

Bioactivity of some Macro Algae Present in the Coastal Areas of Northern Sri Lanka

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Abstract: Northern coastal area of Sri Lanka is a unique marine habitat with huge variety of algae. The present study was aimed to explore bioactive potential of some macro algae present in this region. The brown algae, *Sargassum polycystum*, *Sargassum tenerrimum* and *Turbinaria ornata*, the red algae, *Gracilaria crassa* and the green algae, *Codium fragile* were collected from different coastal sites, Point Pedro, Casuarina beach in Karainagar and Nachchikuda. The fine algal powders were sequentially extracted with acetone and ethanol and the resulting extracts were dried at 40°C. Qualitative phytochemical analysis was carried out to find out chemical compounds present in the above test extracts. The extracts were tested *in vitro* for their antibacterial activity against *Escherichia coli* (ATCC 25922) and *Staphylococcus aureus* (NCTC 6571) by agar well diffusion method. Streptomycin and the solvents used for the extraction were used as standard and control respectively. The one way analysis of variance (ANOVA) followed by Tukey test was used for statistical analysis. Phytochemical analysis of extracts revealed the presence of at least two of the phytochemicals among the tested alkaloids, saponins, flavonoids, tannins and cardiac glycosides. However, none of the extracts showed positive results to glycosides, terpenoids, phlobatannins and anthraquinones. The antibacterial study demonstrated that except acetone extract of *S. tenerrimum*, all other tested extracts were able to inhibit the growth of both *S. aureus* and *E. coli*. The ethanol extracts exhibited significantly ($P < 0.05$) higher inhibition on *S. aureus* compared to acetone extracts, where maximum zone of inhibition was produced by *T. ornata*. On the other hand, acetone extracts showed better activity on *E. coli* compared to effect expressed on *S. aureus*. However, the highest inhibitory effect on *E. coli* was produced by the ethanol extract of *C. fragile*. The results produced by the test extracts were comparatively lower than that produced by standard, Streptomycin, and also the control did not show any effect on the growth of test bacteria. The present study concluded that macro algae collected from different coastal line of Northern Sri Lanka are potential sources of bioactive compounds and can be used as source for antibacterial agent. However, further works should be performed for the isolation and characterization of the active compounds.

Keywords: Antibacterial activity, Macro algae, Phytochemicals