

MARINE ANTIOXIDANTS

PREPARATIONS, SYNTHESSES, AND APPLICATIONS

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Details

ISBN

978-0-323-95086-2

Language

English

Published

2023

Cop

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Imprint

Academic Press

DOI

<https://doi.org/10.1016/C2021-0-02534-7>

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Abstract

Macroalgae are a group of primitive marine algae that are widely distributed along rocky shores in intertidal to subtidal zones. Based on their pigment composition, they are classified into three broad categories: Rhodophyta, Phaeophyta, and Chlorophyta. They are a rich source of bioactive molecules with wide applications in the pharmaceutical, nutraceutical, and cosmeceutical industries. Macroalgal biomolecules have immense antioxidant potential to scavenge the free radicals caused by oxidative stress. Hence they can prevent the onset and delay the progress of various diseases, such as diabetes, arthritis, cancer, cardiovascular diseases, and neurological disorders caused largely by the stress-induced generation of reactive oxygen species. However, their potential has not been fully explored, and the antioxidant activity that has been discovered so far has been characterized mainly through in vitro analysis with very few in vivo studies. The advent of molecular docking and in silico analysis has played a major role in expediting the analysis and providing wider application. In this chapter we discuss the various approaches that have been used to decipher the antioxidant activity of the seaweed biomolecules and unexplored avenues for improving their commercial application.