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# PHYTOCHEMICAL SCREENING OF SOME MACRO MARINE ALGAL SPECIES COLLECTED FROM RAIGAD COAST OF KONKAN

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# ABSTRACT

The aim of the present paper is to evaluate the phytochemical screening of macromarine algae *Cladophora glomerata*, *Ulva intestianis*, *Ul. Lactuca, Sargassum cinerum and Gracillaria cortieata* To study the phytochemical screening of marine algae, five macro marine algal species were collected from the coast of Raigad district of Konkan of Maharashtra State, south east of India, shaid dried ,powdered and extracted Phytochemical screenings of the algal extracts were carried out using standard methods. In this investigation, phytochemical properties of five macro algae with forty extracts were carried out, which showed variations. The presence or absence of phytoconstituents depends upon the solvent medium used for the extraction. The present study of macro algae proves that the macro marine algal species may be used as antioxidant source for human beings after detail investigation.

KEY WORDS: Macro marine algae, phytochemical screening, Raigad coast of Konkan.

### INTRODUCTION

Algae are considered as ecologically and biologically important component in the marine ecosystems. Seaweeds make a substantial contribution to marine primary production and provide habitat. Marine algae are the group of plants that live in aquatic environment (Deodhar, H.D. 1989). Marine algae contain more than 60 trace elements in a concentration much higher than in terrestrial plants. They also contain protein, iodine, bromine, vitamins and substances of stimulatory as well as antibiotic in nature. Marine macro algae are the renewable living resources which are also used as food, feed, and fertilizer in many parts of the world (Chapman, 1998). In addition to vitamins and minerals, seaweeds are also potentially good source of proteins, polysaccharides, fibers, pigments, phenols, vitamins like A,B,C,D and E etc. Marine algae are considered as a source of bioactive compounds as they are able to produce a great variety of secondary metabolites characterized by a broad spectrum of biological activities (Zubia M, R. D.P. 2007).Compounds with antibacterial, antiviral, antifungal, antioxidant activities have been detected in green, brown and red algae (Yuan et al., 2005). The present study was aimed to show the presence or absence of phytoconstituents & bioactive potential of five macro algae collected from coast of Raigad district of Konkan.

# MATERIALS & METHODS Collection of macro algae

In the present investigation, samples of macro marine algal species, *Cladophora glomerata* (Linneus) kutzing, *Ulva intestinalis* (Linnaeus) Nees, *Ulva lactuca* Linnaeus, *Saragassum cinerum* J.Agardh, and *Gracillaria corticata* J.Agardh were collected from the Raigad coast line  $(17^{\circ} 53' \text{ and } 19^{\circ} 08' \text{ North Latitude and } 72^{\circ} 51' \text{ and } 73^{\circ} 42' \text{ East Longitude}) of Konkan region of Maharashtra, during low tides. The collected macro marine algal samples were washed in sea water and fresh water thoroughly to remove the epiphytes and other contaminations. Then samples were transferred into a polythene bags with a small hole to leak out water drop wise and then shade dried.$ 

Collection of macro algae was done in labeled polythene bags and brought to laboratory. Then marine algal samples were analyzed macroscopically for their morphological characters like colour, shape, size, texture etc. Then collected species of macro algae were preserved in 4% formalin solution. Herbarium specimens of each algal species were prepared for identification and confirmation of their taxonomic position. Identification of species was done by referring Taylor (1960), Deodhar (1987) and Dinabandhu sahoo (2001) and other previous publications.

# Preparation of sample for qualitative phytochemicals analysis

For the phytochemical screening, fresh samples were used. Five grams of fresh sample weighed and homogenized with 50 ml of water, HCl (1%), ethanol, ethyl acetate, methanol, chloroform, and benzene and petroleum ether solutions separately. The extract was boiled for one hour, cooled and filtered. The filtrate was used for screening phytochemicals by using standard procedure (Harborne, 1973). In preliminary phytochemical screening of eleven different constituents like alkaloids, glycosides, flavonoides, phenolic compounds, saponins, steroids, tannins, carbohydrates, proteins, fats and sugar etc, were tested.

