

Antibacterial activity of the partitioned fractions of endolichenic fungus *Xylaria feejeensis* collected from the mangrove plant *Rhizophora mucronata* in Negombo Lagoon, Sri Lanka

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Endolichenic fungi (ELF) are known for biosynthesizing secondary metabolites with antifungal, cytotoxic, antioxidant and antibacterial activity to protect their lichen against radiation, microbial invasions and harsh surrounding environments. Mangrove plants in Negombo lagoon is a niche for a diverse range of lichens. The ELF, *Xylaria feejeensis* from the lichen, *Graphis librata* which develops on the mangrove plant, *Rhizophora mucronata* in Negombo lagoon was previously isolated and identified by the research group at the University of Kelaniya. The objective of this study was to determine the antibacterial activity of the secondary metabolites of *X. feejeensis*. A pure culture of *X. feejeensis* on potato dextrose agar plates (60) was incubated for 14 days and secondary metabolites were extracted to ethyl acetate by shaking overnight. The ethyl acetate crude extract (5 mg/ml, 100 µL) was subjected to agar well diffusion anti-bacterial assay against *Escherichia coli* (ATCC25922), *Staphylococcus aureus* (ATCC25923) and *Bacillus subtilis* (ATCC6051) with Azithromycin positive control and it showed above 85% inhibition of growth for all three bacteria. Hence the crude extract (8.58 g) was partitioned in hexane, chloroform and 60% methanol in water (v/v) and tested for antibacterial activity. Hexane fraction showed the highest inhibition of growth of *E. coli* with 100% inhibition and chloroform fraction showed the highest inhibition of the growth of *S. aureus* with 88.5% inhibition whereas methanol fraction showed no antibacterial activity. The results suggest that *X. feejeensis* produces secondary metabolites with high antibacterial activity. Further purification of hexane and chloroform fractions may results in antibacterial drug leads.

Keywords: endolichenic fungi, *Xylaria feejeensis* and antibacterial activity

Acknowledgements: This work was supported by the grant of MSTR/TRD/AGR/03/02/07/08 Ministry of Science, Technology and Research.

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