# Role of Endophytic Fungi in Combating Metabolic Disorders

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Non communicable diseases are the major cause for deaths globally contribution up to 71% from the death rate. Diabetes is a front label disease in this category. Antioxidants also play a major role in combating diabetes. Damaged β cells of pancreas decrease the insulin production in diabetic patients. Antioxidants help to repair damaged β cells. In continuation of our studies on chemistry and bioactivity of fungi associated with edible fruits of Sri Lanka, the secondary metabolites produced by four endophytic fungi isolated from two edible fruits of Sri Lanka, *Phyllanthus acidus* (F: Phyllanthaceae) and *Elaeocarpus serratus (*F: Elaeocarpaceae) were studied. The fungi isolated were *Biscogniauxia capnodes* and *Daldinia eschcholtzii* (from *P. acidus*); and *Neofusicoccum parvum* and *Neopestalotiopsis saprophytica* (from *E. serratus)* and tested for their bioactivity.

Pure cultures of each fungus were fermented (21 days) in Potato Dextrose Broth (PDB) media and the fungal broth was extracted with ethyl acetate (EtOAc) while the mycelium was sequentially extracted with EtOAc followed by methanol (MeOH). EtOAc extracts of the broth and mycelium were combined together since similar patterns of the TLC analysis of both extracts. EtOAc extracts were found to be the most active extracts for DPPH radical scavenging antioxidant activity, phytotoxicity against *Lactuca sativa* seed germination and antifungal activity against *Cladosporium cladosporioides* studies. *B. capnodes D. eschcholtzii* and *N. parvum* EtOAc extracts showed very high antioxidant activity (50% inhibition between 50- 125 ppm) and antifungal activity in TLC bioautographic method. EtOAc extracts were chromatographed over silica gel, Sephadex LH-20 and PTLC respectively, to furnish a total of 23 compounds. The structures of these compounds were determined by analysis of NMR data and comparison with reported data. Some of these compounds exhibited antifungal activity against *C. cladosporioides* and antioxidant activity. This is the first report of each fungus as an endophyte from the host fruit as well as the first report of antifungal activity.