Acknowledgement

First and foremost, I bow in front of the Almighty for bestowing me with the strength and courage to carry out my research work successfully, and also giving me the ability to offer a minor contribution to the world of science.

I convey sincere gratitude to my supervisor Dr. Anand Ramteke, Dept. of MBBT for introducing me to the wonderful field of Cancer Biology. I am greatly indebted to him for his invariable guidance, scientific fore-thought, illustrative discussions, beneficial suggestions, encouragement, constructive criticism and realignment of research strategies during the conduct and completion of this study.

I am also grateful to my co-supervisor Dr. Ashu Bhan Tiku, School of Life Sciences, Jawaharlal Nehru University, New Delhi for her guidance and inspiration, which enabled me to accomplish all my objectives.

I express my genuine sense of gratefulness to Prof. M.K. Chaudhuri, Vice chancellor, Tezpur University, Tezpur, Assam for giving me the opportunity to carry out my research work in this esteemed University.

I am very much obliged to my Doctoral Committee members: Prof. Alak K. Buragohain, Prof. Tarun K. Maji and Dr. Tapas Medhi from Tezpur University for their sincere guidance and valuable suggestions to improve my research work.

I extend my deepest gratitude to the Head, all the faculties and staff members of Dept. of MBBT, specifically Dr. S.K. Ray, Dr. M. Mandal, Prof. A. K. Mukherjee, Mr. Samar Kakati, Mr. Pranab Borah, Mr. Pranab Mudoi, Mr. Deepak Deka etc. for their intellectual and technical support during the entire course of investigation. I am grateful to all my fellow labmates Viveeyan, Rupesh, Monoj, Pitambar, Anindita, Madhumita, Manabi, Chandana, and Gani for their help and support during the entire period of my research work. I also express my gratitude to my earlier lab members Soni, Gaurav, Bhaskar, Surya, Priyabala, Amrita, Amit, Naina, Jonita, Jagrity and Narendra.

My heartiest thank to all my seniors and juniors from the department of MBBT, for being constant source of encouragement. I am thankful to Dr. Ranjan da, Dr. Mayur da, Dr. Jetendra bhai, Dr. Rahul, Mr. Salam Pradeep, Dr. Anupam, Dr. Subhendu, Lipika, Dr. Rupamoni, Dr. Anushree, Diganta, Kuldeep, Yasir, Ajay, Devabrata, Dhrubajyoti (B), Anjan, Pranjal, Dhrubajyoti (DJ), Saurav, Manab and many more from MBBT (TU) for their constant support and help at various stages of doctoral research.

I am equally thankful to all my friends and seniors from various other departments/institutions specifically, Dr. Nibedita, Mandip, Chinmayee (Chemical Science); Dr. Nayan Mani (Physics); Dr. Deepak, Dr. Runjun (Nano Sciences); Mr. Mantoo Kaibarta (Computer Sciences); Dr. Vijay (Energy); Bania khura, Partha da (O/o, Dean), Pankaj da, Biswas da, Dr. Rohini da (Shopping complex, TU) and many more for their support at certain stages of my work. I am also thankful to Dr. Navneet, Dr. Sumit, Dr. Rambabu, Dr. Vandana, Rahul, Arun (SLS, JNU), Pandeji, Shyamji (JNU) for making my life at JNU healthier.

Sincere thanks to Dr. A A Mao (BSI, Shillong) and Prof. S K Borthakur (Gauhati University) for their help in taxonomic identification and authentication of plant specimen. I am grateful to Prof. Ashim J Thakur (Chemical Sc., TU); Dr. K. M. Ansari, Shamshad Alam (IITR, Lukhnow); Prof. R. P. Singh (JNU); Prof. Ashim J. Thakiu (Chemical Sc., TU), Mr. Shankur Phukan (Chemical Sc. TU) for their help in carrying out some experimental analysis successfully. I am thankful to Indian Institute of Crop Processing Technology, Tamil Nadu; CARe-KERALAM Ltd., Kerala; SAIF, Indian Institute of Technology, Bombay; Gauhati Biotech Park, Gauhati; Singh Histology Processing Centre, New Delhi for their support in experimental work. Defence Research Laboratory (DRL), Tezpur is also acknowledge for providing animal for *in vivo* study.

I am grateful to Prof. R. Agarwal, Dr. Gagn Deep, Dr. C Agarwal (University of Colorado, Denver, USA) and Prof. R K Kale (JNU, New Delhi) for giving me an opportunity to work in their labs and availing instrumentation facilities of the institution, and heartiest thanks to Dr. Rahul Kumar, Dr. Sushil Kumar and others for their guidance during my stay in United States.

Last but not the least, I would like to express my deep sense of gratitude to my **BABA** (Ohab Ali) and **MAA** (Suriya Begum); **ANIMA**, my better half; **DADA** (Akhtar Hussain) and **VONI** (Sabina Yasmin); **Khura** (Sahidul Islam) for their unconditional endless support, care, love and patience during my Ph.D work as well as in all stages of my life. I offer my heartfelt thanks to **Nani**, Hamid mama-Sajiran mami, Makib mama-Sabida mami, Mantu mama-Maniyara mami, Tamuj mama and all the cousin brother/sisters specially Karim ka, Bablee, Ricky, Vicky, Sima and their family members particularly nephews Ridip, Rahul. I am very much grateful to my in-laws family, Sister-in-laws family and all other relatives, my all the teachers, friends especially late Amrit da (Pandey) and many more.

The financial assistance in the form of a DST INSPIRE Junior/Senior Research Fellowship (IF10230) received from Department of Science and Technology (DST) Govt. of India, New Delhi (India) is duly acknowledged. Also I am ever grateful to DST for nominating me to interact with Noble laureates in the 5th HOPE Meeting 2013, Tokyo (Japan), where I was accredited with a designation of JSPS HOPE Fellow by Japan Society for the Promotion of Science (JSPS).

(Anowar Hussaín)

Date: