CHAPTER-II

Scope and objectives

Inadequate availability of fertile land, constraint access to water for agriculture, child and maternal malnutrition, obesity and life threatening diseases are the burning issues of today. India has a diverse coastline of 8085 Km$^2$ covering 29 states and 7 union territories, which offers many advantages for utilization of marine biological resources. Seaweeds are crucial primary producer in oceanic aquatic food chain and they are endowed with diversified nutrients without contamination and their chemical components having antioxidant and therapeutical properties. There were reports on different aspects of seaweeds and efforts are also underway exploring the lesser known seaweeds in different parts of the country and outside. However it is essential to work on locally available resources to bring out their neutraceutical and pharmaceutical values, for utilization as source of nutrient supplements, minerals, vitamins, enzymes and antimicrobials in medicine. Hence the present investigation was undertaken with the following objectives.

- Enlisting and recording the availability status of seaweeds in Hare Island of Gulf of Mannar.
- Evaluating the seasonal changes in the nutritional components of selected seaweeds with special reference to carbohydrate, protein, free amino acid and lipid and recording the amino acid and fatty acid profile.
- Quantification of major antioxidant chemicals, vitamins, minerals and antioxidant activity of selected seaweeds.
• Finding the antifungal property of seaweeds against human pathogens (*Candida albicans*, *Trichophyton simii* and *Trichophyton rubrum*) and plant pathogens (*Aspergillus niger* and *Curvularia lunata*).

• Elucidating the effectiveness of seaweeds in controlling human pathogenic bacteria such as *Escherichia coli*, *Bacillus subtilis*, *Salmonella typhi*, *Pseudomonas areuginosa* and *Klebsiella pneumoniae*.

• Envisaging the role of seaweeds in green synthesis of silver nanoparticles and characterization of biosynthesized silver nanoparticles.

The data accounted through this study aid in the potential utilization of seaweeds as source of non-conventional, low calorie nutritious food and can help to overcome malnutrition and obesity, especially in low income groups. The results of the study also underline the cost effective, biofriendly resources which could be tapped for development of effective drugs in future.