Acknowledgment

The blissful day has finally arrived, with the shining blessings of God, to enlist the angels sent by him to give me a momentous upliftment in academic career after victorious accomplishment of this Ph.D thesis.

First and foremost I offer my sincerest gratitude to my supervisor, Dr Indu Pal Kaur, Associate Professor, Pharmaceutics, University Institute of Pharmaceutical Sciences, Panjab University, Chandigarh, who has supported me throughout my thesis with her patience and knowledge whilst allowing me the room to work in my own way. I attribute the level of my Ph.D degree to her encouragement and effort, and without her, this thesis, would not have been completed or written. With her enthusiasm, inspiration, and great efforts to explain things clearly and simply, she helped me to gain indepth knowledge about my research. Throughout my thesis-writing period, she provided encouragement, sound advice, good teaching, good company, and lots of good ideas. I would have been lost without her. One simply could not wish for a better or friendlier supervisor.

I wish to thank Professor Karan Vasisht, Chairman, UIPS for providing excellent working environment that gave impetus to my research project.

The kind and supportive nature of Dr Kanwaljit Chopra could never be left unfelt.

My thanks are extended to faculty of the Pharmaceutics, especially Professor V.R Sinha, Professor O.P. Katare, Professor B.S. Bhoop, Dr Shishu, and all the faculty members of U.I.P.S, Panjab University for their concern, encouragement, support and above all, the much needed and valued suggestions. I also pay my obituary to Late Professor P.D. Sharma at this point of time.

A great word of thanks for Mr Dinesh Singla (General Manager, Panacea Biotec, Lalru) for his immense support, incredible perseverance and illuminating guidance for successful completion of my research work. Without Dinesh sir, it would not have been possible to complete my thesis work on time. He is not only a good manager but a humble, helpful, kind, intelligent and a superb human being. His words are so motivating and soothing, that every toughest work of the world can be performed with utmost ease, with the kind of patience in him.

A special word of thanks to Dr Sukhjit Singh (Vice- President, Panacea Biotec, Lalru) and the facilities provided by Panacea Biotec, Ltd to conduct all my
Acknowledgment

Analytical studies under their supervision. A heartfelt thanks to the BioARD group, especially Mr Sudhir Sahwney, Dr Anurag Singh Chauhan, Mr Gagandeep Singh, Ramakant, Mr Pramendra Singh and Mr Manoj. Without their assistance it would not have been possible to perform the analytical studies.

I am also thankful to Mr Vidyasagar uncle (Director DRDO), Puja masi, Dr Anil K Mishra and Krishna Chuttani, for providing me the facilities to work at INMAS, New Delhi to perform my proof of concept studies. The support and the suggestions provided by Dr Dutta and Dr Poonam (Medicos) for histopathological studies is highly acknowledged.

I am indebted to many student colleagues for providing a stimulating and fun environment to learn and grow. I am especially grateful to my junior Harinder Singh and Pramod Kumar Singh for their all time support whenever required. I am also thankful to my colleague and juniors Rohit, Shilpa, Keshav, Simar, Parneet, Gaurav, Mandeep, Cheena, for bearing with my grumblings, grudges and bouts of anger and motivating me at times of downfalls. Thanks are also due to my other juniors, Gaurav Sharma, Rohit Makkad and Gajanand and my friends Kaiser, Anshuman, Basant, Rishi Kapil, Azaki, Saurabh Aggarwal, Varun Rishi, Nidhi, Neeraj, Ruchita, Mahaveer Dhobi for encouraging me during testable times. A special thanks to Dr Shashi Bhushan, who helped to perform some imperative experiments during the research work. Thanks are due to my seniors Dr Anurag Kuhad, Dr Amit Bhatia, Dr Neelima Dhingra, Prema and Kanwalpreet Kaur.

A mere word of thanks is inadequate for my dear husband Manoj, who constantly inspired and filled in me, an unrocking determination, to accomplish the task set for me. His patience, spiritual powers and an ultra cool nature to bear with my anger during the failures is really appreciable. Without him it would not have been possible to accomplish this task of Ph.D.

All and above it was my baby, Vaibhav whose smile helped me move out of the tensed environment during the experiments. His words "Mumma aapka thesis hogaya" made me work so hard, so as to accomplish the research work with fullest potential. He is the one to whom I could not give his deserved time due to priority for my career.
Words cannot express the love, synergy and moral boost provided by mummy, papa and dadiji, without their blessings, I could not have reached where I am. They left behind all their comforts, to provide me with the best environment to complete my Ph.D. Although my brother Daksh is far off to Australia for his job, his everlasting smile and his expressive words “bus kar bahut padhayi ho gaye, kar yaar” always made me feel refreshed. They always inspired and supported and filled in me, a strong determination to accomplish the task set for me. It’s the grace of God and blessings of my parents and guide that I have been able to complete my project successfully.

I am grateful to my loving and caring inlaws, mamma, papa and dadiji, who stood behind me always wherever I needed their help. I am thankful to Anju, Poonam, Gulshan bhaiya and Prashant and sweet buds Gauri, Abha and Aks who were all time ready to help and motivate me to complete the task.

I thank Mrs Maninder Kaur (CPBES), Mrs Darshan Kaur, Mr Raj Kumar, Ranjeet Kaur, Mr Pradeep Singh, Mr Devilal (DST Lab), Mrs Shushma, Mr Mah for their technical assistance during my experimental work. I owe special thank to Mr Harvinder Singh and Mr Bhupinder Singh for their timely help during my research.

Thanks are also due to the clerical, laboratory and technical staff of UIPS, especially, Mr Chaman, Mr Anil Kumar, Mr Buta Singh, Mr Swaroop Singh, Mr Sharda, and Mr Sahib Singh for their constant help and assistance. I feel a sense of thankfulness towards the librarian especially Mr Priyadarshan for providing all the necessary books and the journal to aid my thesis work.

Financial grant received from CSIR and UGC, New Delhi is highly acknowledged.

I pay homage to those experimental animals that sacrificed their lives making my endeavour successful. May God grant them eternal peace and forgive me for the sin of killing them.

The expertise in this study belongs to those acknowledged above. All errors are mine.

Date: 24.8.2011

VANDITA KAKK