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Antibacterial activity of endophytic fungi isolated from two *Cyperus* species, *C. bulbosus* and *C. alternifolius*

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Endophytic fungi isolated from Cyperaceae family plants are known to assist the host against biotic stresses including microbial attacks. Accordingly, endophytic fungi of *Cyperus* species are a judicious target for investigating their ability to produce antimicrobial agents. The current study was designed to isolate the endophytic fungi of two *Cyperus* species and evaluate their antibacterial producing potential. For the isolation of endophytic fungi, the leaves and roots of two healthy plants, *C. bulbosus* and *C. alternifolius*, were surface sterilized using standard procedure and the plant materials were next cut into small segments and were placed on five types of media, potato dextrose agar (PDA), malt agar extract (ME), malt peptone dextrose agar extract (MEA), starch yeast peptone agar extract (SYP) and yeast peptone dextrose agar extract (YPD). Fungi emerging from the host tissues were transferred onto new PDA dishes and sub culturing was done until pure cultures were obtained. After incubating for 2-3 weeks each fungal culture was extracted with ethyl acetate and the extracts were tested against *Staphylococcus aureus*, *Bacillus cereus*, *Pseudomonas aeruginosa*, *Escherichia coli* and *Salmonella enterica* at 400, 200,100 µg/disc using agar disc diffusion assay.

Eleven and ten endophytic fungi were isolated from *C. bulbosus* and *C. alternifolius* respectively. Nine endophytes were isolated using YPD medium while five, four, three and two endophytic fungi were isolated from PDA, SYP, MEA and ME media respectively. At 400 µg/disc concentration, of the isolated endophytic fungi, nine from *C. bulbosus* and eight from *C. alternifolius* inhibited at least one bacterium tested. At this concentration, three extracts (02 from *C. alternifolius* and 01 from *C. bulbosus*) were active to both Gram positive and Gram negative bacteria. Furthermore, 11 and 10 endophytic fungal extracts showed activity against Gram positive *S. aureus* and *B. cereus* while 09, 05 and 06 showed activity against *P. aeruginosa*, *E. coli* and *S. enterica* respectively. At 200 and 100 µg/disc concentrations, eight endophytic fungal extracts were active for the tested pathogens. This screening revealed that *Cyperus* spp. are hosts to a number of endophytic fungi producing antimicrobial agents and that further research may result in potential antimicrobial drug leads.

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