Characterization of an unexplored lichen *Hypotrachyna infirma*(Kurok.) Hale and its selected endolichenic fungi for biological properties

Thesis submitted to the Bharathiar University in partial fulfilment for the award of the degree of

DOCTOR OF PHILOSOPHY IN BOTANY

By Mrs. R. GOKILAVANI, M.Sc.

Under the guidance of Dr. H. REHANA BANU, M.Sc., M.Phil., Ph.D.

Assistant Professor, Department of Botany





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I Mrs. R. GOKILAVANI hereby declare that the thesis, entitled "CHARACTERIZATION OF AN UNEXPLORED LICHEN HYPOTRACHYNA INFIRMA (KUROK.) HALE AND ITS SELECTED ENDOLICHENIC FUNGI FOR BIOLOGICAL PROPERTIES" submitted to the Bharathiar University, in partial fulfilment of the requirements for the award of the Degree of DOCTOR OF PHILOSOPHY IN BOTANY is a record of original work done by me during the period 2018 - 2022 under the supervision and guidance of Dr. (Mrs.) H. REHANA BANU, M.Sc., M.Phil., Ph.D. Assistant Professor, Department of Botany, PSGR Krishnammal College for Women, Coimbatore and it has not formed the basis for the award of any Degree /Diploma / Associateship /Fellowship or other similar title to any candidate of any university.

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This is to certify that Ph.D candidate Mrs.R.Gokilavani working under my supervision has published three research articles and one review article in the standard journals named.

- 1. **Plant archives**. Vol. No 20(2): 3777-3783, 2020 "Biological properties of lichens-A review by R.Gokilavani, H.Rehana banu, (UGC approved journal)
- 2. **Asian Journal of Phytomedicine and Clinical Research**. Vol. No 8(2): 95-103, 2020. "GC-MS analysis of the methanolic extract of *Hypotrachyna infirma* (Kurok.) Hale" by R.Gokilavani, H.Rehana banu (UGC approved journal)
- 3. **International Journal of Pharmacy and Pharmaceutical Sciences.** Vol. No 13(8): 0975-1491, 2021. "Phytochemical studies of endolichenic fungi isolated from *Hypotrachyna infirma* (Kurok.) Hale" by R.Gokilavani, H.Rehana banu (UGC approved Journal).
- 4. **Research Journal of Biotechnology**. "GC-MS analysis of endolichenic fungus isolated from *Hypotrachyna infirma* (kurok.) Hale" by R.Gokilavani, H.Rehana banu (SCOPUS)

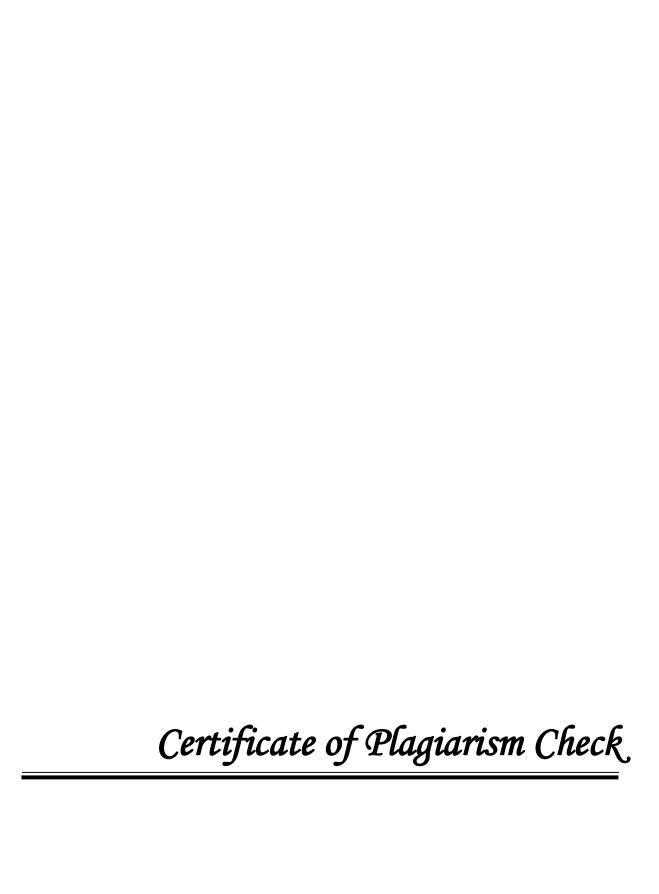
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LIST OF UNITS

% - Percentage

°C - Degree celsius

Cm - Centimetre

ft - Feet

gm - Gram

g/l - Gram per litre

km - Kilometer

mm - Millimeter

ml - Millilitre

mg/ml - Milligram per millilitre

ml/min - Millilitre per minute

mM - Milli Molar

nm - Nanometer

pH - Potential of Hydrogen

gm/L - Gram per litre

rpm - Rotation per minute

μl - Microlitre

μg/ml - Microgram per microlitre

μg - Microgram

List of Abbreviations

LIST OF ABBREVIATIONS

ANOVA - Analysis of Variance

BSS - Balanced Salt Solution

Cd - Critical Difference

DMSO - Dimethyl sulfoxide DPPH – 2,2 -diphenyl-1-picrylhydrazyl

ELISA - Enzyme- linked immunoassay

EDTA - Ethylene diamine tetra acetic acid

FRAP - Ferric reducing antioxidant power

FTIR - Fourier transform infrared spectroscopy

GCMS - Gas Chromatography and Mass Spectrometry

HCl - Hydrochloric acid

HepG2 - Hepatocellular carcinoma

H₂O₂ - Hydrogen Peroxide

MTT - 3-(4,5-dimethylthiazol-2-yl)-2,5-diphenyltetrazolium bromide)

NAOH - Sodium hydroxide

NaCl - Sodium Chloride

NaNO₂ - Sodium Nitrite

NCCS - National Center for Cell Sciences

pH - Potential of Hydrogen

S.E.D - Standard Error of the Difference

S.E.M - Standard Error of the Mean

UV - Ultraviolet

WHO - World Health Organization