Research line: Improvements in aquatic seafood production systems, with the aim of reducing waste and improve its management

Research group: Department of Aquatic Production (DPA), ICBAS/U. Porto

novomar

Objectives

The general objective of this research group is to contribute to the improvement of seafood production techniques, mainly from aquaculture but also from fisheries. It covers many different working areas, e.g. Ichthyology, Aquatic Ecology, Fisheries Biology, Aquatic Physiology, Fish Hygiene and Pathology, Seafood microbial, chemical, physical and sensory Quality and Safety, Seafood Technology, Seafood Inspection, Fish Welfare and Seafood waste management, including by-product and upgrading technologies.

Description

Seafood industry, based on wild and, increasingly, on farmed fish, also produces an increasing quantity of wasted materials, most of them edible and/or usable for more noble destinations than the simple rejection or fish meal. There are two general actions that can be taken: 1) improving production techniques, in order to reduce or avoid the waste as much as possible, and 2) creating innovative management techniques for the waste that is completely unavoidable.

The DPA includes basic scientific studies on aquatic animal Biology, Physiology and Pathology, aiming better adaptation of farming techniques to the biological characteristics of the species, studies on several aspects of the final products (including waste) produced by the fishing, farming and subsequent processing techniques.

For NOVOMAR project, historical collaboration with processing industries will be exploited to identify sources and characterize products, by-products and corresponding waste. A more direct contact will be established with the seafood wasted raw-materials end-users of the food, phamaceutical, cosmetical and other industrial groups

Techniques

Main techniques used are: anatomic, morphological and ecological characterization of aquatic species and their behaviour, using sampling of animals, microscopy, characterization of organs and tissues, biometry and growth measurements (fish, crustaceans and molluscs), fish immunology tests and vaccine development, isolation and identification of aquatic pathogens (mainly bacterial and parasitological), sensory techniques[1] (QIM, texture analysis), physical instruments like the Torrymeter, shelf-life studies on real fish samples, waste improvement and upgrading techniques[2] like silage, improved refrigeration, acid and enzymatic treatments, protein hydrolisates, lyophilisation, etc.

1. Vaz-Pires, P., Seixas, P. (2006) Food Control 17 (12), 942-949. DOI: 10.1016/j.foodcont.2005.07.004
2.Cardoso, C., Mendes, R., Pedro, S., Vaz-Pires, P. and Nunes, M.L. (2010) FoodScience