

**Antibacterial activity of methanol extract of *Gracilaria edulis*
In North West of Sri Lanka**

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Seaweeds are important living organisms in the marine environment because they are recognized as a potential source of bioactive natural products. The methanol extract of *Gracilaria edulis* sea weed was prepared to screen its antibacterial activity against four common bacterial pathogens using the disc diffusion method. The tested pathogenic strains were *Escherichia coli*, an extended spectrum beta lactamase (ESBL) producing coliform, *Pseudomonas aeruginosa* and *Staphylococcus aureus*. The Minimum Inhibitory Concentrations (MIC) of the extract against the 4 organisms was determined using the broth macro dilution method. Methanol saturated sterile discs were used as the negative control and did not show any inhibitory zone against the tested 4 organisms. Four antibiotics, Cefotaxime, Augmentin and Ampicillin were used for comparison. The zone of inhibition (ZOI) produced by methanol extract of *G. edulis* was maximum against *S. aureus* [16±0.5mm] medium against *E. coli* [12±0.8mm] and ESBL producing coliforms [12±0.5 mm] but with minimum activity against *P. aeruginosa* [10±0.8 mm]. In comparison, the ZOI produced by ceftazidime, Cefotaxime and Augmentin against *E. coli* were 26 (±0.8) mm 32 (±0.8) mm and 18 (±0.8) mm respectively, against the ESBL producing coliform, 25±0.5mm, 32±1.4mm, and 16±0.5mm respectively and against *S. aureus* 9 (±0.5) mm, 21 (±1.9) mm and 30 (±0.5) mm respectively. A ZOI of 16 (±1.3) mm and 20 (±1.9) mm was demonstrated only by ceftazidime and cefotaxime against *P. aeruginosa*. Ampicillin was relatively inactive against all test strains, giving a ZOI of 11.7 (±0.5) mm and 11.5 (±0.5) mm against *E. coli* and the ESBL producing coliform respectively. The MIC of the methanol extract was lowest for *S. aureus* at 1.25µg/ml, 2.5µg/ml for *E. coli* and ESBL producing coliform and 5µg/ml against *P. aeruginosa*. The activity of the methanol extract of *G. edulis* against *S. aureus*, an ESBL producing coliform and *E. coli* is promising and needs to be studied further.

Keywords: *Gracilaria edulis*, Methanol extracts, Antimicrobial activity.