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ANTIBACTERIAL PROPERTIES OF FOLIAR FUNGAL ENDOPHYTES ASSOCIATED WITH SRI LANKAN MANGROVES

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Recent researchers have steered their attention towards plant-based antimicrobial agents to overcome antibiotic resistance and the adverse effects of synthetic antibiotics. Hence, mangrove fungal endophytes, the occupiers of internal plant tissues, and their secondary metabolites are being vastly studied. However, the antimicrobial properties of Sri Lankan mangrove fungal endophytes are relatively unexplored. The current investigation aims to detect the inhibitory potential of the foliar fungal endophytes isolated from seven mangrove species from the Western Province of Sri Lanka, *viz.*, *Avicennia marina*, *Bruguiera gymnorrhiza*, *Nypa fruiticans*, *Rhizophora mucronata*, *Rhizophora mangle*, *Sonneratia alba* and *Sonneratia caseolaris*. Pure fungal isolates obtained by the culture-dependent method were subjected to solvent extraction using ethyl acetate. The antimicrobial screening was performed using the well diffusion assay against two microorganisms: *Escherichia coli* (ATCC 25922), a Gram-negative bacterium and *Staphylococcus aureus* (ATCC 25923), a Gram-positive bacterium, and diameters of the inhibition zones were measured. The highest number of isolates (3) were obtained from *S. alba* and *S. caseolaris*. *Aspergillus tamarii, Aspergillus terreus, Aspergillus flavus, Aspergillus niger, Penicillium citrinum, Penicillium notatum* and *Penicillium verruculosum* were isolated from certain mangroves and categorised based on their macroscopic and microscopic characteristics. Most of the isolates were inhibitory against both the test organisms except *A. flavus* isolated from *R. mangle*. The highest inhibitory action was exhibited by *P. notatum* of *N. fruiticans* against *S. aureus* (22±2.5 mm) and *E. coli* (19.5±2.5 mm). The least potency was exhibited by *A. terreus* (7±1.1 mm) isolated from *S. alba* against both test organisms. A greater inhibitory action was exhibited towards *S. aureus* than *E. coli* except for the positive control, *P. citrinum* isolated from *R. mucronata* and *S. alba*. Other isolates exhibited low to moderate activities. Hence, it is evident that the foliar endophytes are capable of eliciting bacteriostatic action against certain bacterium and will aid in the discovery of non-synthetic antibiotics.

Keywords: Antimicrobial agents, Ethyl acetate extraction, Well diffusion