Acknowledgement

I would like to place on record my respect as well as gratitude to my teacher, Dr M. Patrick Gomez who has not guided my research activities but also helped me develop over the years. My association with him has inspired me with a zeal to reach higher. I consider myself privileged to be under his tutelage. I am ever grateful for the opportunities he has provided to me.

I would like to express my immense gratitude to Prof. K. Rajan, LSS in Zoology, Dept of Plant Biology and Plant Biotechnology, St. Joseph’s College (Autonomous), Tiruchirapalli for his encouragement and moral support to me during the course of thesis writing.

My sincere thanks are due to my doctoral committee member Dr. (Mrs.) P. Geraldine, Professor, Dept of Animal Sciences, Bharathidasan University, Tiruchirapalli for her constructive criticism and useful suggestions throughout the course of this study.

I express my sincere thanks to Rev Dr. Rajarathinam R SJ, Principal and Rev. Dr. A. Joseph SJ, Secretary, St. Joseph’s College (Autonomous) (SJC), Tiruchirappalli for their support and the facilities offered at the college for the conduct of these studies.

I thank Dr V. M. A. Kadir, Head, Dept of Biochemistry, SJC for his constant help and encouragement. I take this opportunity to thank Dr. D. Irudaya Arockiasamy and Dr. G. Melchias, the Heads of Dept of Plant Biology and Plant Biotechnology, and Biotechnology for all their help and timely guidance on various occasions. I also thank the staff members of PB & PBT, Biochemistry and Biotechnology, SJC for all the help rendered to me.

I sincerely thank my friend Dr. I. Maria Johnson for providing me with antibodies and chemicals and for helping me in carrying out the two-dimensional electrophoresis and embryonic studies. I also express my sincere thanks to my friends, Dr. Peter Natesan, Mr. Bakkiyanathan and Dr. Vetrivelan for their valuable help during the course of this study.

I owe my sincere thanks to Prof. Caroline Fall, University of Southampton, Southampton, U.K. for her constructive criticism and useful suggestions throughout the course of this study. I also thank Prof. Peter Wong, Department of Pharmacology, National University of Singapore, Singapore; Prof. Vaclav Hampel, Dept of
I also thank Dr. Anbalagan, Biotech, Yercaud for his timely help and valuable suggestions in standardizing the 2D gel electrophoresis technique. I am extremely thankful to Dr. Tapos of EM division, All India Institute of Medical Sciences, New Delhi for his help in the electron microscopic studies. I thank Delta-2D software Co, Germany for their timely help in conducting 2D gel analysis.

I would like to express my immense gratitude to Prof. J. Sengupta and Prof. D. Ghosh, Dept of Physiology, All India Institute of Medical Sciences, New Delhi. I respect their values in life; their principles and commitment to their work, which have in turn, made me a more responsible and enlightened person. I have picked up the basics of my scientific career in their lab and for all future opportunities that may come my way, I will always be thankful to them.

I am grateful to the Council Scientific and Industrial Research (CSIR) for awarding the fellowship during the course of this study. I also acknowledge the financial support received from Society for Developmental Origin of Health and Adult Disorder, U.S.A; International Brain Research Organization, U.S.A; International Neuroscience Society, U.S.A; Physiological Society, London, U.K; Society for Endocrinology, U.S.A and Department of Biotechnology (DBT)/ Department of Science and Technology, Government of India, New Delhi.

I am extremely thankful to Dr Christine Gomez for her concern, support and prayers. Finally I owe a lot to my parents, sister, brother-in law, wife and parents-in-law for their constant encouragement, motivation and support, I was able to realize and fulfill my aspirations. My heartfelt thanks are due to my mom for her prayers, encouragement and loving support, which have helped me a lot to finish my thesis successfully. My special thanks are to my wife for her prayers, loving support and patience.

(J Fredrick Rosario)