

Acknowledgements

“From every wound, there is a scar and every scar tells a story; A story that says – “I have survived” and this mammoth task would be incomplete without acknowledging the support from Almighty whose cosmic energy was always there on the way when I felt the need. The story also made me realized that this would not be a “success” without the help of my near and dear ones. The heart touching moments reminds me of the instances where I was on rescue even without any call; may it be scientific, technical or personal.

First of all, I bow with reverence to thank ‘Lord Shiva’ who enriched me with such golden opportunity and infused the power in my mind to fulfill the task assigned to me.

*At the outset, I would like to pay my tribute to great visionary and founder of the Banaras Hindu University, **Bharat Ratna Mahamana Pandit Madan Mohan Malviya Ji**, because of whom thousands of students put their step towards bright and prosperous future.*

*Although it’s true that “No stone could be gem without polishing of friction and no man be perfect without trials” but this bitter doses were soothed with the lifelong lesson from **Prof. Sanjay Singh**, my PhD supervisor, “Move and the Way will Open”. My indebted thanks to him who also taught me that “The way of life is above to the wise”. His immense optimism and faith on my capabilities always buffered the things and kept me on the track towards the preset objectives. I feel very much honored and it has been really a privileged for me to work with him.*

*I welcome this opportunity to express my sincere gratitude and thankfulness to my admired co-supervisor **Dr. Ashish Kumar Agrawal**, Assistant professor for his valuable and critical suggestions, enormous enthusiasm, scientific acumen, scholarly guidance, active persuasion and supervision. I will always remain indebted for his diligent efforts and professional competencies.*

*Secondly, I thank my Research Progress Evaluation Committee members, **Prof. B. Mishra**, Department of Pharmaceutical Engineering and Technology and **Prof. Pradeep Srivastava**, School of Biochemical engineering for their valuable suggestions and comments during my PhD tenure.*

*I am indeed obliged and grateful to **Prof. Sushant Kumar Shrivastava**, Head of the Department for allowing me to use the facilities in the department to carry out the research activities.*

*It is my extreme privilege to gratuitously convey my special thanks to all the faculty members of Department, **Prof. B. Mishra, Prof. Sushil Kumar Singh, Prof. Sushant Kumar Shrivastava, Mr. A.K. Srivastava, Prof. K. Sairam, Prof. S. Hemlatha, Dr. Senthil Raja, Dr. Alekh N. Sahu, Dr. S.K. Mishra, Dr. Ruchi Chawala, Dr. Ashok Kumar Maurya, Dr. M.S. Muthu, Dr. G.P. Modi, Dr. P.K. Nayak, Dr. Vinod Tiwari, and Dr. S.K. Jain** for their kind cooperation and valuable suggestions throughout the research work.*

*My sincere thanks to **Prof. Ragini Tilak, Dr. Muktanand Tripathi and Ms. Nidhi Pandey** for their assistance and carrying the antimicrobial studies at Department of Microbiology, IMS (BHU), Varanasi.*

*I would like to acknowledge the **Central Instrument facility Centre (CIFC)**, IIT (BHU), Varanasi for providing the analytical instrument facility to carry out my characterization studies.*

*My sincere thanks to **Mr. Ram Jiyawan, Mr. Yashwant Singh, Mrs. Mr. Chhote Lal, Mr. Virendra Kumar, Mr. Nandlal, Mr. MadanLal, Mr. Ram Hriday Pathak, Mr. Akhila Nand Upadhyay, Mr. Arun Kumar, Mr. Md. Jameel, Mr. Sunil Kumar Singh** and all other non-teaching staff of the department who had provided me all the necessary support while needed.*

*I honor valuable suggestion and support of my lab mates **Dr. Amrita srivastava, Dr. Abhishek Kumr Sah, Dr. Sanjay Kumar Singh, Dr. Vijayakumar M.R., Dr. Ramoj Kosuru, Dr. Hitesh Kumar Dewangan, Mrs. Lakshmi, Mr. Uddipak Rai, Mrs. Swati, and Md. Meraj**. I would like to thank post graduate students, **Tushar, Farukh, Surbhi, Nitin, Shilpkala, Deepika, Amrita, Slesha, Bhavya, Vipin and Bhaskar Anand** for their continuous support and providing a stimulating & fun filled environment.*

Last but not the least to my family where “Life begins and Love never ends” culturing some high and low notes for making my life a beautiful song..... so beautiful that at times my deepest senses of indebtedness especially towards my parents, find it difficult to control my emotions when I recall glimpses of their sacrifice and unconditional love;

Need not to say, my eyes react to the situation perfectly. "Silences make the real conversations between people. Not the saying but never needing to say is what counts & quot; I express my gratitude and apologies to everybody whose contributions, I could mention in this section.

Finally, I am highly indebted to the almighty for showering immense blessing in gifting me my beloved parents, family and friends.

Date:

Place: IIT (BHU), Varanasi

Krishna Kumar Patel