

ACKNOWLEDGEMENT

This thesis is the culmination of my journey of Ph.D. in the Department of Microbiology and Biotechnology centre, The Maharaja Sayajirao University of Baroda, which was just like climbing a high peak step by step accompanied with encouragement, hardship, trust, and frustration. When I found myself at top experiencing the feeling of fulfilment, I realized though only my name appears on the cover of this dissertation, a great many people including my family members, well-wishers, my friends, colleagues and various institutions have contributed to accomplish this huge task.

At this moment of accomplishment, I am greatly indebted to my research guide, Prof. Devarshi Gajjar, who accepted me as her Ph.D. student and offered me her mentorship, motherly love and care. This work would not have been possible without her guidance and involvement, her support and encouragement on daily basis from the start of the project till date. Under her guidance I successfully overcame many difficulties and learnt a lot. She took extreme efforts for me to conduct this entire work. Her own zeal for perfection, passion, unflinching courage and conviction has always inspired me to do more. Her scientific acumen has made her as a continuous source of ideas which inspired and enriched my growth as a student, a researcher and a scientist I want to be. Her guidance helped me in all the time of research and writing of this thesis. I could not have imagined having a better advisor and mentor for my Ph.D. study. She also taught me several other aspects of my life and supported me in difficult and depressing situations. I am indebted to her, for her faith in me and providing the right direction whenever I needed it the most. For all these, I sincerely thank her from bottom of my heart and will be truly indebted to her throughout my life time.

Many earnest thanks to Prof. G. Archana, the Head of Department and member of my doctoral committee, and Dr. T. Bagchi (Former HOD) for their insights, valuable suggestions and providing right

direction for my Ph.D. I would like to thank them for providing me with the requisite institutional facilities, moral, financial and technical support throughout my research tenure.

I sincerely thank Dr. T. Bagchi, Late Prof. B.B. Chattoo, Dr. Rajesh Patkar and members of their labs, for allowing me to use their lab facilities to conduct my research work, without their support this study would have been difficult to conduct.

I would like to thank my other doctoral committee members Dr. J. Manjrekar and Dr. Rajesh Singh (Department of biochemistry) for their insightful comments and encouragement, but also for the hard question which incited me to widen my research from various perspectives.

I would specially like to thank Dr. Ratika Shrivastava for introducing and teaching me the new field of cell culture and for her help and technical support to conduct the experiments related to cell culture in my Ph.D. work. I would like to thank Prof. A. Nerurkar, Prof. S. Ingle, Dr. Mrinalini Nair, Dr. Pushpendra Singh, Dr. Nandita Baxi and Dr. Pranav Vyas for their support.

I want to thank Dr. Savitri Sharma from L.V. Prasad eye institute, Hyderabad and Dr. Abhay Vasavada, Director of Iladevi Cataract and IOL research centre, Ahmedabad for providing with fungal cultures used in present study.

I am thankful to Indian institute of Technology, Mumbai for giving the permission to carry out the MS studies. I am thankful to SICART, Vallabh vidhyanagar for giving the permission to carry out HPLC-MS studies. I am thankful to Indian institute of Technology, Kharagpur for help in FTIR analysis.

I am thankful to GSBTM and The M.S. University of Baroda for the financial support.

I would specially like to thank Mr. Shirish Nagarkar, who helped me a lot to understand the university guidelines, rules and regulations and all the official work. He was always there when I

needed help to carry out documentation work every now and then. Without a single question he always helped me immediately. I used to go to him for any help without hesitation. Without his all support it would have been very difficult to conduct any official work. A big special thank goes to Mrs. Thomas, who was store in-charge and always get me whatever chemical I needed. She is very lovely lady. She has helped a lot. I would like to thank non-teaching staff, Dr. Harsukh, Mr. Panchal, Mrs. Seema, Mr. Talati, Mr. Pravin, Mr. Nitesh and Mrs. Arpana for their help throughout my Ph.D. I thank Mr. Mayur for his guidance and help during synopsis and thesis submission.

Ph.D. students often talk about loneliness during the course of their study but this is something which I never experienced at Prof. Gajjar's lab (DGL). A special thanks to my 1st labmate, Ms. Siddhi Desai, she is truly great person and very good and humble friend. She was always there whenever I was feeling depressed and disappointed to my self during my Ph.D. She always motivated me and tried to understand and help me in my work related problems as well as personal problems. I want to thank Mr. Rinku Sahu, who is truly a gentleman. We had great discussions related to work. He also supported me in my difficult times in life. He encouraged me a lot to complete my Ph.D. I enjoyed time with both of them in lab. We had great fun inside lab as well as outside lab. They are really great friends and labmates.

