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Bioactivity of some endophytic fungi in *Acalypha indica*

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Background: Secondary metabolites of endophytic fungi are vital source of bioactive compounds. *Acalypha indica* is a promising medicinal herb used in traditional medicine with wide variety of endophytic fungi.

Objectives: This study was focused on bioactivity of fungal extracts obtained from four endophytic fungi isolated from *Acalypha indica*.

Methods: Surface sterilized parts of leaf, flower and petiole of the plant were cultured on Potato Dextrose Agar. Four types of fungi were isolated JK/AI/C, JK/AI/D, JK/AI/G and JK/AI/K. They were cultured large scale on Potato Dextrose Broth for 21 days and it was extracted with ethyl acetate (EtOAc). Mycelia were extracted sequentially with EtOAc and methanol (MeOH). The two EtOAc extracts were combined after analysing patterns of their Thin Layer Chromatography. Crude extracts were screened for antifungal activity against *Cladosporium cladosporioides*, phytotoxicity activity against lettuce seed germination, cytotoxicity activity against brine shrimps, antioxidant activity against DPPH (2,2'-diphenyl-1-picrylhydrazyl) and α -amylase enzyme inhibitory activity.

Results: EtOAc extracts of JK/AI/D (73.29% shoot inhibition; 68.5% root inhibition) and JK/AI/G (65.47% shoot inhibition; 95.81% root inhibition) gave good phytotoxic effects than other extracts. EtOAc extracts of JK/AI/K and JK/AI/G resulted in 93.33% and 96.67% of Brine shrimp mortality respectively. The EtOAc extracts of JK/AI/C, JK/AI/D and JK/AI/G showed antifungal activity. The EtOAc extracts of JK/AI/G, JK/AI/C and JK/AI/D gave IC_{50} of 2.14 mg L⁻¹, 5.12 mg L⁻¹ and 14.41 mg L⁻¹ against DPPH radical scavenging assay respectively. The MeOH extracts of JK/AI/K and JK/AI/C gave IC_{50} of 40.42 mg L⁻¹ and 52.04 mg L⁻¹ against DPPH radical scavenging assay respectively. EtOAc extract of JK/AI/G showed inhibition of α -amylase enzyme with IC_{50} value of 441.15mg L⁻¹ and MeOH extract of JK/AI/C with IC_{50} value of 100.56mg L⁻¹. Molecular level identification of these four fungi and isolation of pure compounds from these extracts are in progress.

Conclusion: The extracts of endophytes of *A. indica* is a promising source for isolation of bioactive compounds.

Keywords: *Acalypha indica*, bioactivity, endophytic fungi