Short Communication

Pak. j. sci. ind. res., vol. 34, no. 6, June 1991

Biological Activities in Seaweeds

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(Received October 31, 1988; revised July 27, 1991)

The therapeutic efficacy of biologically active compounds may be demonstrated under suitable conditions by their inhibitory effect on micro-organisms which is capable of antagonising their growth. Cell multiplication may be measured directly by cell count and turbidity [1]. The measurement of turbidity is easier and simpler than the chemical procedure, as it can be measured rapidly with good precision. Biological activity may also be determined by the incubation of secretions of algae along with a suspension of erythrocytes at 15 - 20° [2]. Algae has diverse assemblage of micro-organisms for fermentation and mass culture. In this way these Algae produce wide array of biologically active compounds. It has been suggested that the marine algae might become a source for biologically active compounds on economic scale in near future [3]. Apart from red and brown species, in green algae also microbiological substances were detected. The compounds were cultured actinomycetes, which is established in the interaction of streptomycetes and algae [4]. Various other compounds have also been detected as antiviral and cytotoxic activities were observed in Seaweeds [5].

To carry out the antimicrobial activity in four different species of seaweeds belonging to Rhodophyceae and Pheaophyceae classes; *Tetrasporangia, Botryocladia microphysa, Carpogonia florideae and Iyengaria stellata*, the samples were collected fresh at the Manora seaside, Karachi, washed thoroughly with water and stored at 4°. For biological activity an enriched broth, free from inhibitors, were used [6]. USP. method was followed.

20 Grams of broth was suspended in 1 litre of freshly distilled demineralised water and boiled till dissolved completely. It was sterilized in the autoclave at 121° for 15 mins. The pH at 37° was maintained at 7.3 ± 0.1.

Samples of seaweeds were weighed and grinded separately to make fine residual substance with the addition of small quantity of freshly distilled water (20 ml), and filtered. The residue was washed with water twice. Finally the residue was washed twice with 20 ml, of absolute alcohol and filtrate was evaporated on water bath till dryness. An amount of 40m/gms of the dried sample was taken in 100 ml of distilled water.

Each ml of standards *(Bacillus subtilis, streptococcus faecalis, Staphylococcus aureus, Esehcrichia coli and salmonella typhi)* contained 0.1 mg.

These tubes were warmed for 30 mins at 37° in water bath and incubated for 4 hrs at 37° and then kept at room temperature to see the turbidity on Unicam spectrophotometer at 380 nm wavelength. The graph was plotted as concentration v/s time Fig. 1 (concentration of sample v/s time taken for turbidity).

Table 1. Four Test Tubes for Each Sample/Standard Were Taken.

Number of tube	Sample (ml)	Standard (ml)	Water (ml)	Broth (ml)	Total (ml)
1.	0.25	0.1	2.65	9.0	12.0
2.	0.50	0.2	2.30	9.0	12.0
3.	1.0	0.4	1.60	9.0	12.0
4.	2.0	0.8	0.20	9.0	12.0
Blank (Formaline)	0.50	0.2	2.30	9.0	12.0

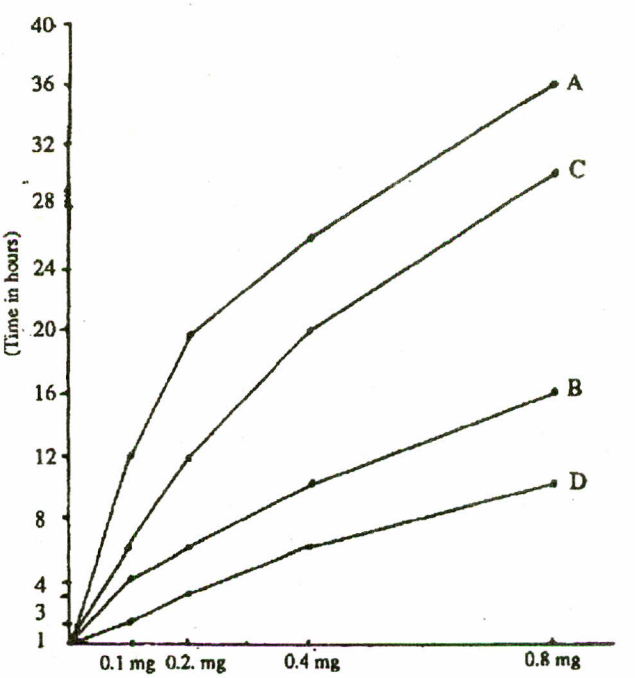

Fig. 1. Microbiological activity of four different species of seaweeds having different conc. were plotted on graph as conc. of samples v/s time.
A = Tetra sporangia, B = Botryocladia microphysa, C = Carpogonia florideae, D = Iyengaria stellata.

Results and Discussions

The four seaweed samples have been tested for their biological activity. When the graphs were plotted it became evident that these samples contain antimicrobial active components which shows the biological activity. It was also observed that the species *Tetrasporangia* is more active

than the other three tested species, whereas the specie of *Iyengaria stellata* shows very low activity. The specie *Carpogonia floridea* is second as far as biological activity was concerned and the specie *Botryocladia microphysa* stands third in degree of biological activity as compared to other species tested.

Key words: Seaweeds, Karachi, Antimicrobial activities.

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