In the course of my research work, I was fortunate to get the invaluable guidance of my supervisor, Prof. Kunal B. Roy, to whom I extend my heartfelt gratitude. It was his constant encouragement and inspiration that contributed immensely towards the completion of this work. I would specially like to appreciate his patience in dealing with a sensitive person like me.

I am grateful to Prof. Faizan Ahmad, Dept. of Biosciences, Jamia Milia Islamia, for allowing me to use the C.D. machine in his laboratory. I would like to thank Dr. Shushma Yadav, Vikas Rishi, Ritu, Beenu, Shabbir and Hanif of Jamia Milia Islamia for their kind help.

I am extremely grateful to Dr. Tapas Saha for his everwilling assistance. I was fortunate to have him as my senior, who taught me the essence of research. Next to Prof. Kunal B. Roy, it is his guidance and help that is most valuable to me. He has been a very good friend, always trying to encourage me and guide me during my tough times. Without his help this thesis work would have taken longer than it did, for completion.

I am indebted to all my teachers, Dr. Joshi, Dr. Nirmala, Dr. Mudgal and Dr. Nanda, Dept of Biochemistry, Daulat Ram College, Delhi University and Prof. H.K. Das, Prof. Rakesh Bhatnagar, Dr. Santosh Kar, Dr. Rajeev Bhat, Dr. K.J. Mukherjee, Dr. U.K. Pati and Dr. Aparna Dixit, Centre for Biotechnology, Jawaharlal Nehru University, for their goodwill and role in providing me the bigger prospective of science and research. Special thanks to Dr. Bhatnagar for letting me use his laboratory’s UV transilluminator and shaker. I am also grateful to Dr. Aparna Dixit for allowing me use the shaker incubater in her laboratory.

I appreciate the help and encouragement given to me by my labmates, Agam, Tapas, Sangeeta, Sonia, Gobardhan and Babita. I am thankful to all my friends, Smriti, Shams, Saroj, Nidhi, Caurabh, Atul, Suchitra, Vidita, Neeta, Ritu Goel, Shobita, Sharat, Ramanuj, Prerna, Sarita, Vikas Handa, Sunny, Vandana, Pankaj, Praveen, Puran, Y. Sangeeta, Poonam, Deepali, Sujata, Aruna, Ramani and Shailesh. I am specially thankful to Sangeeta, Smriti, Tapas, Shams and Nidhi who provided the much needed motivation, advice and support to help me get through difficult times.

I offer my sincere thanks to Madhusudhan Dey (CPMB, JNU) for helping me with the agarose gel photographs.

I wish to express my deep sense of gratitude to my grand parents, my parents and my brother for it was their prayers and love that kept me going and I could reach this
position, where I am today. I offer my sincere thanks to Ashok mama, Lakshmi mami, Dodda, Prabhakar uncle, Usha aunty, Raghu chacha, Shailaja aunty, Abhishek, Juhi and Shradha who gave me so much love and support that I could stay away from my parents for seven long years in J.N.U. to complete my post graduation and research work.

I am grateful to Sailaja for her unfailing friendship and constant encouragement.

I offer my sincere thanks to Dr Rajashekaran and Dr Sonika for going out of their way to help me with the computer programs.

I am thankful to Geeta madam and Sindhu madam for their cooperation. The help rendered by Anilji, Bishuji, Umeshji and Ramsukhji is duly appreciated.

I would also like to acknowledge the scholarship from UGC that supported me during the course of this research.