PO-2

Bioactive Extracts from some Fungi of Importance in Agriculture

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Fungi are a rich source of secondary metabolites. The discovery of penicillin by Sir Alexander Fleming (1928) produced by the fungus, *Penicillium notatum*, is one of the important discoveries of the 20th century. The study of secondary metabolites originating from fungi is now a rapidly expanding field of research in the search for novel bioactive compounds. The current study was directed to the isolation of environmental friendly bioactive compounds originating from fungi of importance in agriculture.

Fusarium oxysporum, Trichoderma viride, Cercospora canescens; Macrophomina phaseolina, Fusarium solani and *Colletotrichum* sp., were isolated from diseased banana stems, onion bulbs, sesame stems, guava fruits and potato tubers. Fungi were identified by detailed analysis of morphological characters. Pure cultures of each fungus were inoculated in to different types of solid media, such as rice and potato, in Erlenmeyer flasks and incubated for 4 weeks. All media were crushed, sequentially extracted with *n*-hexane, EtOAc and MeOH using a sonicator and solvents were evaporated under vacuum. All extracts were subjected to the cytotoxicity bioassay – against brine shrimp (*Artemia salina*) lethality, phytotoxicity bioassay against lettuce (*Lactuca sativa*) and antifungal activity bioassay - against *Cladosporium cladosporioides.*

EtOAc extracts from rice and potato media of *Cercospora canescens*, *Trichoderma viride* and *Fusarium oxysporum* showed significant cytotoxic activity. Both n-hexane and EtOAc extracts of *Fusarium solani* and *Colletotrichum sp.* from potato medium showed cytotoxic activity in the brine shrimp lethality assay. EtOAc extracts of both *Cercospora canescens* and *Trichoderma viride* from rice medium showed root and shoot inhibition while *n*-hexane extracts of *Colletotrichum sp.* obtained from potato medium showed significant root inhibition. EtOAc and MeOH extracts of *Cercospora canescens* obtained from rice media and EtOAc extracts of *Macrophomina phaseolina*, *Trichoderma viride* in rice media showed antifungal activity against *Cladosporium cladosporioides.* Results from these bioassays indicate that these fungal extracts may lead to the isolation of environmental friendly bioactive compounds.