I would like to thank Ms. Hiral Patel, who joined lab lately. I enjoyed working with her and I got one more person to share my lab responsibilities with and she is a real helping hand. She learned all the thing very quickly and managed everything beautifully in lab. I thank Ms. Siddhi Chavan, who was a great friend and we used share sister-like bond. She became very close person to me in lab in short time. She helped me a lot in my work, especially handling my cultures well. I thank Mr. Suraj Shukla for and Mrs. Harshada for their help during thesis writing. I would like to thank my other labmates Mr. Siddhesh Vishwakarma and Mrs. Supriya

for their help and support. We all always worked as a team in lab. All the members of lab keep cheerful environment in lab, help and motivate each other during difficulties.

I would like to thank dissertation students, Mr. Devender, Mr. Anshul, Ms. Shivani, Mr. Sandeep, Mr. Kartik, Mr. Abhishek, Ms. Sukruti, Ms. Nikita, Ms. Annapoorna, Ms. Zeenat, Ms. Varsha, Miss Dharvi, Ms. Surbhi, Ms. Supriya, Ms. Shweta, Ms. Sharmista, Ms. Kinjal and Mr. Aaksah, who worked in DGL.

My special thanks goes to my colleagues Dr. Vihang Thite, Dr. Hashim Reza, Dr. Abhik Saha, Dr. Ruchi Jariwala, Dr. Anuja, Dr. Manikandan, Dr. Jigar shah, Dr. Rakesh, Ms. Hiral Shah, Mr. Divya, Dr. Akhil, Dr. Janki, Dr. Hemanti, and Ms. Sejal who helped me a lot during initial years of my Ph.D. They helped me in conducting my experiments and in troubleshooting the problems I faced in experiments. We had rigorous discussion about research problems and their solutions. I thank Mr. Anand parnandi and Ms. Khyati Mehta for their help in microscopy.

A special big thanks go to Dr. Vihang Thite, he guided me a lot in writing my synopsis and thesis. He always helped me in tiniest problem I faced during thesis writing even after his busy schedule.

I pass special thanks to Ms. Juliya Thomas, Ms. Prachi Gandhi, Ms. Khyati Mehta, Mr. Mihir Sarang and Ms. Jaswinder kaur saini who were always there whenever I was frustrated as well as happy with life and work. They always listened to me, helped me and encouraged me to get out of depression and frustrations, and enjoyed with me in my happy moments.

I also thank my other colleagues, Mr. Jitendra, Mr. Ashtaad, Ms. Shweta, Ms. Siddhi, Ms. Roshni, Ms. Abhi, Ms. Mansi, Ms. Hamat, Ms. Niralee, Ms. Humayra, Mr. Arpit, Mr. Anand, Ms. Subhangi and Ms. Dipeksha for their support.

Finally, I acknowledge the people who mean a lot to me, my parents, for showing faith in me and giving me liberty to choose

what I desired. I salute you all for the selfless love, care, pain and sacrifice you did to shape my life. Although you hardly understood what I researched on, you were willing to support any decision I made. I would never be able to pay back the love and affection showered upon by my parents. Also I express my thanks to my brother Jiteen, he used to encourage and motivate me always and helped me in taking correct decision in difficult situation, and sister in law Jayshree for her support and valuable prayers. I specially thank my nephew Pranshu, his happiness in little things makes me realise I've got so much in life. I used to forget about my worries whenever the little one is with me. Thanks to my cousin Nikita for her love, care and encouragement to survive in stressed conditions during my Ph.D.

I owe thanks to a very special person, my husband, Udit for his continued and unfailing love, support and understanding during my pursuit of Ph.D. degree that made the completion of thesis possible. You were always around at times I thought that it is impossible to continue, you helped me to keep things in perspective. There were times during the past two years when everything seemed hopeless and I didn't have any hope. I can honestly say that it was only his determination and constant encouragement (and sometimes a kick on my backside when I needed one) that ultimately made it possible for me to see this project through to the end. I greatly value his contribution and deeply appreciate his belief in me. Words would never say how grateful I am to you.

I consider myself the luckiest in the world to have such a lovely and caring family, standing beside me with their love and unconditional support. My heart felt regard goes to my father in law, mother in law and sister in law for their love and constant support. I thank the Almighty for giving me the strength and patience to work through all these years so that today I can stand proudly with my head held high.

Swati Madhu