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ABSTRACT BOOK

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BIOLOGY OF AQUATIC ENVIRONMENTS

QUALITY OF LARGEMOUTH BASS (*Micropterus salmoides*), CULTURED IN SICILIAN AQUAPONIC SYSTEM

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Largemouth bass *Micropterus salmoides*, is a freshwater species from North America, introduced in Italy at the end of the last century, being recorded at first in the Lake Trasimeno in the 1980s, and has since spread throughout the country, even to Sicily. Thanks to its rapid growth performance, short rearing cycle, strong adaptability, handling tolerance, flesh quality and absence of intramuscular bones, this species became target of the aquaculture sector in many countries. In particular, *M. salmoides* is one of the emerging species in aquaponics, a farming system that symbiotically combines aquatic animal culture (aquaculture) with plant culture (hydroponics). Aquaponics farms, in Sicily, have implemented this closed-loop farming system consisting of four elements: water, fish, bacteria, and plants, where the cycle begins with the farming of *M. salmoides* in fresh water. The aim of this study was to evaluate, for the first time, the quality and shelf life of the largemouth bass from an aquaponics farm in Sicily and to provide information about consumer perception (liking or disliking of the fish product), in order to define consumer acceptance and its commercial success. Obtained results showed that this species has a low lipid content and is an important source of omega-3, mainly DHA (22:6 ω-3 docosahexaenoic acid) and EPA (20:5 ω-3 eicosapentaenoic acid). Both sensory analysis and biochemical parameters resulted correlated with good acceptability of the product up to 12 days. These results highlighted that Sicilian aquaponics might contribute to add value to the seafood production sector by exploiting new species, enabling greater diversification of seafood products and helping to improve the sustainability and profitability of the sector.

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CHEMICAL CHARACTERIZATION AND BIOLOGICAL PROPERTIES OF MACROALGAE EXTRACTS

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Marine species are a rich source of bioactive molecules and among them, it is known that marine algae produce different secondary metabolites for which different biological activities

such as: immunomodulatory (Raposo *et al.*, 2016), antioxidant (Fisch *et al.*, 2003) and antimicrobial (Pinteus *et al.*, 2015) were demonstrated. The aim of this study was chemical characterization of the extracts of three macroalgae species: *Carpodesmia crinite* (Duby, Orellana & Sansón, 2019), *Carpodesmia brachycarpa* (J. Agardh, Orellana & Sansón 2019, WoRMS, 2023), *Ericaria brachycarpa* (J. Agardh, Molinari & Guiry, 2020), *Asparagopsis taxiformis* (Delile) Trevisan 1845) to evaluate also their biological activities. The characterization of the secondary metabolites was performed by HPLC-MS and showed higher meroterpenoids levels. Then, the extracts were tested on the *Arbacia lixula* sea urchin and against the bacterial strains *Listeria monocytogenes* and *Staphylococcus aureus*. In the first case results showed a modulation in total and differential cell count demonstrating their involvement in immunity responses. In the second case important antimicrobial activities were observed against both bacterial strains tested. The results obtained, although preliminary, are certainly encouraging to understand better the biological potentiality of these metabolites.

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GELATINE FOR FOOD USE: FROM THE *Rhizostoma pulmo* MESOGLEA (EXTRACELLULAR MATRIX) A NEW COLLAGENE SOURCE

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Gelatine for food use is commonly produced from animal waste coming from the slaughter of cattle and pigs. In recent years this practice has highlighted several critical points, risks to human health such as infections with transmissible spongiform encephalopathy or other viral vectors (Z. Ahmed, "Marine drugs" 2021), tightening in the legislation on slaughterhouses that make it difficult to supply the raw material and the increase of those who do not consume products of animal origin. Given the importance of gelatine in both food and pharmaceuticals, the study of alternative sources has therefore been undertaken. Discarded plant sources, which were found to be inadequate, the research was directed towards animals that could constitute a source of gelatine of comparable quality with the one commonly used but without the risks and negativity of the traditional system. Such animals have been identified in the Cnidarians; in this study, in particular, we considered the scyphozoans of the species *Rhizostoma pulmo* in their medusoid form, the most suitable thanks to the composition of the extracellular matrix, consisting essentially from denatured collagen. The gelatine extracted from the *Rhizostoma* mesoglea has been analyzed; it has been seen that its composition is comparable, from the organoleptic point of view, with that of the commonly used animal gelatine. The analysis then took into account the possible presence of pathogenic microorganisms and these do not appear in the results, allowing us to affirm

