MARINE ANTIOXIDANTS

PREPARATIONS, SYNTHESES, AND APPLICATIONS

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Chapter 22 - Bioprospection of marine microalgae for novel antioxidants in human health and medicine

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Abstract

Microalgae are the new model organisms for a wide range of biotechnological applications, especially in the development of products with health benefits, such as nutraceuticals and functional foods, which is a fast-growing business field. There is growing interest in microalgae-based dietary supplements as whole biomass or in the form of purified extracts containing compounds such omega-3 fatty acids and carotenoids. The commercial production of bioactive compounds from microalgae is currently challenged by the lacunae of knowledge and in-depth research on this diverse potential bioactive compound producers still needs to be addressed. This chapter focuses on the bioactive compounds of microalgae, their antioxidant properties, and their potential therapeutic application. Many products from microalgae have shown potential as antioxidants and are beneficial in treating certain health conditions. The demand for natural products that may be found in microalgae has increased over the last decade and has attracted the attention of food industries as well as cosmetics and nutraceuticals manufacturers. Natural antioxidants are in high demand, as they are used as alternatives to synthetic antioxidants. In addition, the high biodiversity of microalgae along with photosynthetic yield, growth, productivity, and metabolic plasticity is advantageous during cultivation using biotechnological tools. Apropos of the applicability of wide diversity of antioxidant compounds for medicine and healthcare, this chapter is an attempt to highlight the novel antioxidants from microalgae, their mode of action, assays used to assess antioxidant activity, production processes and methodologies used, and industrial production of antioxidants from microalgae.