Acknowledgements

I wish to express my thanks to the Almighty for enabling me to work under the supervision of Prof. Kabir-ud-Din, UGC-BSR Faculty Fellow (Formerly: UGC Emeritus Fellow). Words are inadequate to express my gratitude to him for his keen interest, eminent guidance, intellectual stimulations, undivided attention and helping hand and remaining for me a source of encouragement throughout the progress of this work. He has been a source of inspiration for me and never let me down. His commitment to research, punctuality, integrity and probity has made him a role model for me. From him, I learned how to plan all the things simultaneously which will help me to face my future life.

I am very grateful to Prof. M. Mushifiq, Chairman, Dept. of Chemistry, A.M.U., Aligarh, for providing me necessary facilities in the department.

I put on record my heartfelt thanks to Prof. Zaheer Khan,(JMI), Dr. Iqrar A. Khan and Dr. Mohd. Akram for their kind help and valuable suggestions. Special warm thanks to Ms. Aiman Jahan Khanam (Aimy), who did an enormous job in reviewing and editing my thesis. Her significant comments and suggestions enhanced this thesis a lot.

I owe my special thanks to Dr. Rizwan Hasan Khan and Mr. Sumit Kumar Chaturvedi, Interdisciplinary Biotechnology Unit, A.M.U., Aligarh, for letting me avail laboratory and other facilities in order to complete my work.

I also take this opportunity to express my sincere gratitude to Dr. Andleeb Zehra Naqvi, Dr. Manorma Panda, Dr. P. Ajmal Koya, Dr. Ziya Ahmad Khan, Dr. Umme Salma Siddiqui and Dr. Mohd. Sajid Ali for their willing help and guidance during different stages of my work. I shall always remember my seniors and labmates Dr. Mohd. Sayem Alam, Dr. Naved Azum, Dr. Mohd. Altaj, Dr. Suraiya Khatoon, Dr. Mohammad Shafi Sheikh, Dr. Riyaj Mohammad, Dr. Farah Khan, Dr. Abul Bashar Khan, Dr. Malik Abdul Rub, Mr. Dileep Kumar, Ms. Kahkashan Anjum, Ms. Sahar Noori, Ms. Zeenat Aslam, Ms. Nazish Fatma, Mr. Zahid Yaseen, Mr. Gamal Ahmad, Mr. Adel Ahmad, Ms.
Sabreena Yousuf and Imtiyaz for their all time cooperation and encouragement during my work period.

I am also thankful to my friends Er. Bhartendu Chaturvedi (Big B), Zeeshan Ahmad, Er. Garima Garg, Er. Avdhesh Kumar, Dr. Arun Chauhan, Er. Trapti Singhal, Er. Aastha Gakhar, Sonu Sharma, Naresh Kumar, Kalpana Gaur, and Suneel Kumar for their cooperation and timely help.

My humble gratitude must also be reserved for my father Mr. Virendra Dutt Sharma, a role model for me, my mother Mrs. Meena Sharma, my younger brothers Saurabh Bhardwaj and Himanshu Sharma for being the source of inspiration. Their blessings, support, encouragement, and caring attitude have really helped me to complete this thesis.

I gratefully acknowledge Uttar Pradesh Council of Science and Technology (UPCST), Lucknow, for the financial assistance in form of a Research Assistantship and thanks are due to SAIF (CDRI, Lucknow) for providing $^1$H NMR facilities.

Last, but not the least, I have no words to convey my thanks to all my Teachers, who sculptured and enabled me to achieve what I wish.

(Gaurav Sharma)