A Comparison of Richness, Diversity and Antibacterial Producing Capacity of Endophytic Fungi of *Cyperus iria* from Three Geographical Locations in Sri Lanka

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Endophytic fungi living inside healthy tissues of plants are a well-established source of various biologically active secondary metabolites. Although sedges are known to harbor numerous endophytic fungi, endophytes inhabiting sedges of the family Cyperaceae have been sparsely investigated. Therefore, the current study was designed to investigate the endophytic fungal richness, diversity and the antibacterial producing capacity, of the *Cyperus iria* from three geographically distinct locations in Sri Lanka. Endophytic fungi were isolated from surface sterilized aerial and root segments of healthy *C. iria* collected from Badulla, Matale and Colombo Districts and crude ethyl acetate fungal extracts were tested for antibacterial activity against four selected bacteria; *Staphylococcus aureus*, *Bacillus cereus*, *Pseudomonas aeruginosa* and *Escherichia coli* at 400 µg/disc concentration using agar disc diffusion method where Gentamycin (10 µg/disc) and methanol were used as the positive and negative controls, respectively. Isolated endophytic fungi were identified using molecular techniques. Endophytic fungal richness of *C. iria* from the three locations namely Badulla, Matale and Colombo were 17, 34 and 23 respectively and 12, 23 and 13 fungi were isolated from aerial parts while 05, 11 and 10 fungi were isolated from root segments. Accordingly, more fungi were isolated from aerial parts than from roots. Among the isolated fungi *Fusarium*, *Curvularia*, *Trichoderma*, *Penicillium* species were the most abundant. With respect to antibacterial activity, all endophytic fungi isolated from Badulla plants, 85 % from Matale plants and 82 % from Colombo plants showed activity against at least one bacterium tested. Also irrespective of the location of the plant most fungal extracts showed activity against the Gram positive than the Gram negative bacteria. In conclusion, endophytic fungi of *C. iria* from all three locations showed a high fungal richness and a majority showed antibacterial activity.

Keywords: Endophytic fungi, Antibacterial activity, *Cyperus iria*, Gram positive

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