

*I sincerely dedicate this thesis to
Maa, Papa and Wadood.*

DECLARATION BY THE CANDIDATE

I do hereby declare that the thesis entitled “**Identification and characterization of an anti-platelet protein from *Daboia russelii* venom and understanding its molecular mechanism**” submitted to the School of Sciences, Tezpur University in part fulfilment for the award of the degree of **Doctor of Philosophy** in Department of Molecular Biology and Biotechnology, is a record of original research work carried out by me. Further, I declare that no part of this thesis has been reproduced elsewhere for award of any other degree.

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CERTIFICATE OF THE SUPERVISOR

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

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Acknowledgement

First and foremost, I express sincere gratitude to my supervisor Prof. Robin Doley for his trust in me and providing me the opportunity to pursue my doctoral research under his supervision. I thank him for his constant guidance, encouragement and his patience throughout the course of my PhD. There is so much that I have learnt from him during this journey that I can never thank enough for.

I take this opportunity to acknowledge University Grants Commission, Govt. of India for providing me with Junior Research Fellowship and Senior Research Fellowship; and Department of Biotechnology, Govt. of India for granting the project (BT/PR24531/NER/95/755/2017) which supported this work.

I thank all the Hon'ble Vice Chancellors of Tezpur University for providing all the necessary facilities for education and research in the campus. I thank the entire Tezpur University fraternity for their help and support. I thank Pobitora Madame Curie Women's Hostel for being my home away from home.

I extend my heartfelt gratitude to the Department of Molecular Biology and Biotechnology for providing all the necessary facilities for research alongwith the ambience of a family. This place has helped me grow as a person and I shall be forever grateful to it. I thank all the faculty members of the department for extending their laboratory facilities. I sincerely thank my doctoral committee members, Dr. Rupak Mukhopadhyay and Prof. Manabendra Mandal for their valuable suggestions and recommendations. I also thank all the members of the Dept. of MBBT for their help and support.

I express my thanks Dr. Md. Abu Reza from University of Rajshahi, Bangladesh for his generous gift of venom sample. I acknowledge Dr. Zahid Ashraf and his lab from Jamia Millia Islamia University as well as Dr. Karthikeyan Vasudevan and his lab at Centre for Cell and Molecular Biology, Hyderabad for assisting with part of my PhD work. I also thank Translational Health Science and Technology Institute, Faridabad for LC-MS/MS analysis. I thank all the volunteers who donated blood and helped me carry out this work.

I thank my labmates Dr. Simran Kaur, Dr. Archana Deka, Dr. Arpita Devi, Susmita, Mandira, Amit, Mahari, Jyotirmoy, Nyumpi, Plabita and Shristi for creating and maintaining a healthy research environment in the lab. I thank all the project students who have worked with me and helped me learn during the process. I thank Dr. Maitreyee Sharma for her constant presence; and without the way paved by her, pursuing this work would have been extremely difficult. I thank all my seniors and juniors from Dept. of MBBT for their help and friendship.

I thank my friends, Aftab, Shreaya, Manoj, Mandira and Muzamil for always being there. From endless talks over tea to standing by and holding hands during breakdowns, thank you for being there.

I thank Susmita for being my constant, listening, motivating and uplifting; enjoying and celebrating; through tears and laughters and through tough times and good ones.

Most importantly, I thank my family. I thank my grandparents for showering their blessings from wherever they are. I thank Maa, Papa and my little brother, Abdul Wadood for their unconditional love, never-ending support, care and faith in me. No amount of words can summarize my love for you. And I don't say this enough but "Thank You".

Last but not the least; I express my love and deepest gratitude to almighty God for everything.

