

Abstract: (8 mm), k. pneumonia (8 mm),

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Abstract: The brown seaweed, sea lettuce, *Sargassum tenerrimum* (J. Agardh, 1848) was handpicked from Bhatkarwada rocky shore of Ratnagiri (16°59'25.5"N, 73°16'32.9"E) in the month of December 2014. The collected samples were cleaned, shade dried, grounded and kept under freezer till further use for purpose of extraction. Crude extracts were prepared by using the solvent ethanol and methanol from the green seaweed, *S. tenerrimum*. The screening for their antibacterial activity against 8 bacterial pathogens viz.

Escherichia coli, *Staphylococcus aureus*, *Klebsiella pneumonia*, *Pseudomonas aeruginosa*, *Salmonella typhi*, *Shigella flexneri*, *Corynebacterium diphtheria* and *Sarcina lutea*. The test bacterial strains were procured from Biotechnology Department of Gogate Jogalekar College, Ratnagiri, Maharashtra. The discs loaded with the penicillin 0.2 g antibiotic were tested as standard whereas the discs loaded with the extracting agent were tested as control. The extract of *U.*

fasciata (0.50 l) extracted in methanol was found effective against *S. aureus* (8 mm), *K.*

pneumonia (8 mm), and *P. aeruginosa* (8 mm). The extract of *U. fasciata* extracted in ethanol having maximum activity against *S.*

lutea (11 mm) and *S. aureus* (10 mm), whereas minimum activity against *K. pneumonia* (8 mm), *P. aeruginosa* (7 mm), and *C. diphtheria* (9 mm). The green seaweed, *Ulva fasciata* from Ratnagiri coast are found potential source of natural antibacterial substances.

Key Words: The green seaweed, Bacterial pathogens, Antibacterial activity,

Ratnagiri Introduction: Marinealgae are exploited mainly for the industrial production of phycocolloids such as agar-agar, alginate and carrageenan, not for health aspects (Khan S. I. and Satam S.

B., 2003). Biostimulant properties of seaweeds are explored for use in agriculture and the antimicrobial activities for the development of novel antibiotics.

Selective utilization of marinealgae as potential source of pharmaceutical agents has been increasing in recent years. Extracts of marine algae were reported to exhibit antibacterial activity (Siddhanata et. al., 1997 and Mahasneh et. al., 1995).

Antibacterial activities on bacteria and fungi were reported by Hellio et. al. (2000). Karthikaidevi et. al. (2009) reported that ethanol extract shows the better results against *Staphylococcus* sp. Extracts prepared from fresh seaweed samples are reported to show negligible antimicrobial activity as compared to that obtained with dried seaweeds. The region of Konkan of Maharashtra state is richly endowed with vegetation of marine algae and Ratnagiri is no exception.

So the work was undertaken to study the antibacterial activities of selected seaweeds from Ratnagiri coast. Materials and methods: a)

Sample Collection: These samples of the green seaweed, sea lettuce, *Ulva fasciata* (Delile, 1813) were from Bhatkarwada rocky shore of Ratnagiri (Ratnagiri Coast, Lat 16°99' N; Long 73°27' E) in the month of

October 2014. The collected seaweed samples were and brought to the laboratory in plastic bags. Then cleaned with fresh water to remove all the extraneous matter such as epiphytes, sand particles, pebbles and shell, and spread out at room temperature for drying. The shade dried seaweed samples were grounded to fine powder and the powdered samples were then stored in refrigerator for further use.

b) Sample Storage: The shade dried seaweed samples were grounded to fine powder. The powdered samples were then stored in refrigerator for further use. c) Extracts Preparation: Seaweed extract prepared using ethanol and methanol solvent for 72hrs from dried seaweed fine powder. Both solvent was used in a ratio of 1: 4 (100 gm powdered seaweed: 400ml solvent). Extracted liquids were centrifuge at 8000 rpm for 10 mins at room temperature and supernatant were collected, filters and evaporated. The samples of extract were stored and refrigerated at 4°C prior to use. d) Microbial strains: Pure strain of 8 bacteria procured from Gogate Jogalekar College, Ratnagiri used for the further assay study.

The test bacterial strains were *Escherichia coli*, *Staphylococcus aureus*, *Klebsiella pneumoniae*, *Pseudomonas aeruginosa*, *Salmonella typhi*, *Shigella flexneri*, *Corynebacterium diphtheriae* and *Sarcina lutea*. The bacterial stock cultures were maintained on Mueller Hinton Agar medium at 4 °C. e) Antibacterial assay: The bioassay was carried out using the agar diffusion method (Hun et. al. 1994). The paper disc of 6 mm diameter

prepared from whatman No. 1 filter paper. Each extract was loaded in sterile filter paper disc and air dried.

Indicator microbes were spread on Muller-hinton agar plates with sterile discs placed on plates. After incubation for 24 hours at 37°C, a clear zone around a disc indicates antimicrobial activity. Discs loaded with the extracting agent were tested as control. Discs loaded with the penicillin 0.2 µl antibiotic were tested as standard. The antibacterial activity was evaluated by measuring the diameter of inhibition zone.

Result and Discussion: The extractability with Methanol solvent found more than Ethanol for the green seaweed *Ulva fasciata*. The results of the experiment of bioassay are given in the table 1. The investigation made on extract of *Ulva fasciata* extracted in methanol having antibacterial activity against *Staphylococcus aureus* (8mm), *Klebsiella pneumoniae* (8mm), *Pseudomonas aeruginosa* (8mm). Where as no antibacterial activity shown against *Escherichia coli*, *Salmonella typhi*, *Shigella flexneri*, *Corynebacterium diphtheriae* and *Sarcina lutea*. Extract of *Ulva fasciata* extracted in ethanol having maximum activity against *Sarcina lutea* (11mm) and *Staphylococcus aureus* (10mm), minimum activity against *Klebsiella pneumoniae* (8mm), *Pseudomonas aeruginosa* (7mm) and *Corynebacterium diphtheriae* (9mm). Where as no antibacterial activity shown against *Escherichia coli*, *Salmonella typhi* and *Shigella flexneri*. Table: 1. Antimicrobial activity of selected seaweeds on 8 bacterial strains: SN

*Bacterial Strain A B E F G 1 E.

coli — — 12mm — 7mm 2 Staphilococcus aureus 8mm 10mm 8mm 7mm
 7mm 3 Klebsiella pneumonia 7mm 7mm — — 7mm 4 Pseudomonas
 aergiuosa 8mm 7mm — — 7mm 5 Salmonella typhi — — — — 6 Shigella
 flexneri — — — — 7 Corynebacterium diphtheria — 9mm — — 8 Sarcina
 lutea — 11mm 10mm 7mm — *Sample (Dose= 0. 50 μ l)A= Ulva fasciata:
 Methanol(1: 4)B= Ulva fasciata : Ethanol (1: 4)E= Stantard Disc with
 AntibioticF= Control Disc with solvent MethanolG= Control Disc with solvent
 Ethanol Conclusion: The extract of U. fasciata (0.

50? l) extracted in methanol was found effective against S. aureus (8 mm), K.
 pneumonia (8 mm), and P. aeruginosa (8 mm). The extract of U. fasciata
 extracted in ethanol having maximum activity against S. lutea (11 mm) and
 S.

aureus (10 mm), where as minimum activity against K. pneumonia (8 mm),
 P. aeruginosa (7 mm), and C.

diphtheria (9 mm). The green seaweed, Ulva fasciata from Ratnagiri coast
 are found potential source of natural antibacterial

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