safety applications and (iii) plant health applications. Molecular characterisation of the most active fractions will help identify the specific compounds involved. BlueShell will investigate upscaling feasibility and market potential for the most interesting cases.



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CONSORTIUM

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Topic:

- Shellfish by-products

Marine biomass:

- Crustacea

Source of marine biomass:

- marine biomass processing by-products and waste fractions

Keywords:

fermentation, enzymatic hydrolysis, mussel, crab, shrimp, nutrition, food safety, plant health, antifouling, antimicrobial

Total costs*: € 1.319.000

Funding granted*: € 1.152.000

Duration: 3 years (2017-2019)

** Exact amount may change after completion of national contracts*