(Rafika Yasmin)

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List of keywords

- Chapter 1 *Daboia russelii*, *Daboia russelii* venom, Russell's viper, Cardiovascular diseases, Anti-platelet proteins
- Chapter 2 Proteomics, LC-MS/MS, Reverse-phase HPLC, Electrophoresis, *Daboia russelii*, Platelet aggregation, Fluorescence emission spectroscopy, Molecular docking
- Chapter 3 Proteome analysis, Mass spectrometry, *Daboia russelii* venom, Bangladesh, Phospholipase A₂, Procoagulant
- Chapter 4 *Daboia russelii* venom, Russell's viper, Anti-platelet protein, Dabocetin, Daboxin P, Snaclec, PLA₂
- Chapter 5 Daboxin P, Anti-platelet protein, Thrombin, K-562 cells, calcium influx, Fura-2AM, Fura-4 AM, *Daboia russelii*

List of abbreviations

%	Percentage
μ	Micron
μg	Micro gram
μl	Micro litre
μM	Micro molar
°C	Degree celcius
3FTx	Three finger toxin
Å	Angstrom
AA	Arachidonic acid
ACE	Angiotensis-converting enzyme
AD50	Aggregation dose 50
ADP	Adenosine diphosphate
APS	Ammonium persulfate
APTT	Activated partial thromboplastin time
AU	Absorbance unit
BCIP	5-Bromo-4-chloro-3-indolyl phosphate
BPF	Bradykinin potentiating factor
BSA	Bovine serum albumin
CaCl ₂	Calcium chloride
CNBr	Cyanogen bromide
Col	Collagen
CRISP	Cystein rich secretory proteins
CVD	Cardiovascular disease
Da	Dalton
Dab	Daboxin P
Dis	Disintegrin
DTNB	5,5'-dithio-bis-(2-nitrobenzoic acid)
DTT	Dithiotreitol
g	Gravitational force
GBD	Global burden of disease
GFC	Gel filtration chromatography

GP	Glycoprotein
GPC	Glutaminyl-peptide cyclotransferase
GPCR	G-protein coupled receptor
HCl	Hydrogen chloride
hr	Hour
kDa	Kilo dalton
KSPI	Kunitz-type serine protease inhibitor
LAAO	L-amino acid oxidase
LC-MS/MS	Liquid chromatography-mass spectrometry/mass spectrometry
M	Molar
mA	Milli ampere
mAU	Milli absorption unit
mg	Milligram
MeCN	Acetonitrile
min	Minute
ml	Millilitre
mM	Milli molar
NaCl	Sodium chloride
NaHCO ₃	Sodium bicarbonate
NBT	Nitro blue tetrazolium
NCBI	National Centre for Biotechnology Information
NCT	Normal clotting time
NH ₄ HCO ₃	Ammonium bicarbonate
nM	Nano molar
NP	Natriuretic peptide
OD	Optical density
PAGE	Polyacrylamide gel electrophoresis
PAR	Protease activated receptor
p-BPB	P-bromophenacyl bromide
PBS	Phosphate buffered saline
pH	Power/Potential of Hydrogen
PLA ₂	Phospholipase A ₂
PM	Peptidomimetic

PMA	Phorbol 12-myristate 13-acetate
p-NA	P-Nitroaniline
PPP	Platelet poor plasma
PRP	Platelet rich plasma
PT	Prothrombin time
RBC	Red blood cells
RP-HPLC	Reverse-phase high pressure liquid chromatography
RT	Recalcification time
RVV	Russell's viper venom
s	Second
SD	Standard deviation
SDS-PAGE	Sodium dodecyl sulphate- polyacrylamide gel electrophoresis
sec	Second
Snaclec	Snake C-type lectin
sPLA2	Secretory phospholipase A2
SVMP	Snake venom metalloprotease
SVSP	Snake venom serine protease
TCA	Trichloroacetic acid
TEMED	Tetramethyl ethylenediamine
TFA	Trifluoroacetic acid
Thr	Thrombin
TXA ₂	Thromboxane A ₂
U	Enzyme unit
V	Volt
VEGF	Vascular endothelial growth factor
VNGF	Venom nerve growth factor
vWF	Von willebrand factor
z	Charge