Meetings International
SciTechnol

J Mar Biol Oceanogr 2018, Volume: 7
DOI: 10.4172/2324-8661-C1-012

International Conference on

AQUACULTURE & MARINE BIOLOGY

June 25-27, 2018 | Rome, Italy

Marine biopolymer applications in aquaculture

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Marine organisms synthesize a considerable variety of biopolymers, which can be grouped into three main classes: polysaccharides, proteins and nucleic acids. The exploitation of marine biopolymers for industrial and medical purposes is a fast-growing sector of enormous interest, as demonstrated by the increasing number of different types of compounds isolated from aquatic organisms and transformed into profitable products for health applications and food/feed industry. Differently from feed for livestock, feed for aquaculture requires an adequate level of processing to guarantee good stability in water, long enough for animals to consume it. Indeed, some species are grazers and need time to eat the feed offered. Thus, in order to facilitate rearing management, the addition of binders to the feed to meet the different feeding behavior of different species has to be been considered. Binders are essential for the manufacturing of formulated feed, and research is always on the look-out for new solutions based on eco-friendly, sustainable and cost-effective materials. Here we present some applications of natural biopolymers, mainly carbohydrates capable of creating three-dimensional networks or hydrogels that entrap nutrients and are sustainable and biodegradable.

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