

Chapter 9

Seaweed: A Potential Resource for the Development of Novel Multigenerational Medicinal Products

J. Immanuel Suresh

 <https://orcid.org/0000-0002-9709-3164>
The American College, Madurai, India

M. S. Sri Janani

St. John's Research Institute, Bengaluru, India

ABSTRACT

*A preponderance of research suggests that marine organisms are a veritable resource of metabolites critical in the drug discovery and development process. Typically, seaweeds produce a plethora of compounds that exhibit anti-inflammatory, antimicrobial, antiviral, anticancer, and antifungal properties. Studies on seaweed phytochemicals show that they possess an array of pharmacological properties that include antioxidative, immunostimulatory, and antitumor activity. Certain algae such as *Ulva reticulata*, *Caulerpa occidentalis*, *Cladophora socialis*, *Dictyota ciliolata*, and *Gracilaria dendroides* produce phlorotannins, diterpenoids, sterols, quinines, etc. These compounds are believed to have significant potential in the synthesis of investigational new drugs that will lead to the development of medicines that are safe, affordable, and effective in the prevention, management, and treatment of a broad spectrum of diseases and comorbidities. Consequently, this brief overview complements ongoing other exploratory studies propounding the utilization of CAM products in disease therapy.*

DOI: 10.4018/978-1-7998-4120-3.ch009

INTRODUCTION

Seaweeds are source of bioactive compounds as they are able to produce diverse of pharmaceutically significant compounds such as anti-inflammatory, antimicrobial, antiviral, anticancer, antifungal, antioxidant, antitumor activities,, and are feasible sources of novel medicines. Seaweeds are macroalgae found in the bottom of marine areas. Metabolites obtained from marine red, green, and brown algae possibly possessing the medicinal applications that inhibiting a variety of human pathogens (Abedin,, and Taha, 2008; EL-Gamal, 2010). Marine environment is a massive resource for innovative compounds. Marine organisms are probable causes of bioactive secondary metabolites for use in the improvement of innovative pharmaceutical agents. (Faulkner, 2002; Abdel-Raouf et al., 2008). Lots of these secondary metabolite substances have been revealed to possess significant biological activities. Several reports have been issued regarding isolated compounds with biological activity, representing their aptitude to produce secondary metabolites with high intricacy, and infinite assortment of pharmacological properties from algae. Marine seaweeds are ecologically importance, and it plays an imperative role in industrial, food, and medicinal applications (Chathurvedi et al., 2011). Marine algae are habitually referred to as Seaweeds. Red, and brown algae are principally used as human food sources. Seaweeds are acquainted with valuable medicinal components such as anti-coagulants, anti-angiogenic, and anti-adhesive activities have been detected in red, brown, and green algae. They serve as an important source of bioactive natural substances. It is scrutinized that the edible seaweeds contain a significant quantity of the protein, vitamins, and minerals, which are indispensable nutrition for human being (O'Sullivan et al., 2010; Rodrigues et al., 2015) .

MARINE SEaweeds

Marine seaweeds are a fundamental part of the aquatic environment. It is indispensable for the sustainability of numerous life forms, and imperative as the raw material resource (Matsukawa et al., 1997). Seaweeds are categorized based on their color of the pigments, nutrients, and chemical composition (Fig No: 1). Some Seaweeds are free-floating, and some are attached on rocky surfaces, and some are root- like structures found in the bottom of the ocean layers (Mendes et al., 2013). They are renewable living resources used as conventional therapy in many parts of humankind. For animals, and humans, Seaweeds have also been investigated as a

12 more pages are available in the full version of this document, which may be purchased using the "Add to Cart" button on the publisher's webpage: www.igi-global.com/chapter/seaweed/329636

Related Content

Cannabinoid Neurobiology and Medical Cannabis Intervention for Amyotrophic Lateral Sclerosis (ALS): Understanding the Molecular Mechanisms of Action

Mohammad Uzair, Hammad Qaiser, Muhammad Arshad, Aneesa Zafar and Shahid Bashir (2023). *Medical Cannabis and the Effects of Cannabinoids on Fighting Cancer, Multiple Sclerosis, Epilepsy, Parkinson's, and Other Neurodegenerative Diseases* (pp. 147-169).

www.irma-international.org/chapter/cannabinoid-neurobiology-and-medical-cannabis-intervention-for-amyotrophic-lateral-sclerosis-als/320046

Community Music Therapy Partnering With Community Musicians: Orchestral Dialogues – Accepting Self, Accepting Others

Janelle S. Junkin (2019). *Healing Through the Arts for Non-Clinical Practitioners* (pp. 214-226).

www.irma-international.org/chapter/community-music-therapy-partnering-with-community-musicians/211675

Auditory Profile of Children With Some Rare Neurodevelopmental Disorders

Saransh Jain and Vijaya Kumar Narne (2022). *Research Anthology on Pediatric and Adolescent Medicine* (pp. 235-258).

www.irma-international.org/chapter/auditory-profile-of-children-with-some-rare-neurodevelopmental-disorders/298214

Childhood Leukemia and Environmental Risk Factors

Mounir Tilaoui, Abdelamjid Zyad, Hicham Chatoui and Tarik Rakkaa (2022). *Research Anthology on Pediatric and Adolescent Medicine* (pp. 405-426).

www.irma-international.org/chapter/childhood-leukemia-and-environmental-risk-factors/298224

Role of Cannabinoids in the Regulation of Amyotrophic Lateral Sclerosis (ALS)

Akila Muthuramalingam, Ashok Kumar Pandurangan and Subhamoy Banerjee (2023). *Medical Cannabis and the Effects of Cannabinoids on Fighting Cancer, Multiple Sclerosis, Epilepsy, Parkinson's, and Other Neurodegenerative Diseases* (pp. 170-186).

www.irma-international.org/chapter/role-of-cannabinoids-in-the-regulation-of-amyotrophic-lateral-sclerosis-als/320047