ACKNOWLEDGMENTS

I give my whole hearted thanks to the almighty God for all the wisdom and perseverance that he has bestowed upon me during my research work and indeed throughout my life. The success of any work is not confined to the individual who has undertaken the work, more often it is the collective effort of the people that is reflected in the success.

My sincere thanks are due to everyone who has assisted me throughout the tenure of this venture. It is a great privilege and pleasure to avail the golden opportunity to express my deep sense of gratitude and sincere thanks to my supervisor, Dr. (Mrs.) Rajesh Kumari Manhas, Associate Professor and Head of the Department of Microbiology. Her sharp intellect coupled with sound technical knowledge, professional skill, sincerity towards purpose and constructive criticism has made it possible for me to overcome the hurdles that came during my research work.

I am thankful to Dr. S. Mayilraj and Dr. Suresh Korpole, Scientists, Institute of Microbial Technology (IMTECH), Chandigarh (India), for their inspiration, persistent guidance, friendly behavior and blessings throughout my research work.

I wish to express my gratitude and thanks to Prof. Saroj Arora, Department of Botanical & Environmental Sciences and Dr. Subheet Jain, Department of Pharmaceutical Sciences, Guru Nanak Dev University, Amritsar, Punjab (India) for their suggestions and timely help. I would like to thank Dr. Santi M Mandal, Central Research Facility, Indian Institute of Technology, Kharagpur, West Bengal (India) for his help.

I am thankful to the Department of Biotechnology (DBT) and Department of Science and Technology (DST), New Delhi, for their financial support. I express my thanks to Prof. D.S. Arora, Prof. B.S. Chadha, Prof. H.S. Saini, Prof. Sajid Hussain, Dr. Amarjeet Kaur and Dr. Sukhraj Kaur, Department of Microbiology, for their concern, encouragement and support throughout my study.

The timely help rendered by non-teaching staff is also acknowledged.

Thanks are also due to my seniors Dr. Gurinder Jeet Kaur, Dr. Suman Sharma, Dr. Asiya Nazir, Dr. Manju Sharma, Dr. Rohit Soni, Dr. Pratapbir Singh and Dr. Rakesh Sharma.

Thanks are reserved for Ms. Talwinder Kaur for her concern, much needed support and painstaking contribution to accomplish this research work. I was fortunate enough to have her as a junior and friend in the stressed out times.
I would also like to extend my thanks to Harpreet, Richa, Priyanka and Jemimah for their care, support and help.

To all the research scholars Harleen, Bhagwati, Jyoti, Sunil, Preetkawal, Aman, Baljit, Bahadur, Chavi, Riveka, Heena, Preeit, Suman and Jasleen thank you all for your help and support.

Words alone cannot express my feelings for my parents and family- who gave me happiness much more than anyone else in the world could ever give. To my parents, your everlasting support, blessings and unconditional love has immensely helped me to make my dream come true.

Eternal thanks to my dearest grandmother for her blessings, support, care, love and trust. I very fondly refer and express thanks to my dear younger brothers for their love and encouragement.

It is impossible for me to frame in words the love and moral support of my husband, Mr. Naveen Sharma. He has motivated me during my thick's and thins and supported me throughout my research work.

The sweetest thanks are due to Ananya, my daughter whose incomplete and innocent words gave me immense pleasure and made my life a lively one.

I would also like to express my appreciation for the technical know-how of formatting and typing of manuscript provided by Mr. Subhash Kumar and Mr. Maninder Singh from Subhash Computers. Thanks are also due to all those whose names by inadvertence do not appear in the acknowledgement.

Thank you all

Deepika Sharma