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Antibacterial properties of some Sri Lankan marine algae

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Marine organisms are a rich source of structurally novel and biologically active metabolites. Although *in vitro* bioactivities of marine algae have been reported in a number of studies, the bioactivity seemed to change with the place and time of collection. The present study was aimed to determine antibacterial properties of some selected tropical marine algae and to compare extraction procedures for their efficiency to extract bioactive compounds. Five common marine algae have been collected from the Mount-Lavinia shore: *Caulerpa racemosa, Codium geppei, Valoniopsis pachynema, Gracilaria corticata* and *Padaina tetrastromatica.* Natural compounds were extracted from both fresh and air dried samples. Water, methanol and methylene chloride were used as extractants. Samples were processed in two ways; either using soxhlet extractor or sonicator. For the sonicator-extraction, algae: extractant was added at a 1: 3 weight/volume ratio, where as in soxhlet extraction process, it was 1: 30. From the three extracts employed, methanol yielded the highest amount of crude extract. For antibacterial testing, crude extracts were redissolved in respective solvents to yield disk strengths of 0.01mg/disc, 0.005 mg/disc, and 0.0033 mg/disc. Antibacterial testing was done with the disk diffusion method employing both Gram negative *Escherichia coli* ATCC35218 and Gram positive *Staphylococcus aureus* ATCC25923. Three replicates were maintained for each experiment. Gentamycine and respective solvents were used as positive and negative controls, respectively. The water extract of fresh *C. racemosa* at a disk strength of 0. 01 mg/disc showed inhibition towards *E. coli* with a mean inhibition zone diameter of 7.3 ± 0.85 mm. The sonicated methanol extracts of fresh *C. geppei* at disk strength of 0. 01 mg/disc inhibited *S. aureus* with a mean inhibition zone diameter of 7.83 ± 0.85 mm and methanol soxhlet extract of air dried *P. tetrastromatica* showed strong inhibition towards *S. aureus* (15. 83 ± 0.85 mm) at a disk strength of 0. 01 mg/disc. Methylene chloride extracts did not show any inhibition. Minimum inhibitory concentrations of positive samples were tested using a concentration series where the original concentrations were found to be the minimum inhibitory concentration in each case. These results indicated that successful extraction of bioactive compounds depended strongly on the solvent and the technique used in the extraction procedure.

Keywords: antibacterial properties, marine algae, disk diffusion method