

PREFACE

I am grateful to numerous peers who have contributed towards shaping this thesis. I would like to express my sincere gratitude to all of them. At the outset, I would like to express my appreciation and sincere gratitude to my guide Dr. Palash Mandal for his advice during my doctoral research endeavor for the past few years. As my supervisor, he has constantly inspired me to remain focused on achieving my goal. His observations and comments helped me to establish the overall direction of the research and to move forward with investigation in depth. I thank him for providing me with the opportunity to work with a talented team of researchers. It was indeed a rewarding experience.

At this juncture, I would like to thank my co-supervisor, Prof. D.K Singh Sir for his continuous support, patience and motivation throughout my Ph.D tenure. He has helped me in all possible ways and this shall always remain incised somewhere deep within me for the rest of my life. He himself being stationed far away from my research laboratory and study area was a constant source of inspiration during all these years and of course his insides time and again would open up new dimensions in my research.

Here again, I would like to show my gratitude to the Heads of the Department of Botany who looked after the department during my tenure of work for extending all the required facilities.

I am also thankful to all the teachers of Department of Botany, namely Prof. A.P. Das, Prof. B.N. Chakraborty, Prof. P. K. Sarkar, Prof. (Mrs) U. Chakraborty, Dr. A. Saha, Dr. A Sen, Dr. S.C. Roy and Dr. M. Chowdhury for their continuous support, help and encouragement. I would also like to thank the faculty in charge of SAP, Dr. U Chakraborty and Dr. A Saha for letting me utilize the facility and carryon my work smoothly.

It is indeed important to extent my gratitude to non-teaching staffs of the Department. They have all been cooperative and helpful in different ways.

I extent my special gratitude to Mr. Subhrojyoti Bagchi, Asst. Professor of Computer Sc. Malda College for assisting me while performing network analysis. Also, I would like to express

my heartiest gratitude to Dr. Anoop Kumar, Asst. Professor, Department of Biotechnology, and Dr. Pranab Ghosh, Professor, Department of Chemistry, University of North Bengal for their help during the course of my research work. I also want to extent my gratitude to Dr. Devendra Singh, Scientist D, Botanical Survey of India for helping me with the identification of plant samples.

I would also like to extend my gratitude to all my lab mates some old and new. People who come to this list are Ms. Arunika Subba, Mr. Sujoy Sen, Mr. Priyankar Roy, Mr. Dipayan Das, Mr. Salman Haider, Dr. Tarun Kumar Mishra, Ms. Suchisree Jha, Mr. Saran kumar Gupta, Dr. Mitali Ghosal and Dr. Dibakar Chowdhury, they all helped me in some way or other during my Ph.D tenure. Their support and co-operation was indispensable. Especially Miss Arunika Subba, my all season friend. She gave me mental and emotional support besides the academic help. She has helped me cheer up and get going whenever I felt low or needing in this span of my Ph.D tenure.

I am thankful to SAIF, IIT Madras and SAIF, IIT Mumbai for mass spectroscopic analysis of bioactive fractions. I am also grateful to Botanical survey of India for allowing the identifications of Plant samples.

Special thanks to University Grants Commission (UGC) for funding this work under the scheme of “Maulana Azad National fellowship”.

Last but not the least, I want to express heartfelt gratitude to my parents, Mr. Mukesh Mukhia and Mrs. Asha Mukhia. They have been instrumental in building who I am today. They have been the source of constant support, strength and inspiration not only in my Ph.D but also in my entire academic endeavor. Their sacrifices are immense, not that I can enumerate. This acknowledgment would remain incomplete without mentioning Late. Chandra Prasad Mukhia, my Bajey (Grandfather). I know wherever he is, he would be proud of me today.

Place: **University of North Bengal**

Date: **19. 11. 2018**

Sumira Mukhia
[Sumira Mukhia]