A cknow ledgm ent

I hereby would like to acknowledge all those who have directly or indirectly contributed to this thesis, in their own respect.

A person who is commemorated even before Dhikr (remembrance of GOD) is definitely an individual entitled as GURU, Prof. M. V. Rao played this role I would like to record my gratitude to my guide for his supervision, advice, and guidance from the very early stage of my research as well as giving me extraordinary experiences throughout the work. Above all and the most needed, he provided me unflinching encouragement and support in various ways. His truly scientist intuition has made him as a constant oasis of ideas and passion in science, which exceptionally inspire and enrich my growth as a student, a researcher and a scientist want to be. I am indebted to him more than he ever realize.

I pay my sincere thank to all teaching staff of Zoology Department for their kind support. I gratefully acknowledge Dr. Divya Chandel, Dr. Devendra Jhala for their advice, supervision, and crucial contribution, which made backbone of this research and consequently to this thesis. Their involvement with originality has triggered and nourished my intellectual maturity that, I will benefit from, for a long time to come. Many thanks go in particular to Dr. Vaishali Hydrabadi and Dr. Sunita Chawla. I am much indebted to Vaishali mam for her valuable advice in science discussion, supervision in culture system and furthermore. I put forward my heart full appreciation to Sunita mam for using her precious time to read this thesis and give her critical comments about it. I have also benefited by advice and guidance from both who have always kindly granted me their time even for answering some of my unintelligent questions about toxicology and culture system, furthermore bearing me for my outspoken nature and keeping them occupied with my discussion.
This thesis owes its existence to the help, support, and inspiration of many people. In the first place, I would like to express my sincere appreciation and gratitude to lab seniors Dr. Avani Gopalkrishnan and Dr. Hemlata Tiwari, who carved technical skills in me to undertake this research. There are two persons who need special consideration and mention in enlisting contributor to this thesis and my research. Alpesh Patel and Jignasa Dattani have consistently stood by me from days I crawled in research. They have been everlasting support, thrive to step ahead and made my ambience scientific with deliberate discussion and counter advocacy that lead to newer thoughts. I would endorse my Labmates, Tapan Patel, Anshita Purohit, Ravi Meda, Dhara Vyas, Swati Thakur, Rajendra Bhatt, Sahil Shah and Gaurang Sindhav for their special support and creating a friendly environment to work in. I deem an immense pleasure in thanking research students of my department and other departments of School of Sciences, Gujarat University who availed me opportunity in interdisciplinary conversation and giving in-depth and broader view in fields other than I have worked in.

My sincere thanks to Scientists and Institutes that I have come across in this short walk who have contributed to assort my technical and intellectual insight, to name a few – Dr. H. S. Dhalliwal IIT, Roorkee, Dr. K. Thangaraj CCMB, Hyderabad, Dr. Asathi Sharma IUAC, Delhi, Dr. N. P. Bhattacharya, SINP, Kolkata, Dr. Deepak Modi NIRRH, Mumbai, Dr. John Blangero IBMS, USA, Dr. Rank AU, Anand, Dr. Radhakrishna, USA.

Biological science is indebted to all those animals that have sacrificed their lives and contributed to the current knowledge that we decipher. My special thanks to all those spirits that I had set free from animal forms, which I used for my in vivo experiments and retrieving data after conscious dosing.

I cannot forget to thank all non teaching staff and students of Department of Zoology and BMTC for rendering their generous support all through my tenure as a research student. Department as a whole requires a special mention in my work as it made me feel comfortable as home, that I will carve to visit at every given chance.
My sincere gratitude falls short for the kind support given by Prof. M. M. Sarin, PRL in ICPEAS analysis and Dr. T. C. Nag, AIMS in Electron microscopy work. I am also thankful to Ms. Bindu Khakhar, E.M Technician of our department for her contribution.

Earth can be made to feel like heaven in company of some true and good friends. I fall short of words and space to record my regards for my friends whom I am always indebted to. Though would not be able to enlist all of them, but some enwove with my life, Sarfraz Farooqui, Vinod Bhalg, Prakash Mudaliyar, Shiva Naicker, Kumar Naidu, Sudagar Mudaliyar, Sandeep Mudaliyar, Surendra Verma, Raju Chawda, Jeny Koshy, Akash Bhavsar, Sandeep Munjapara, Ashutosh Khamar, etc..

I gratefull to financial support given by Clinic facility, Zoology Department in form of Research Fellow.

I stand no exception to this heritage and take my chance of expressing my heartily gratitude to my beloved parents (Raju shanker Chettiar and Shoba R. Chettiar), who have taken extensive efforts to make me what I am. All my gratitude falls short before their towering contribution in making me. Last but not the least, I owe special gratitude to my family: Pooja Chettiar and Tharun Chettiar (my kids), Vel Shanker, Narayan Shanker, Ishwari V. Shanker, Venkatlakshmi Chettiar, Gopal Chettiar (my cousins), and my parents for their continuous and unconditional support of all my undertakings, scholastic and else.

Shiva Shankaran Chettiar