

RESEARCH ARTICLE

Molecular phylogeny and bioprospecting of Endolichenic Fungi (ELF) inhabiting in the lichens collected from a mangrove ecosystem in Sri Lanka

Kasun Maduranga¹, Renuka Nilmini Attanayake², Sinthujah Santhirasegaram¹, Gothamie Weerakoon^{3*}, Priyani Ashoka Paranagama^{1*}

1 Department of Chemistry, University of Kelaniya, Kelaniya, Sri Lanka, **2** Department of Botany, University of Kelaniya, Kelaniya, Sri Lanka, **3** Integrative Research Centre, Department of Science & Education, Field Museum of Natural History, Chicago, United States of America

✉ Current address: Algae, Fungi and Plants Division, Department of Life Sciences, The Natural History Museum, London, United Kingdom

* priyani@kln.ac.lk



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Abstract

Endolichenic fungi (ELF) are unexplored group of organisms as a source for the production of bioactive secondary metabolites with radical scavenging activity, antilipase and amylase inhibitory activities. Endolichenic fungi in lichens collected from mangrove or mangrove associated plants are least known for their fungal diversity and potential to produce bioactive compounds. A total of 171 ELF strains were isolated from the lichens collected from mangrove and mangrove associated plants in Puttalam lagoon. Out of this collection, 70 isolates were identified using rDNA-ITS region sequence homology to the GenBank accessions and a phylogenetic analysis was performed. Commonly isolated genera of ELF from lichens were *Aspergillus*, *Byssochlamys*, *Talaromyces*, *Diaporthe*, *Phomopsis*, *Endomelanconiopsis*, *Schizophyllum*, *Cerrena*, *Trichoderma*, *Xylaria*, *Hypoxylon*, *Daldinia*, *Preussia*, *Sordaria*, *Neurospora*, and *Lasiodiplodia*. In the present study, the effectiveness of ethyl acetate extracts of the ELF isolates were investigated against antioxidant activity, antilipase activity and α -amylase inhibition activity in *in-vitro* conditions. The results revealed that the extracts of *Daldinia eschscholtzii*, *Diaporthe musigena* and *Sordaria* sp. had the highest radical scavenging activity with smaller IC₅₀ values (25 μ g/mL to 31 μ g/mL) compared to the IC₅₀ values of BHT (76.50 \pm 1.47 μ g/mL). Antilipase assay revealed that 13 extracts from ELF showed promising antiobesity activity ranged between 25% to 40%. Amylase inhibitory assay indicated that the test extracts do not contain antidiabetic secondary metabolites.

Introduction

Natural product research is moving forward impressively and interest in the exploration of microbial diversity has been encouraged by the fact that microbes serve as hidden treasures in