FCT - 51

Exploring bioactive compounds in the endolichenic fungus, *Xylaria feejeensis*, inhabiting the lichen, *Graphis librata*, collected from Negombo lagoon, Sri Lanka

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The accelerating pharmaceutical problem of bacteria growing resistant to existing antibiotics forces the scientific community to search for new antibacterial compounds for antibiotic drug development. Literature reveals that Sri Lankan mangrove inhabiting endolichenic fungal (ELF) population is rich in many such bioactive compounds. Previously isolated and cultured ELF, *Xylaria feejeensis*; from the lichen *Graphis librata* inhabiting in the mangrove plant *Rhizophora mucronata* was cultured on 60 large potato dextrose agar medium containing petri dishes and incubated for 14 days at room temperature. After extracting secondary metabolites to ethyl acetate (EA) the resulted crude extract was tested for its antibacterial and antioxidant activity. EA crude extract showed negligible antioxidant activity in DPPH radical scavenging assay hence this assay was not proceeded further. The activity of crude extract (5 mg/ml) against *Escherichia coli* (ATCC25922), Staphylococcus aureus (ATCC25923) and *Bacillus subtilis* (ATCC6051) was tested using agar well diffusion antibacterial assay. An inhibition zone diameter of 1.9 cm, 2.2 cm, and 2.2 cm against three bacterial strains with Azithromycin positive control (5 mg/ml) 2.2 cm, 2.2 cm and 2.3 cm was observed respectively. By partitioning of EA crude extract resulted two antibacterial active hexane and chloroform fractions and one antibacterial inactive 60% methanol in water fraction. Hexane fraction showed the highest antibacterial activity with inhibition diameter zone of 2.6 cm against *E.coli* with 2.6 cm diameter of inhibition zone for positive control. Further purification of hexane fraction was performed by normal phase column chromatography and 4 fractions were resulted. The highest polar fraction showed 1.4, 2.1 and 1.7 cm diameter inhibition zones of growth of *E.coli*, *S. aureus* and *B. subtilis* comparable with 2.2 cm Azithromycin. The other 3 fractions showed no antibacterial activity against these bacterial strains. Results suggest that further purification of active fraction and structure elucidation might result in new antibiotic lead compounds.

Keywords: Endolichenic fungi, *Xylaria feejeensis*, Negombo lagoon, Antibacterial activity

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