# The Perspective Of Using Biological Resources Of The Black Sea

Ryabushko Vitaly [1] and Ryabushko Larisa [1,2]

*(1) The A.O. Kovalevsky Institute of Biology of the Southern Seas National Academy of Sciences of Ukraine, 99011 Sevastopol, Ukraine*
*Telephone: +380692550833 Email: rabushko2006@yandex.ru*
*(2) Telephone: +380692550833 Email: larisa.ryabushko@yandex.ru*

The Black Sea and the Sea of Azov harbour massive living resources; properly processed, those marine organisms and plants would provide biologically active substances (BAS) for food, pharmaceutical and agriculture industries. Over 2 000 species of planktonic and benthic microalgae have been acknowledged as bearing a large content of fatty acids, carotenoids, polysaccharides, sterols, vitamins, macro- and microelements and some other valuable compounds. In diatoms, lipids can make up to 30% of dry weight, and polyunsaturated fatty acids (PUFA) to 40% of total fatty acid pool. Diatoms are the major producer of such PUFA as eicosapentaenoic acid (EPA); economically, this production is comparable with EPA from fish oil. In other microalgae dominant carotenoid fractions include fucoxanthin, β-carotene and diadinoxanthin. Fucoxanthin, the carotenoid extracted from brown algae and diatoms, has been reported as a strongest antitumor agent. Microalgae provide a renewable natural resource for production of a variety of food, medicines and a fodder for mariculture (invertebrates). Modern technology has enabled manufacturing BASs from microalgae, e.g., phycocyanine and a variety of BASs are produced from Arthrospira (Spirulina), phycoerythrine from Porphyridium, β-carotene from Dunaliella, astaxanthin from Haematococcus, astaxanthin and canthaxanthin from Scotiellopsis. Similarly, brown algae Cystoseira barbata are a rich natural source of fucoxanthin, alginate and some BASs, and seagrass Zostera growing in plenty on the Black Sea shelf – of cellulose, ethyl alcohol, biofuel and zosteran. The technology for farming Botryllus schlosseri furnishes such final products as phylloxanthin and BASs. Jellyfishes Aurelia aurita which form huge swarms in coastal zones of the sea have proved to be a promising raw material for collagen and fibrillin production. High biological value of molluscs Mytilus galloprovincialis, Rapana venosa and Anadara inequivalvis is primarily owing to a large content of amino acids (including essential amino acids) and PUFA (over 20% and more than 60% of total fatty acids, correspondingly), a spectrum of vitamins (A, E, PP, V, B) and over 30 biogenic macro- and microelements. Being effective antioxidative and antiradiation remedies, hydrolyzates manufactured from soft tissues of these molluscs also improve cardiovascular and hemapoietic activity, and facilitate excretion of toxicants and radionuclides from human organism. The tests have proved that the hydrolyzate produces health-improving effect, increases human immunity and prevents inflammatory diseases; it efficiently treats stresses and physiological

overloading, too. Massive stocks of the sprat Sprattus sprattus and the anchovy Engraulis encrasicholus ponticus that dwell in the Black Sea and the Sea of Azov are a good source of w-3 polyunsaturated fatty acids. Moreover, having been duly processed, waste products of the fish are the ecologically safe combined fertilizer valued in farming.