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SECONDARY METABOLITES FROM AN ENDOPHYTIC FUNGUS ASSOCIATED WITH *CENTELLA ASIATICA* AND THEIR PHYTOTOXICITY

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Weeds are a growing problem in agriculture, and synthetic weedicides negatively impact environmental health. Endophytic fungi are studied as an alternative source of bioactive metabolites. *Centella asiatica* (Gotukola) of Family Apiaceae is an important medicinal herb known to produce many bioactive compounds. This study was conducted to isolate and investigate the phytotoxicity of secondary metabolites of an endophytic fungus associated with *C. asiatica*. Endophytic fungi were isolated from triple sterilized leaves of *C. asiatica*, collected from the Central Province of Sri Lanka. The pure fungus was cultured on a large scale in Potato Dextrose Broth for five weeks with shaking at room temperature. The broth was then filtered and extracted in Ethyl acetate (EtOAc). Mycelium was extracted in EtOAc and Methanol. Chromatographic separation of combined EtOAc extract of broth and mycelium furnished four compounds austdiol (KCCA-3), 4-(hydroxymethyl)-3-methoxy-5-methylcyclopent-2-enone (KCCA-4), eugentine (KCCA-6), 6-methoxy methyl eugenol (KCCA-8) and their structures were elucidated by detail analysis of Nuclear Magnetic Resonance (NMR). The endophytic fungus was tentatively identified as *Muyocopron laterale* by amplification of ITS regions of rDNA gene. Further, confirmation of the identity of endophytes by other gene regions is in progress. Pure compounds were screened for phytotoxicity by lettuce (*Lactuca sativa*) seed germination inhibition assay and leaf puncture assay using two-week-old cucumber (*Cucumis sativus*) leaves. Compound KCAA-3 showed root and shoot inhibition at IC₅₀ 5.38 mg l⁻¹ and IC₅₀ 805.19 mg l⁻¹, respectively. KCCA-4 and KCCA-8 were found to be with low activity. In leaf puncture assay, KCCA-3 and KCAA-4 resulted in necrotic symptoms after 48 h of treatment and increased by 72 h in 1,000 mg l⁻¹ to 31.25 mg l⁻¹ concentrations, where necrosis was higher in KCCA-3 in all concentrations than KCCA-4. Results suggest that this endophyte is a source of phytotoxic compounds which could further be tested on weeds to identify their potential for developing eco-friendly weedicides.

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Keywords: *Centella asiatica*, Eco-friendly weedicides, Endophytic fungi, Phytotoxicity