

**INVITRO ANTIBACTERIAL ACTIVITY OF SARGASSUM WIGHTII
FROM MANDAPAM COAST, TAMIL NADU, INDIA**

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ABSTRACT

The antibacterial activity of *Sargassum wightii* was screened against human bacterial pathogens like *Bacillus cereus*, *Klebsiella pneumoniae*, *Streptococcus pyogenes*, *Vibrio cholerae*, *E. coli*, *Proteus vulgaris* and *Salmonella typhi*. The maximum activity was recorded from the extract of *Sargassum wightii* against *K. pneumoniae* and minimum activity against *Streptococcus pyogenes*.

KEY WORDS

Antibacterial activity, Mandapam coast, human bacterial pathogens.

INTRODUCTION

Seaweeds are highly living resources which are also used as food, feed and fertilizer in many countries in the world. Seaweeds are having low calorie food but highly contains vitamins, minerals and dietary fibres. Then they have more potential of protein, carbohydrates and fatty acids also (1). Recent research implies that polysaccharides like inulin, oligofructose, galactooligosaccharides and lactulose can also act as potent prebiotic compounds against pathogenic microbes in animals and humans. Seaweeds are held within various secondary metabolites like mycotoxins, alkaloids, phenolic compounds, food grade pigments and plant growth factors (2). Various studies from across the world have demonstrated that marine algae are also possess a number of biological activities beneficial for human health including antimicrobial, cytotoxic, antimitotic, anticancer and antimutagenic activities (3-7).

MATERIALS AND METHODS

Collection of samples

Sargassum wightii collected from the Gulf of Mannar region of Mandapam coast (Lat 09° 17'N, Long 79° 07'E), Tamil Nadu, south-east coast of India. The

collected sea weed *Sargassum wightii* were initially washed with sea water to remove the macroscopic epiphytes, sand particles and other extraneous matter and then rinsed in distilled water. This was then air dried in shady place and ground to fine powder which was used for further analysis.

Preparation of Extract

20 gm powdered *Sargassum wightii* were soaked in 50 ml of methanol over the 48 hours and then filtered by Whatmann filter paper No 1 along with 2 gm sodium sulfate to remove the sediments and traces of water in the filtrate. Then the filtrate is concentrated to 1 ml by bubbling nitrogen gas into the solution (8).

Antimicrobial assay

Antimicrobial activity was carried out using Kirby-Bauer's disc diffusion method. Sterile Hi-Sensitivity agar was prepared and poured into Petri dishes. The depth of the medium should be approximately 4mm. After solidification the plates were dried for 30 mins to remove excess of moisture from agar surface. The test compound (0.1 ml) was introduced into the disc (0.7 cm) and then it is allowed to dry. The disc was completely saturated with the test compound by

this method. The disc was then introduced into the upper layer of the medium at least 25mm away from the edge. The disc was then pressed lightly on the surface of the medium. The plates were incubated at 37⁰ C for 48-72 hours for bacteria (9).

Minimum Inhibitory Concentration

Measure the diameter of the Zone of inhibition (area wherein there is no growth around the discs) using the millimeter of a ruler. MIC is the lowest concentration of antibiotics that exhibit the zone of inhibition of the assay plates. Record the results and interpret based on the standard as given below.

S. No	Organisms	A	S
1	<i>Bacillus cereus</i>	22	15
2	<i>Klebsiella pneumonia</i>	19	19
3	<i>Streptococcus pyogenes</i>	15	12
4	<i>Vibrio cholerae</i>	21	17
5	<i>E.coli</i>	16	13
6	<i>Proteus vulgaris</i>	17	16
7	<i>Salmonella typhi</i>	19	18

A-Antibiotic, S-Sample (Values in mm)

RESULTS AND DISCUSSION

Methanol extract of *Sargassum weightti* was highly provided antibacterial activities for many bacteria were tested almost 70% with positive control antibiotics using in the current pharmaceutical drugs. the zone of inhibition were found to be 19 mm for *K.pneumoniae*, 12mm for *S.pyogens*, 13mm for *E.coli*, 15mm for *b.cereus*, 16mm for *P.vulgaris* and 18 mm for *S.typhi*.

CONCLUSION

In the present study have clearly shown that the methanol extract of *Sargassum weightti* had highly effective antibacterial activity against *Klebsiella pneumonia*, *Salmonella typhi*, *Proteus vulgaris* and *E.coli* followed by lesser activity against *Streptococcus pyogenes*, *Vibrio cholerae* and *Bacillus cereus*.

REFERENCES

1. K.vallinayagam, R.Arumugam, R.Ragupathi Raja Kannan, G.Thirumaran and P.Anantharaman "Antibacterial activity of Some selected Seaweeds from Pudumadam Coastal regions" Global Journal of Pharmacology 3(1):50-52,2009

2. Ponnusamy Kumar, Singaravelu Senthamilselvi, Munisamy Govindaraju "GC-MS profiling and antibacterial activity of *Sargassum tenerrimum*" Journal Of Pharmacy Research 6 (2013) 88-92.
3. Visakhprabhakar, r.Anandan, Aneesh T.p,Jayasree. N.B,Sreejith.v.Nair, Halima O.A "Fatty acid composition of *sargassumwightii* and *Amphiroaanceps* collected from the Mandapam coast Tamil Nadu,India", J.Chem.Pharm.res.,2011,3(1):210-216.
4. kerr, R.G.; Kerr, s.s Marine natural products as therapeutic agents. Expert Opi.Ther.Pat.1999,9,1207-12222.
5. M.I eahbeh, Aquaculture, 159,101(1997).
6. X.Q.XuV.H. Tran, G.Kraft and J.Beardall, Phytochemistry, 48, 1335919980.
7. T. Bjournland and m.Aguilar-Martinez, Phytochemistry 15, 291 (1976).
8. B. Uma and R.Parvathavarthini "Antibacterial effect of Hexane Extract of sea Urchin, *Temnopleurus alexandri* (Bell,1884)" International Journal of pharm tech Research Coden (Usa): *Ijprif* Issn : 0974-4304 Vol.2,No.3,pp 1677-1680,july-sept 2010.
9. Bauer, A.W.W.M.M. Kirby, J.C. Sherris and M.Turck (1966) "Antibiotic susceptibility testing by a standardized single disc method" Am.J.Clin.Pathol.36:493-496.



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