

Antibacterial Activities of Endophytic Fungi of *Cyperus iria* Collected from Matale District

J.M.N.M. Jayasundara², P.B. Ratnaweera^{1*} and E.D. de Silva²

¹Department of Science and Technology, Uva Wellassa University, Badulla, Sri Lanka

²Institute of Biochemistry, Molecular Biology, Biotechnology, University of Colombo, Colombo 03, Sri Lanka

Antibiotic resistance of bacteria has become an ongoing severe human health concern which requires extensive research priority. Endophytic fungi of *Cyperaceae* family plants are considered as a potential source for isolating bioactive compounds. Hence, the objective of the current study was to isolate endophytic fungi of *Cyperus iria* and investigate the antibacterial activities of the crude fungal extracts. Healthy *C. iria* plants were collected from Weragama in Matale district and endophytic fungi were isolated from the surface sterilized roots and aerial parts using five types of media (SYP, YPD, ME, PDA and MEA) enriched with antibiotics. Each pure fungal culture was sub cultured in ten PDA dishes, incubated close to sporulation, extracted into ethyl acetate, filtered and resulting crude extracts were obtained. The crude extracts were tested for antibacterial activity using agar disc diffusion assay against four bacteria, *Staphylococcus aureus* (ATCC 25928), *Bacillus cereus* (ATCC 11718), *Pseudomonas aeruginosa* (ATCC 9027) and *Escherichia coli* (ATCC 35218) at 400 µg disc⁻¹ concentration where Gentamycin (10 µg disc⁻¹) and methanol (10 IA disc⁻¹) were used as the positive and negative controls, respectively. Total 34 morphologically distinct putative endophytic fungi, 23 from aerial parts and 11 from roots, were isolated. Thirteen fungal extracts exhibited antibacterial activity against *S. aureus*, 24 against *B. cereus*, 12 against *P. aeruginosa* and one against *E. coli*. Among all, 29 fungi were active against at least one bacterium tested while five fungi were inactive to all. Activity of three extracts against *B. cereus*, 12 against *P. aeruginosa*, and one against *E. coli* was similar to the activity of the positive control. Fifteen extracts against *B. cereus*, 27 against *P. aeruginosa*, 33 against *E. coli* and 21 against *S. aureus* showed significant ($p < 0.05$) antibacterial activities compared to the negative control. In conclusion, *C. iria* from Matale harbors a lot of endophytic fungi, where several are capable of producing bioactive secondary metabolites with selective antibacterial properties.

Keywords: Bioactive, Antibacterial, Endophytic fungi, *Staphylococcus aureus*, *Pseudomonas aeruginosa*

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