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IDENTIFICATION AND ANALYSIS OF BIOPOLYMERS FROM CRUSTACEANS DECAPOD OF THE ROMANIAN BLACK SEA WATERS

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ABSTRACT

The using of marine resources for the industrial, biomedical applications and human consumption has got a quickly growth in previous decade in the world. The Romanian Black Sea environment, containing lots of organisms, which have considerable ecological and biological properties, is one of the most unstudied biological resources. In this paper, we have identified three species of crustaceans on Romanian sea waters of the Black Sea, as possible sources of chitin and chitosan. Because these species constitute a rich source of value-added products, as chitin, protein pigments and flavour compounds, the full exploitation of this easily accesible resource has attracted much interest. Chitin and chitosan, the naturally renewable polymers have excellent properties such as biodegradability, biocompatibility, non-toxicity and adsorption. The extraction and characterization of these biopolymers have been studied by optical microscopy and FTIR/ATR spectroscopy. Results of the preliminary studies revealed from: FTIR/ATR „fingerprint spectra”, intensities and stretching, characteristic functional groups of bands, the presence of chitin and chitosan in the samples. Spectra samples were compared with those of chitin and chitosan standards. By optical microscopy and FTIR/ATR coupled analytical methods the results have been checked and also, indicated morphological differences between the chitin and chitosan standards. The material (crustacean shell) was dried, milled and sieved (dimensions of the particles less than 150 μm) and than digested in a mixture of peroxide, nitric acid and hydrochloric acid. Metallic elements, such as As, Cd, Cr, Cu, Fe, Mo, Ni, Pb, Se, Zn, V, Al, Ca, Mg, Na, K, were analyzed using inductively coupled plama optical emission spectrometry. High contents of Ca, Mg, Na and K were recorded.

Keywords: Chitin, chitosan, crustaceans decapod, biopolymer, metallic elements
