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CHARACTERIZATION OF BIOACTIVE METABOLITES FROM MARINE MACROALGAE COLLECTED FROM VERAVAL COAST OF GUJARAT

Hiral P. Goswami ¹, Jigna G. Tank ^{*1} and Rohan V. Pandya ²

UGC-CAS Department of Biosciences ¹, Saurashtra University, Rajkot - 360005, Gujarat, India.

Department of Microbiology and Biotechnology ², Atmiya University, Rajkot – 360005, Gujarat, India.

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Correspondence to Author:

Dr. Jigna G. Tank

Assistant Professor,
UGC-CAS Department of
Biosciences, Saurashtra University,
Rajkot - 360005, Gujarat, India.

E-mail: jignagtank@gmail.com

ABSTRACT: Seaweeds are potential sources of bioactive molecules. They are known to be rich sources of proteins, carbohydrates, lipids, vitamins, minerals, and other secondary metabolites. To evaluate the presence of these compounds in marine macroalgae collected from Veraval coast of Gujarat, present studies was carried out. The methanol extract of six macroalgae species (*Ulva lactuca*, *Ulva faciata*, *Acanthophora dendroides*, *Gracilaria corticata*, *Padina tetrastromatica*, and *Cystoseira indica*) was subjected to LCMS/MS analysis which suggested presence of amino acids, sugar, vitamins and phytohormones in algae extracts. The aminoacids and vitamins present in *Ulva lactuca* (betaine, L-methionine, L-asparagine), *Ulva faciata* (L-arginine, L-proline, L-histidine, L-valine, L-Threonine, Dihydrofolic acid), *Acanthophora dendroides* (L-glutamic acid, L-alanine, L-serine, L-phenylalanine, L-tyrosine, nicotinic acid), *Gracilaria coeticata* (L-canavanine, L-isooleucine, and L-cysteine) and *Padina tetrastromatica* (L-Aspartic acid, L-leucine) can be utilized for the development of dietary supplements and proteinaceous food for domestic animals. The sugar present in *Ulva faciata* (glucosamine), *Acanthophora dedroides* (D-xylose, D-mannose, D-fructose), *Gracilaria corticata* (D-Rhamnose, fucose, D-galactose), *Padina tetrastromatica* (D-glucuronic acid, D-glucose, D-mannuronic acid), and *Cystoseira indica* (arabinose, maltose) can be utilized in food products, cosmetic, gelling and thickening agents. The phytohormones present in *Ulva lactuca* (6-Benzylaminopurine, jasmonate), *Gracilaria corticata* (salicylic acid, ethylene), *Padina tetrastromatica* (Abscisic acid), and *Cystoseira indica* (Indole-3 acetic acid) can be utilized in agriculture as plant growth regulators. Hence, these algae species are essential raw materials for the production of various pharmaceutical and biotechnological products.

INTRODUCTION: Principally, it was observed that the drugs developed from natural sources mainly come from microorganisms and terrestrial plants. However, marine organisms are the alternative sources to discover novel bioactive compounds ¹.

Secondary metabolites are organic compounds synthesized in living organisms using primary metabolites. These compounds are specific for each and every organism species within a phylogenetic group.

These secondary compounds are economically important for different pharmaceutical and biotechnological industries for synthesizing medicines, flavouring agents, thickening agents, and recreational drugs ². Marine macroalgae are natural sources of biologically active therapeutic and bioactive molecules for treating multiple diseases ^{3,4}.

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