MASTER BIOTECHNOLOGIES

PARCOURS MASTER INTERNATIONAL EN BIOTECHNOLOGIES MARINES

M2 / semestre 9

INGREDIENTS AND ACTIVE MOLECULES

Bioactive molecules from marine animal biomasses

3 crédits ECTS
Volume horaire
CM : 28h
TD : 0h
TP : 4h

Responsable(s)
Fabienne GUERARD
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Pré-requis nécessaires
Bases of biology, biochemistry, enzyme engineering, microbial engineering.
Possibly, bases of marine biology and ecology.

Compétences visées

Learning outcomes:
- A comprehensive vision of blue biotechnologies on a worldwide scale.
- The capacity to identify the research teams and research activities for establishing collaborations.
- The ability to identify the emerging markets, their size and their potential.
- The ability to transpose data and concepts of the scientific literature into R & D approaches integrating scaling-up.
- The capacity to explain the biological activities and functionality of molecules to non-specialists while having a dialogue with experts.
- The ability to inject new ideas, and to create innovative products.
- The ability to understand what is hindering and driving in marine process, and to choose the most appropriate strategy for achieving the final objective.

Descriptif

Introduction: Global overview of how enhancing the value of fisheries and aquaculture products from animal origin: definitions, resources, markets, notion of value chain, current trends, and examples of innovation in Norway.
Chapter 1: Concentrates and isolates of proteins: conventional methods, Ph-shift, pulps.
Chapter 2: Gelatines et collagens: general properties, specificities of marine collagens, impact of process on techno functional properties. Niche and mass applications of gelatines. Innovative uses in nutraceutics, nutri-cosmetics et biomaterials (tissue engineering, ...)
Chapter 3: Enzymes in industrial processes: 3.1. Fish protein hydrolysates (FPH) with functional properties: pH-stat method, characterisation of peptidic populations, choice of enzymes for FPH. 3.2 Use of enzymes for the controlled destructuration of complex matrices: application to microalgae.
Chapter 4: Peptides exhibiting biological activities: definitions, examples in food, feed, nutraceutical, cosmetics,
Chapter 5: Biopolymers (chitin and chitosan, chondroitin sulphate, hyaluronic acid: general characteristics, extraction process, properties et example of uses.
Chapter 6: Marine lipids: structures and functions: PUFA and phospholipids

Bibliographie

Pour plus d'informations : http://formations.univ-brest.fr
Handbook of Marine Biotechnology 2015 SPRINGER  
Marine Biotechnology : Enabling Solutions for Ocean Productivity and Sustainability (2013) OECD  
Improving seafood products for the consumer (2008). T. Børresen (Ed.) Woodhead (GB)  
Marine Biotechnology I & II (2005), Le Gal & Ulber (Eds.) SPRINGER  
Chitine et chitosane: du biopolymère à l'application (2009), Crini, Badot & Guibal, Presses Univ. Franche-Comté, 
Biofutur N° 301 : Biotechnologies marines (Juillet-Août 2009), Tec & Doc  

**Modalités de contrôle des connaissances**

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**Session 2 : Contrôle de connaissances**

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**Langue d'enseignement**

Anglais