

A Preliminary Study Reveals the Hidden Freshwater Fungal Diversity in Anuradhapura and Ratnapura Districts in Sri Lanka

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Sri Lanka is a biodiversity hotspot and a significant contributor to global biodiversity. It is estimated that Sri Lanka is home to approximately 34,000 fungal species, with only around c. 3,000 of them currently documented, leaving approximately 31,000 undescribed. Notably, the documentation of fungal diversity in Sri Lanka's freshwater ecosystems has been inadequate. The main objective of this study was to reveal the hidden fungal diversity in freshwater ecosystems in Anuradhapura and Ratnapura districts. Accordingly, fungal samples from submerged dead plant specimens and live aquatic plants were collected in fifteen and ten freshwater habitats (lentic and lotic) in Anuradhapura and Ratnapura districts, respectively. Fungal isolation was conducted using single spore isolation and direct isolation techniques. Approximately 120 living fungal cultures were maintained in the culture collection of Rajarata University of Sri Lanka on PDA media and sterilized distilled water at -4 °C. Identification was carried out based on morphological characteristics such as macro morphology, micromorphology, and colony characteristics as well as molecular characterization. Preliminary molecular identification was conducted by using ITS (primers: ITS1F/ITS4) loci to identify the nine fungal genera including, *Aureobasidium*, *Coniochaeta*, *Hypoxylon*, *Lentinus*, *Lasiodiplodia*, *Neopestalotiopsis*, *Neurospora*, *Rhytidhysterion*, and *Trichoderma*. Moreover, LSU (primers: LROR/LR5), SSU (primers: NS1/NS4), and RPB2 (primers: fRPB2-5F/fRPB2-7Cr) loci will be utilized to confirm the further accuracy of the identification. Consequently, this study will contribute to the identification of existing fungal genera, their species diversity, novel fungal taxa, and ingoldian fungi (or freshwater fungi *sensu stricto*) within the hidden fungal diversity of freshwater ecosystems in Sri Lanka.

Keywords: *Biodiversity, Culture collection, Ingoldian fungi, Lentic and lotic freshwater habitats, Morphological and molecular identification*