I hereby certify that this is the revised version of the thesis entitled "MOLECULAR CHARACTERIZATION AND ANTICANCER ACTIVITY OF FUNGUS *SCLEROTIUM STIPITATUM* BERK. *ET.* CURR. (NILAMANGA)" submitted by Alina K Sebastian under my guidance after incorporating the necessary corrections or suggestions made by the adjudicators. The content of the CD is the same as in the hard copy.

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24. 05. 2022

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CERTIFICATE

This is to certify that the thesis entitled **"Molecular Characterization and Anticancer Activity of Fungus *Sclerotium stipitatum* Berk. *et.* Curr. (Nilamanga)"** is an authentic record of research work carried out by **Mrs. Alina K Sebastian** under my supervision in fulfilment of the requirement for the degree of Doctor of Philosophy, in Botany of University of Calicut. The results embodied in this thesis have not been included in any other thesis submitted previously for the award of any degree or diploma of any other university or institution. Also certified that the contents of the thesis have been checked using anti-plagiarism data base and no unacceptable similarity was found through the software check.

Thrissur
20 December 2021

Dr. Anto P V
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DECLARATION

I, Alina K Sebastian, hereby declare that the thesis entitled "Molecular Characterization and Anticancer Activity of Fungus *Sclerotium stipitatum* Berk. *et*. Curr. (Nilamanga)" submitted to the University of Calicut, for the award of the degree of Doctor of Philosophy in Botany is a bona fide record of the original research work carried out by me under the supervision and guidance of Dr Anto P.V, Assistant professor, Department of Botany, St. Thomas' College (autonomous), Thrissur and that it has not been submitted earlier either in part or full for the award of any degree/diploma to any candidate of any University.

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20.12.2021

Alina K Sebastian

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Alina K Sebastian

Dedicated to my beloved family

PREFACE

Cancer research is progressing toward the identification of anticancer agents from natural sources that may be employed as medicines or as supplements to existing treatment modalities. This is promoted since, as compared to standard chemotherapeutic drugs, they have less adverse effects.

The fungus selected for present study is *S. stipitatum*, a very rare termite fungus that can be found only from old undisturbed termite nests. It has great significance among tribal people because of its medicinal properties. They used to preserve this fungus to treat various diseases like jaundice, cholera, stomach pain, arthritis etc. But due to its rare occurrence and difficulty in locating them only limited studies have done in this species. The specialty of this fungus includes its exclusive habitat, total lack of spores and its inability to survive in an open environment. It becomes dead within a day when it encounters the open environment.

The current study elucidates the molecular characterization of *S. stipitatum*, anticancer potential of the ethanol extract of the drug, and the ability for synthesis of nanoparticles. The chemical screening reveals many bioactive compounds with excellent medicinal properties. Moreover, the natural product from study material can act as a multivalent drug.