

YSCMR 2021

Proceedings of the
**Young Scientists' Conference on
Multidisciplinary Research - 2021**

Virtual International Conference

21st October 2021

“Multidisciplinary Research for Tomorrow’s Challenges”



ISSN 2815-0260

Proceedings of the Young Scientists' Conference on Multidisciplinary Research - 2021

21st October 2021

The material in this publication has been supplied by the authors, and only minor copy editing has been done by YSCMR 2021 editorial committee. The views expressed in the abstracts in this publication remain the responsibility of the named authors and do not necessarily reflect those of the National Institute of Fundamental Studies (NIFS) or the NIFS-Young Scientists' Association.

This document is made freely available on the public internet, permitting any users to read, download, copy, distribute, print, search, or link to the full texts of research articles, crawl them for indexing, pass them as data to software, or use them for any other lawful purpose, without financial, legal, or technical barriers other than those inseparable from gaining access to the internet itself. The copyright is shared by authors and YSCMR 2021 to control over the integrity of their work and the right to be properly acknowledged and cited.

Published by:

Young Scientists' Association (NIFS-YSA),
National Institute of Fundamental Studies,
Hanthana Road, Kandy,
Sri Lanka

www.nifs.ac.lk

Tel: +94 (0) 812 232 002

Email: ysa@nifs.ac.lk

Cover page design & Page setup

Buddhika Karunaratne, Mahesh Senarathna, Hiran Kankanamge

Phytotoxic properties of an endophytic fungus from *Centella asiatica*

K. Samarakoon, N.K.B Adikaram, L. Jayasinghe*

National Institute of Fundamental Studies, Kandy, Sri Lanka

*lalith.ja@nifs.ac.lk

Background: Endophytic fungi are recognized as a new source of bioactive substances with their capacity to produce a wide variety of enzymes and secondary metabolites with various biological activities.

Objectives: This study investigated phytotoxic properties of an endophytic fungus isolated from *Centella asiatica* (Apiaceae).

Methods: Triple sterilized leaf segments of *Centella asiatica* were placed on potato dextrose agar (PDA) and incubated in the dark to isolate an endophytic fungus. Large scale culturing of the pure fungal strain was carried out in potato dextrose broth (PDB) medium for 5 weeks. Culture broth was filtered, and broth and mycelium were separately extracted with EtOAc. Three phytotoxicity assays were conducted: freshly filtered broth was sprayed on 3 weeks old cucumber (*Cucumis sativus*) plants and the plants were observed for 7 days; two EtOAc extracts were combined based on thin-layer chromatography, and the combined extract, after concentrating, was screened for phytotoxicity using lettuce (*Lactuca sativa*) seed germination inhibition assay and leaf puncture assay using 2 weeks old cucumber leaves.

Results: Broth spraying assay showed an increase in wilting symptoms of leaves from day 1 to day 7. No wilting symptoms were observed in plants sprayed with un-inoculated PDB medium. In leaf puncture assay, leaf necrosis was observed after 24 h with increased necrosis by 72 h with the EtOAc extract at 1000 mg l⁻¹. In lettuce seed germination assay, EtOAc extract showed ~100% root inhibition at 1000, 500 and 250 mg l⁻¹ and IC₅₀ values of 23.7 and 55.8 mg l⁻¹ for root and shoot inhibition, respectively. Molecular identification of the fungus and isolation of pure compounds are in progress.

Conclusion: Since synthetic weedicides lead to major environmental and health issues, results of the present study suggest that secondary metabolites from this endophytic fungus can lead to the discovery of eco-friendly weedicides.

Keywords: *Centella asiatica*, Phytotoxicity, Secondary metabolites

Acknowledgement: Financial assistance from National Research Council (NRC/EWC/18-03) is gratefully acknowledged.