Acknowledgements

First and foremost I would like to thank almighty for providing the strength and ability to pursue the doctoral degree.

I take this opportunity to express the deepest gratitude to:

**Dr. Sunil S. More**, Dean, School of Basic and Applied Sciences, Dayananda Sagar University, for his invaluable supervision, support, motivation, healthy discussions and constructive criticism. His great depth of knowledge has helped me in both research and paper work.

**Dr. Chenraj Roychand** (Chairman of Jain Group of Institutions) for the scholarship to pursue doctoral program.

**Dr. Sundarajan N**, Chancellor for his kind support and **Dr. Sandeep Shastri**, Pro Vice Chancellor for sharing enormous knowledge in the research methodology and for solving all the issues related to PhD course.

**Dr. Jayagopal Uchil**, Dean of sciences and Director, Center for Post Graduate Studies, Jain University for providing us the opportunity to carry out the work in a hassle-free atmosphere. **Dr. Varalashmi K N**, Director, Center for Post Graduate Studies for her constant support and encouragement throughout the doctoral program.

**Dr. Sudha Deshmukh** (former Dean) for her immense support and **Dr. Leela Iyengar**, Adjunct professor, CPGS, for her valuable inputs and advice throughout the research work.

**Dr. Maruti Ekbote**, Assistant professor, Department of Pharmacognosy, S. J. M. college of Pharmacy, Chitradurga and **Dr. Shankar**, Distance education, Kuvempu university for helping in collection of plants and their material. **Dr. Sundaram PM**, Senior Application Scientist, Agilent technologies, Bangalore for his support in purification of enzyme.

Management and staff of Nargund College of Pharmacy, for providing facilities to carry out the animal experiments.
All the faculty members of the Department of Biochemistry, CPGS, Jain University, for exchange of ideas, support and constant motivation. All the faculty members of the Department of Biotechnology and Microbiology, CPGS, Jain University, for their kind support.

Dr. Francois Niyongabo Niyonzima for his invaluable suggestions and help. My fellow researchers Vineetha Maheswari, Sayeeda, Lynette, Shwetha and Anusha for the stimulating discussions and fun moments over the course of this study. Oly Chaynika and Shwetha from the Department of Microbiology for their kind support. Jayamohan for his kind help to withdraw blood from the volunteers whenever required. My fellow researchers of the Department of Biotechnology and Microbiology for their kind support. Sincere thanks to Byraja and Nagesh for their help in the laboratory instruments.

Sincere thanks to Mrs. Jayalaxmi who helped me in handling animals and different procedures of injection. Sincere thanks to Shashidhar and Mangalamma for their help in the plant collection. Sincere thanks to Arun for procuring eggs for the experiment.

My husband Dr. Srinivasa for his constant understanding, advice, support, motivation and endless criticism. My daughters Niharika and Samiksha for being patient, co-operative and the driving force behind my work. My aunt Lalitha for being inspirational and pillar of strength throughout my academics. My cousins Praveen and Pradeep for their constant support to do better in academics. My parents Chaya and Janardhan for their constant support throughout my research work. My mother -in - law Sheshamma for being supportive and understanding. My brother Dheeraj for being computer suave and helping me with all computer related problems. Divya, Mithun, Uma Devi, Damodaram, Sukumar, Aravind, Radhika, Bhushan, Sujatha, Sumitha, Savitha, Kavitha, Rajanna, Nagraj for their constant encouragement.

Bhavya J