MarineBiotech

BlueShell

Exploring shellfish by-products as sources of blue bioactivites

ERA-MBT 2nd Transnational Joint Call: Biodiscovery

21st November 2017

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THE CONSORTIUM

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Project period: March 2017 to February 2020

Aims and Objectives

- Discards from the world's fisheries exceed 7 million tons, with only 50% of total catch being used for actual human consumption

- Fish by-products host a multitude of proteins, peptides, oligosaccharides, fatty acids, water soluble minerals, biopolymers and low molecular weight-compounds with biological activity

- These compounds can be endogenous or formed via e.g. hydrolysis or fermentation and finally used in foods, feeds, cosmetics, horticultural stimulants etc.

Aims and Objectives

To explore different aspects of bioactivity in fermented/hydrolysed shellfish by-products which can serve as a basis for new high-value products aiding a sustainable supply of safe, health promoting foods

Aims and Objectives

Explore 3 typical shellfish by-products:

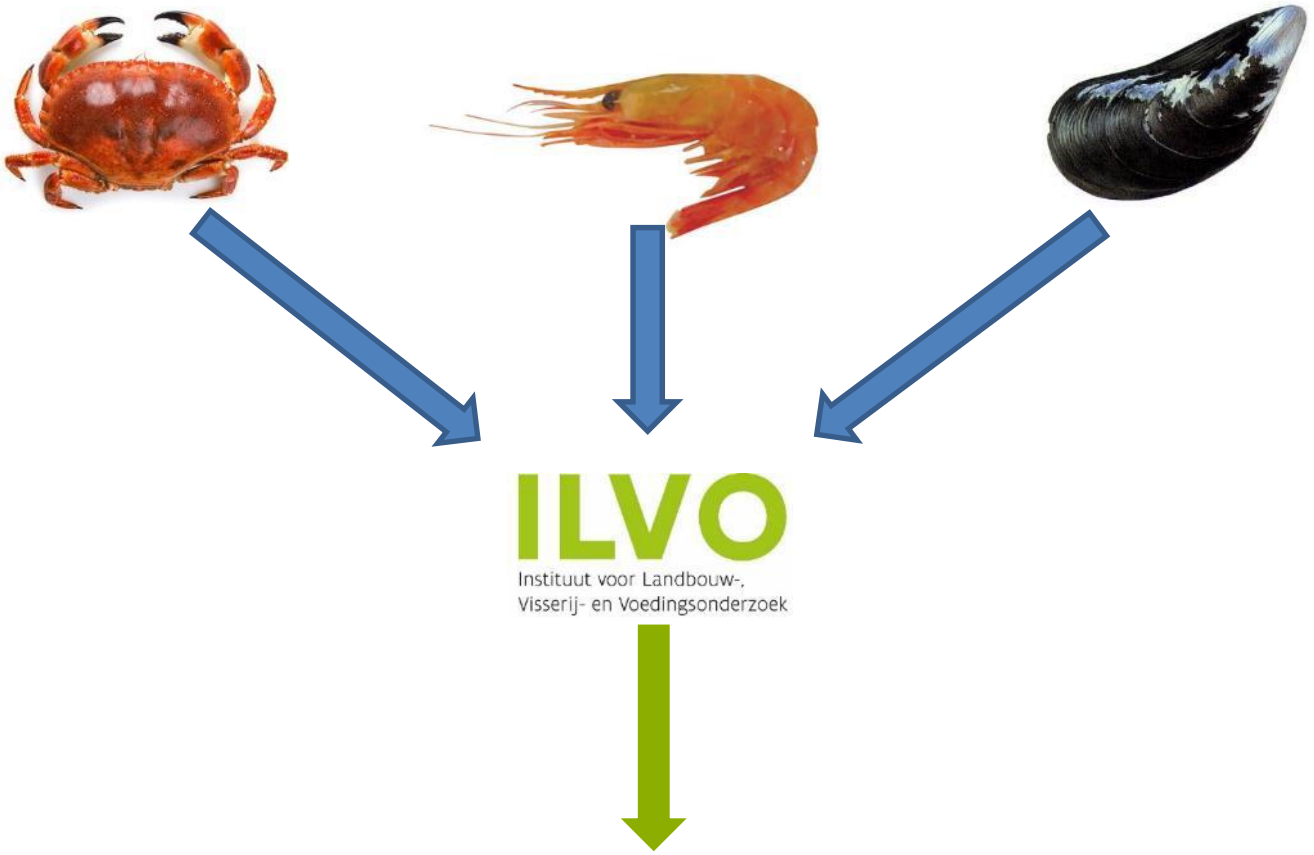
- Shrimp (*Pandulus borealis*) shells
- Crab (*Cancer pagurus*) shells
- Defect mussels (*Mytilus edulis*)

Potential (bio)active compounds:

