

*Dedicated to my beloved Parents  
and my entire family*

## **Declaration by the candidate**

I hereby declare that the thesis entitled “**Studies on crude venom of Indian green pit vipers and characterization of a haemostatically active protein from *Trimeresurus erythrurus* venom**” submitted to Department of Molecular Biology and Biotechnology, Tezpur University, School of Sciences for the award of the **Doctor of Philosophy** is a record of original research work carried out by me. Further, I declare that no part of this work has been previously reproduced for the award of any other degree, from any University or Institute or other organization.

**Date: 18-09-2023**

**Place: Tezpur**



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### Certificate of the Supervisor

This is to certify that the thesis entitled “**Studies on crude venom of Indian green pit vipers and characterization of a haemostatically active protein from *Trimeresurus erythrurus* venom**” submitted to the School of Sciences, Tezpur University in part fulfillment for the award of the degree of Doctor of Philosophy in Molecular Biology and Biotechnology is a record of original research work carried out by **Ms. Susmita Thakur** under my supervision and guidance.

All help received by her from various sources have been duly acknowledged. No part of this thesis has been submitted elsewhere for award of any other degree.

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## List of symbols & Abbreviations

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%	Percentage
µg	Micro gram
µl	Micro litre
µM	Micro molar
°C	Degree Celcius
5-NU	5'-nucleotidases
Å	Angstrom
ADP	Adenosine Diphosphate
AgNO <sub>3</sub>	Silver nitrate
AKI	Acute Kidney Injury
AP	Aminopeptidase
APS	Ammonium persulfate
APTT	Activated Partial Thromboplastin Time
BCIP	5-Bromo-4-chloro-3-indolyl phosphate
BME	β-mercaptoethanol
BSA	Bovine Serum Albumin
CaCl <sub>2</sub>	Calcium chloride
cDNA	Complimentary DNA
CNBr	Cyanogen Bromide
CRiSPs	Cysteine Rich Secretory Proteins
DAD	Diode Array Detection
DNTB	5,5'-dithio-bis-(2-nitrobenzoic acid)
DTT	Dithiothreitol
EAR	Early adverse reaction
ELISA	Enzyme-linked Immunosorbent Assay
END	Endonucleases
ESI	Electrospray Ionization
Fab	Fragment Antigen binding
FpA	Fibrinopeptide A
FpB	Fibrinopeptide B
g	Gravitational force
GPCts	Glutaminyl-peptide cyclotransferases
GPVAV	Green pit viper Antivenom
H <sub>2</sub> O <sub>2</sub>	Hydrogen peroxide

HCl	Hydrogen chloride
HITT	Heparin-induced thrombocytopenia and thrombosis
IAA	Iodoacetamide
IgG	Immunoglobulin G
INR	International normalized ratio
kDa	Kilo Dalton
LAAO	L-amino acid oxidase
LC-MS/MS	Liquid chromatography-Mass spectrometry/Mass spectrometry
M	Molar
mA	Milli ampere
mg	Milli gram
min	Minute
ml	Milli litre
mM	Milli molar
MDS	Million Death study
NaCl	Sodium chloride
NaHCO <sub>3</sub>	Sodium bicarbonate
NBT	Nitro blue tetrazolium
NCBI	National Center for Biotechnology Information
NCT	Normal Clotting Time
NH <sub>4</sub> HCO <sub>3</sub>	Ammonium bicarbonate
nm	Nano meter
OD	Optical Density
PAGE	Polyacrylamide Gel Electrophoresis
PAR	Protease Activated Receptors
PAV	Polyvalent antivenom
PBS	Phosphate buffered saline
PDB	Protein Data Bank
PDE	Phosphodiesterase
pH	Power/Potential of Hydrogen
PLA <sub>2</sub>	Phospholipase A <sub>2</sub>
<i>p</i> -NA	<i>p</i> -nitroaniline
ppm	Parts per million
PPP	Platelet Poor Plasma
PRP	Platelet Rich Plasma
PSPAV	Premium serum Polyvalent Antivenom
PT	Prothrombin Time

PVDF	Polyvinylidene difluoride
RBCs	Red Blood Cells
Rp-HPLC	Reverse phase High Pressure Liquid Chromatography
rpm	Revolutions per minute
RT	Recalcification Time
RVV	Russell's viper venom
<i>s.l.</i>	<i>sensu lato</i>
<i>s.s.</i>	<i>sensu stricto</i>
SD	Standard deviation
SDS	Sodium Dodecyl Sulfate
sec	Seconds
Snaclec	Snake c-type lectin like protein
sPLA <sub>2</sub>	Secretory phospholipase A <sub>2</sub>
SVMP	Snake venom metalloprotease
SVSP	Snake venom serine proteases
SVTLEs	Snake venom thrombin-like enzymes
TBST	Tris buffer saline with Tween 20
TCA	Trichloroacetic acid
TEMED	Tetramethyl ethylenediamine
TFA	Trifluoroacetic acid
TLEs	Thrombin-like enzymes
TL-SVSPs	Thrombin-like snake venom serine protease
t-PA	Tissue type plasminogen activator
U	unit
V	Volt
v/v	Volume per volume
VICC	Venom induced Consumptive Coagulopathy
vWF	von Willebrand factor
w/w	Weight per weight
WBTT20	20 minute Whole blood count
WHO	World Health Organization
XRS	X Ray Scattering
Z	number of charges

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