

**A STUDY ON PHARMACOLOGICAL ACTIVITIES, NUTRITIONAL VALUE AND  
DNA BARCODING OF SELECTED ETHNOMEDICINAL PLANTS FROM  
GOALPARA DISTRICT, ASSAM**



**A thesis submitted to Bodoland University for the degree of Doctor of  
Philosophy in Biotechnology in the Faculty of Science and Technology, 2024**

**BY**

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## **DECLARATION**

I, Seema Khakhalary, do hereby declare that the thesis entitled “**A Study On Pharmacological Activities, Nutritional Value and DNA Barcoding of Selected Ethno Medicinal Plants from Goalpara District, Assam,**” is the original research work done by me in design and execution, that all material contained herein has been duly acknowledged, and that the thesis hereby submitted to Bodoland University for the degree of Doctor of Philosophy in Biotechnology has not been previously by me for a degree at this or any other University.

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### **CERTIFICATE**

This is to certify that the thesis work entitled, “**A Study on Pharmacological Activities, Nutritional Value and DNA Barcoding of Selected Ethno Medicinal Plants from Goalpara District, Assam,**” submitted by Seema Khakhalary (FINAL.BIO00212 of 2019-2020) in partial fulfillment of the requirement for the degree of Doctor of Philosophy in Biotechnology is a record of bonafide work carried out by her under my supervision and guidance.

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## **LIST OF ABBREVIATIONS**

AIDS	-	Acquired Immune Deficiency Syndrome
AO/Et-Br	-	Acridine orange/Ethidium bromide
AOAC	-	Association of Official Analytical Chemists
BC	-	Before Christ
BSI	-	Botanical Society of India
BLAST	-	Basic Local Alignment Search Tool
CTAB	-	Cetyl Trimethyl Ammonium Bromide
CTM	-	Chinese Traditional Medicine
CuSO <sub>4</sub>	-	Copper Sulphate
dNTP	-	Deoxynucleoside triphosphates
DMSO	-	Dimethyl sulphoxide
DNA	-	Deoxyribonucleic acid
EAA	-	Essential Amino Acid
EDTA	-	Ethylenediamine tetra acetic acid
FACS	-	Flourescence activated cell sorting
FAO	-	Food and Agriculture Organization
FBS	-	Fetal Bovine Serum
V-FITC	-	Fluorescein Isothiocyanate
FRAP	-	Ferric Reducing Antioxidant Power Assay
FT-IR	-	Fourier Transformed Infrared Spectroscopy
GA	-	Gallic Acid
GCMS	-	Gas Chromatography Mass Spectrometry
HCl	-	Hydrochloric Acid
HIV	-	Human Immuno Deficiency Virus
H <sub>2</sub> SO <sub>4</sub>	-	Sulfuric Acid
H <sub>2</sub> O <sub>2</sub>	-	Hydrogen Peroxide
HNO <sub>3</sub>	-	Nitric Acid
IC <sub>50</sub>	-	Inhibitory Concentration
ICP-OES	-	Inductively Coupled Plasma-Optical Emission Spectrometry

ISSR	-	Inter-simple sequence repeats
ITS	-	Internal transcribed spacer
K <sub>2</sub> SO <sub>4</sub>	-	Potassium Sulphate
KMnO <sub>4</sub>	-	Potassium Permanganate
M	-	Molar
MEGA	-	Molecular Evolutionary Genetics
MTT	-	3-[4, 5-dimethylthiazol-2-yl]-2, 5 diphenyl tetrazolium bromide)
Ng	-	nanogram
NaCl	-	Sodium Chloride
NaOH	-	Sodium Hydroxide
NCBI	-	National Centre for Biotechnology Information
NEAA	-	Non-Essential Amino Acid
NER	-	Northeastern Region
N <sub>2</sub>	-	Nitrogen
NIST	-	National Institute of Standard and Technology
PCR	-	Polymerase Chain Reaction
PBS	-	Phosphate Buffered Saline
PI	-	Propidium Iodide
RAPD	-	Random Amplified Polymorphic DNA
rbcL	-	Ribulose-bisphosphate carboxylase
RBC	-	Red Blood Corpuscles
RDA	-	Recommended dietary allowances
SD	-	Standard Deviation
TCM	-	Traditional Chinese Medicine
TFC	-	Total flavonoid content
UV-VIS	-	Ultra Violet Visible
WBC	-	White Blood Corpuscles
WHO	-	World Health Organisation

