I reckon it with privilege to work under the competent guidance of my respected and beloved Supervisor, Dr. N. Sakthivel, Professor and Head, Department of Biotechnology, School of life sciences, Pondicherry University. My diction of thanks will be incommensurate for his dexterous, meticulous and altruistic guidance during the advancement of my work, I submit my deep sense of gratitude for his keen interest, wholehearted co-operation and unflagging encouragement and support rendered during the progress of my research work and in preparation of the thesis.

I wish to record my sincere thanks to the members of the doctoral committee, Dr. N. Arumugam, Associate Professor, Department of Biotechnology, School of life sciences, Pondicherry University and Prof. K. Jeevaratnam, Professor, Department of Biochemistry and Molecular Biology, School of life sciences, Pondicherry University for their consistent and constructive suggestions, keen interest and kind encouragement.

I submit my heartfelt thanks to Prof. J. M. Risede, CIRAD-FLHOR, Station de Neufchateau, Sainte Marie, Capesterre-Belle-Eau, Guadeloupe, France for the supply of microbial cultures.

I feel elated to express my heartfelt thanks to my School, UG and PG teachers who provided me with good knowledge, constant encouragement and facilitated me to achieve success in my academics.

I sincerely acknowledge Dr. S. Jayachandran, Dr. V. Arul, Dr. K. Prashanth, Dr. Lata Shukla, Dr. B. Sudhakar, Dr. A. Hanna Rachel Vasanthi, Mr. V. Balasubramanian, Dr. Venkateswarlu Sharma and Dr. D. Arun Kumar, Department of Biotechnology, School of life sciences, Pondicherry University for their support and advice.

A bouquet of thanks is due to my senior friends Dr. R. Sunish kumar, Dr. S. Isaac Kirubakaran, Dr. N. Ayyadurai, Dr. P. Ravindra Naih, Dr. K. Badrinarayanan, Dr. S. Vaithyanathan Pondicherry University, Dr. R. Damodaran, Vector Control Research Centre, and colleagues G. Raman, B.M. Asha, P. Lalitha, R. Kamaraj Kennedy, G. R. Rahul, Jean Cletus, M. Revathi, V. Veena, R. Subasri, Naresh Niranjana, M. Gandhi Pragash, B. Sundarakrishnan, R. Saranathan, P. Balamurugan, Abhijith. R. Makki, A. Paari, N. Yuvaraj, V. Pattu Kumar, Venkatesh,
Words cannot suffice to express heartfelt gratitude to my dear friends A. Moushumi Priya, T. Piriyatharshini, C.R. Subasri, M. Yoga Priya, P. Manochitra, T. Manamathi, Kiruthika, Niramathi and J. Sridhar who took great care of me and made my life pleasant and fun filled.

I would like to express my sincere thanks to Mr. P. Ramalingam, Mr. S. Vadivelou, Ms. Vinothini, Mr. V. Meyappan, Ms. D. Sarala, Ms. I. Chandra, Ms. Muthammal, Ms. M. Anandi, Ms. R. Rajeshwari, Ms. S. Meenakshi, Department of Biotechnology and Mr. C. Balakrishnan, Dean Office, School of Life Sciences, Pondicherry University, for their cooperation and timely help in connection with various official issues.

I acknowledge the financial support received from University Grants Commission (UGC), New Delhi and Department of Biotechnology (DBT), New Delhi for providing me with Junior and Senior research fellowships.

Motivations during my younger days to study and dreams to see me equipped with higher qualification of my loving Appa, Mr. T. Jayakumar and Amma Mrs. J. Perundevi and blessings and memory of my Grandma Mrs. P. Hemambhuchavalli, kept me in high spirits to pursue my academic career and I find no words to express my gratitude for their incomparable sacrifices and prayers. I am falling short of words to thank them.

Words seem to be inadequate to express my indebtedness to my loving Husband, Mr. R. Nagarajaprakash, aunt, Mrs. Shanthi Ramamoorthy, my beloved sister, Dr. J. Manjeu and other family members for their constant encouragement and kind support to complete the course with great success.

I fervently record my heartfelt thanks to THE ALMIGHTY for showering me with immense blessings and guiding me in the path of success.

(J. Pathma)