

Preface

Over 70% of the earth is covered by ocean, and the vast potential of marine flora and fauna for human use remains largely unexplored. Seaweeds, commonly known as marine microalgae, are ubiquitous to ocean, and are mainly classified as brown, red, and green algae depending on pigmentations. Some of the seaweeds are edible and widely used as food in the coastal areas of various countries. Seaweeds are considered to be laden with huge reservoirs for several biomaterials such as polysaccharides, proteins, minerals, lipids, pigments, vitamins, and bioactive compounds. Amongst these, polysaccharides derived seaweed has been comprehensively utilized in various food applications, such as emulsifiers, stabilizers, thickeners, and gelling agents. Besides this, in recent years, there is increased inclination for the plausible use of seaweed polysaccharides in the area of biological and biomedical applications. The essential seaweed polysaccharides like alginate, fucoidan, carrageenan, ulvan, and so on, have widespread use in food, fertilizer, medicine, energy, and industrial applications. The isolation of seaweed polysaccharides remains a challenge, but due to recent cutting age development in screening, isolation, and analytical techniques; it possible not only to increases the overall yield also ensures batch to batch quality and uniformity.

This book, "*Seaweed Polysaccharides: Isolation, Biological and Biomedical Applications*," encompasses important isolation techniques, chemical characterizations, as well as recent applications. In the first part of the book, we deliberated an outline on seaweed polysaccharides and their applications. Then, various novel and interesting techniques of isolation and characterization of seaweed polysaccharides, such as, microwave assisted extraction, enzymatic extraction techniques, conventional method, ultrasonic assisted method, and supercritical extraction methods are discussed. Furthermore, the chemical modification of polysaccharides (like amination, acetylation, oxidation, phosphorylation, and sulfation) that give added advantages in biological and biomedical applications are enumerated and discussed. In the later part of the book, biological applications of seaweed-derived polysaccharides as anticancer, antioxidant, antihyperlipidemic, anticoagulation, and antiinflammation are exhaustively discussed. Finally, we discuss the biomedical applications of seaweed polysaccharides in wound dressing, tissue engineering, drug delivery, and dental applications.

Even though, the potential of seaweed polysaccharide in biological and biomedical application is in premature stage, each chapter within the book is presented uniquely to discuss the full gamut its potential use. We are confident that latest information on isolations; biological and biomedical applications of seaweed polysaccharides will be helpful for the novice and expand their ideas in multiple areas.

We are grateful to all the contributors of this book, who supported to edit this book. We are also thankful to the Elsevier for the continuous support throughout. I believe the fundamental ideas presented in this book will be helpful to increase research area, ultimately improve the quality life to the humankind.

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