- Unique proteins/peptides
- Unusual fatty acids
- Pigments and chitin

Investigate upscaling feasibility and market potential

Progress to date



Progress to date

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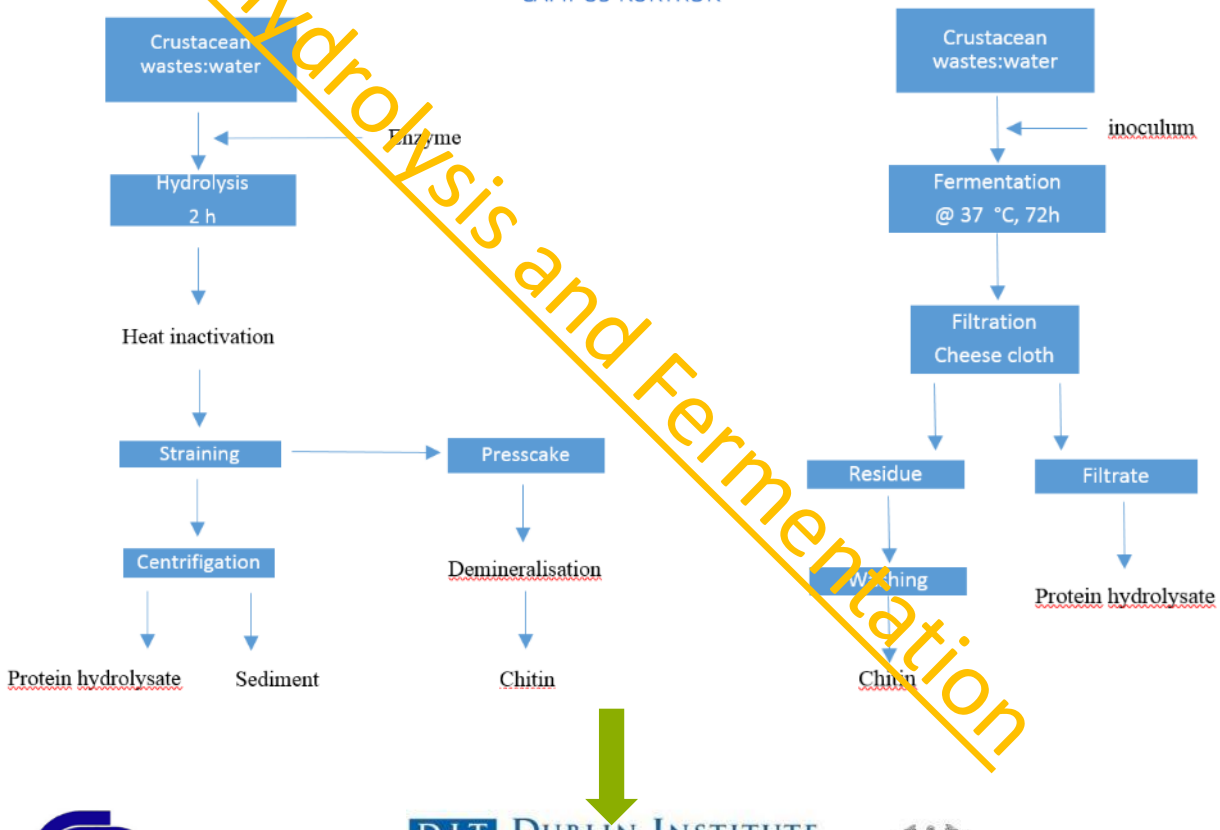

Hydrolysis and Fermentation

Progress to date

Anti-inflammatory effects

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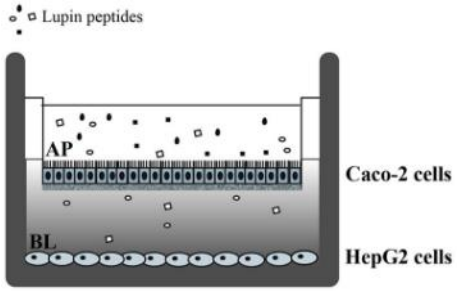

Anti-microbial effects

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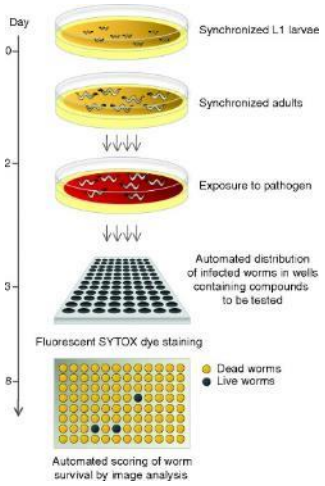

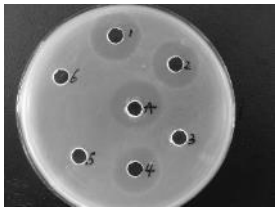

Plant health

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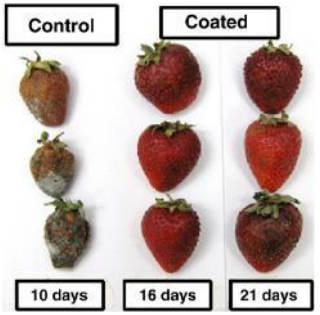

Progress to date

Chitin/ chitosan structure

Small Molecules

Peptides/proteins

Lipids

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DUBLIN INSTITUTE of TECHNOLOGY
Institiúid Teicneolaíochta Bhaile Átha Cliath

Progress to date

Value Chain to market:

different players and stakeholders

- Upscaling feasibility
- Market mapping
- Societal acceptance

Potential impacts and perspectives

Research- related, Innovation-related, Societal-related

- New starter strains
- New bioactivities of crude extracts
- Anti-inflammatory testing is the prior subjection of fractions to in-vitro gastrointestinal digestion
- Securing upscaling feasibility of the findings and combining this with targeted market orientation, towards both businesses and consumers generation of economic value, thereby maximizing the value of (marine) biomass, which is important for fishermen and the coastal community.
- Benefits for human health and safety

Future directions and needs/gaps

- Follow-up projects will be required
  - Develop the concepts, in closer collaboration with the relevant industry
  - Up-scaling and biorefinery
  - Develop starters
  - Other bioactives
  - Other applications