Sr.No	Name of the Algae	Solvent used	а	b	с	d	e	f	g	h	i	j	k
		water	-	+	+	+	+	-	+	+	+	-	+
		HCl	-	+	-	-	+	-	-	+	+	-	+
		Ethanol	-	+	+	+	+	-	+	+	+	-	+
1	Cladophora glomerata (Linneus) kutzing	Ethyl Acetate	-	+	+	+	+	-	+	+	+	-	+
		Methanol	-	+	+	+	+	-	-	+	+	-	+
		Chloroform	-	-	-	+	+	-	+	+	-	-	-
		Benzene	-	+	+	-	+	-	-	+	-	-	-
		Petroleum ether	-	-	-	-	-	-	-	-	-	-	-
		water	-	+	+	+	-	+	+	+	+	-	+
		HCl	-	+	+	+	-	+	+	+	+	-	+
		Ethanol	-	+	-	+	-	+	-	-	-	-	-
2	Ulva intestinalis (Linnaeus) Nees	Ethyl Acetate	+	+	+	+	-	+	+	+	-	-	+
		Methanol	-	+	+	+	-	+	-	+	+	-	+
		Chloroform	-	+	-	+	-	-	-	-	-	-	-
		Benzene	-	+	-	+	-	+	-	+	-	-	-
		Petroleum ether	-	-	-	-	-	-	-	-	-	-	-
		water	-	+	-	+	+	-	+	+	-	-	+
		HCl	-	-	-	+	-	-	-	-	-	-	-
	Ulva lactuca Linnaeus	Ethanol	-	-	-	+	-	+	+	-	-	-	-
		Ethyl Acetate	-	-	-	+	-	-	+	+	-	-	-
3		Methanol	-	+	+	+	-	-	+	+	+	-	+
		Chloroform	-	+	-	+	+	-	+	+	-	-	-
		Benzene	-	-	-	+	-	-	-	-	-	-	-
		Petroleum ether	-	+	+	-	-	-	+	-	-	-	-
		water	-	-	+	+	+	+	+	-	+	-	+
		HCl	-	-	+	+	+	+	+	-	-	-	-
		Ethanol	+	+	+	+	+	+	+	-	+	-	+
		Ethyl Acetate	-	+	+	+	+	+	-	-	+	-	+
4	Saragassum cinerum	Methanol	+	+	+	+	-	+	-	-	+	-	+
	J.Agardh Gracilaria corticata J.Agardh	Chloroform	-	+	-	+	+	+	-	+	-	-	-
		Benzene	+	+	-	-	+	+	-	-	-	-	-
		Petroleum ether	+	-	-	-	+	-	-	-	-	-	-
		water	-	-	+	-	+	+	+	+	+	-	+
		HCl	-	-	+	-	-	-	-	+	-	-	+
		Ethanol	-	-	-	+	+	+	+	+	-	-	-
5		Ethyl Acetate	-	-	-	+	+	+	+	+	+	-	-
		Methanol	-	-	+	+	+	-	+	+	+	-	+
		Chloroform	-	-	-	+	+	+	+	+	-	-	-
		Benzene	-	-	-	-	-	-	-	-	-	-	-
		Petroleum ether	-	-	-	+	+	-	-	+	-	-	-

<b>TABLE 1:</b> Preliminary	phytochemical	study of five mac	ro algal species
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Where, **a**: Alkaloids, **b**: Flavonoids, **c**: Glycosides, **d**: Phenolic compounds, **e**: Saponins, **f**: Steroids, **g**: Tannins, **h**: Carbohydrates, **i**: Proteins, **j**: Fats, **k**: Sugar, (+) : Present, (-) : Absent.

# RESULTS

In the present study, qualitative phytochemical screening was carried out with water, HCl, ethanolic, ethyl acetate, methanolic, chloroform, benzene and petroleum ether extracts of marine macroalgal species, C.glomerata, U.intestinalis, U.lactuca, S.cinereum and G.corticata etc; were tested. The results were shown in table-1.Out of forty tested extracts, thirty seven extracts showed the presence of phenolic compounds, afterwords twenty four extracts showed the presence of carbohydrates, twenty two extracts showed the presence of flavonoids, twenty one extracts showed the presence of tannins and saponins, nineteen extracts showed the presence of glycosides, eighteen extracts showed the presence of steroides and sugar, protein showed its presence in sixteen extracts, followed by alkaloid showed its presence in only five extracts. Fats are completely absent in all the tested extracts.

#### DISSCUSSION

The present study showed the phytochemical screening of five macro marine algal species (*Cladophora glomerata* 

(Linneus) kutzing, Ulva intestinalis (Linnaeus) Nees, Ulva lactuca Linnaeus, Saragassum cinerum J.Agardh, and Gracillaria corticata J.Agardh) with forty extracts and showed variation in phytoconstituents present in them. These marine algae are rich in secondary metabolites like phenolic compounds, alkaloids, glycosides, flavonoides, saponins, tannins, steroids and related active metabolites. These constituents have a great medicinal value. They have been extensively used in the preparation of drugs and in medicinal industry (Kuda T, Tsunekawaa M, Goto H and Araki Y. 2005). In present investigation, it is also observed that presence of phenolic compounds were highest i.e. thirty seven extracts. We know that, phenolic compounds are indication of antioxidant potential because it is used as antiviral, antimicrobial, anti-inflammatory agents, due to its biological and chemical activities, which can be useful in the treatment against various diseases (Zahin M, Farukh A, and Iqbal A. 2009). Tannins are used as antioxidant, antiviral and antibacterial agents (Stirk WA, Reinecke DL, Staden J. 2007). Glycosides are medicinally important; they are therapeutically active as antihelmentics, antiulcer, cardiotonics etc. The flavonoids

are important for the survival of a plant in its environment; they regulate plant growth, inhibit or kill many bacterial strains, inhibit major viral enzymes and destroy some pathogenic protozoans. (Stirk WA, Reinecke D.L, Staden J. 2007). Saponins are used as anti-inflammatory agent as well as it is used in a dietary product (Mittler, R. 2002), Steroids are used for its antimicrobial, anti-parasitic, cardio tonic properties. Protein is an important part of our diet (Patra, J. K, Rath, S. K, Jena, K, Rathod, V. K and Thatoi. 2008). From these results it can be concluded that the selected five marine macro algal extracts may show the antioxidant potential. It can be useful as bioactive agents after its detail investigation, which clarifies its bioactivity and bio-efficacy. It is very essential to standardize every marine algal medicine, because of variations observed in algal phytochemical contents. Therefore after completing the preclinical studies, algal drugs and their products need to be standardized by the authentic department of Indian Government.

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