ACKNOWLEDGMENT

One of the joys of completion is to look over the journey past and remember all the friends and family who have helped and supported me along this long but fulfilling road. It would not have been possible to write this doctoral thesis without the assistance and sustenance of the kind and exceptional people around me, to only some of whom it is possible to give particular mention here.

First and foremost, this thesis grew out of a series of interactions with my supervisor Dr. S. Kannan through his socratic questioning, he brought me closer to the reality I had initially perceived, eventually enabling me to grasp its rich complexity. His comments on chapter drafts are themselves a course in critical thought upon which I will always draw. I am grateful for his steady encouragement and infinite attention to details the ensured quality of my work.

I would like to thank my parents who through my childhood and study career have always encouraged me to follow my heart and inquisitive mind in any direction this took me. They provided me with a loving home, one where an academic mind was celebrated. I would not have contemplated this road if not for my parents who instilled within me a love of creative pursuits, science and language, all of which finds a place in this thesis. They have always been a constant source of support – emotional, moral and of course financial – during my Postgraduate years, and this thesis would certainly not have existed without them. I am forever grateful for their unequivocal support throughout, as always, for which my mere expression of thanks likewise does not suffice.

I offer a token of gratitude to the God Almighty for continuous shower of blessings during the course of my work, and my beloved wife Mrs. K. Kavithaa for their suggestions and encouragement during the period of my study.

With a deep sense of gratitude, I express my personal indebtedness and faithfulness to Dr. K. Sasikala, Professor and Head, Department of Zoology, Bharathiar University, Coimbatore. I am grateful to her for being a constant source of inspiration during the entire period of my study. I also express my heartfelt thanks to Dr. K. Murugan, Professor, Dr. M. Ramesh, Associate Professor, Dr. P. Saravanabhavan, Reader, Dr. V. Ramasubramaniam, Assistant Professor, Dr. C. Gunasekaran, Assistant Professor and Dr. P. Sundararaj, Assistant Professor Department of Zoology, Bharathiar University for their suggestions and encouragement during the period of my study.

Academically I want to thank Prof. M. Krishnan, Professor and Head, Department of Environmental Biotechnology, Bharathidasan University for the support he showed me in the development of this thesis. His direction and support was fundamental in its development.

I would like to express my deepest appreciation and thank to Prof. P. Gunasekaran, Vice Chancellor of Thiruvalluvar University, Vellore, for his suggestions and critical comments.
With due respect I express my gratitude to Prof. G. Marimuthu, Professor and Head, Department of Animal Behaviour and Physiology, Madurai Kamraj University for taking the time to advise and make constructive comments on the document at various stages of its production.

I take this opportunity to say heartfelt thanks to the University Grants Commission, (UGC-RGNF), Government of India, for providing financial assistance in the form of both Junior and Senior Research Fellowship which buttressed me to perform my work comfortably.

Dr. P. Gunasekaran, Director and Dr. K. Kaveri, Deputy Director of the King Institute of Preventive Medicine and Research, Chennai deserve my sincere expression of thanks for providing me experimental hands-on-training on different aspects of cell Culture and viral propagation. I also owe gratitude to the staff members who willingly devoted so much time in giving guidance to me.

I owe a great deal of appreciation and gratitude to Sophisticated Analytical Instrumentation Facility (DST), Department of Anatomy, All India Institute Medical Sciences (AIIMS), New Delhi for providing SEM and HR-TEM facilities.

I gratefully acknowledge Defence Research and Development Organization (DRDO), Bharathiar University for their support during my experimentation in XRD analysis.

My thanks are due to Dr. K. J. Rajendra Prasad, Professor and Head, Department of Chemistry, Bharathiar University for his timely help and support in FTIR analysis.

I gratefully acknowledge Dr. K. Premkumar, Assistant Professor, Department of Biomedical Science, Bharathidasan University for providing Zeta potential analysis.

My thanks are due to Department of Nanoscience and Technology, Karunya University for helping me to carry out particle size analysis.

I extend my sincere thanks to Prof. D. Mangalraj, Dr. Ponpandian and their research team members, Department of Nanoscience and Technology, Bharathiar University for their support during graph construction.

My colleagues at the laboratory ensured that I was constantly engaged and entertained along the way. I would particularly like to thank Mr. S. Sundarraj, Mr. R. Thangam, Mr. P. Mareeshwaran, Mr. R. Vivek, Mr. Mr. C. Rejeeth, Mr. V. Nipun Babu, Ms. M. V. Sujitha, Ms. V. Sreevani, Ms. K. Vimala, Ms. K. Shanthi and M.Phil scholars Mr. T. Ponraj, Mrs. T.A. Mary for their exceptional friendship. Among many other things, they gave me a thoughtful and detailed feedback on this thesis, a careful and patient ear, gentle help in finding my balance, and an appreciation for a life well lived.
I would also like to thank Mr. Senthil, Mr. Thangam, Mr. Jadeesh Lal, Mr. Maruthappan, Mr. Kannan and J. Karthick Office Staffs, Department of Zoology, for sending communications in time.

The informal support and encouragement of many friends has been indispensable, and I would particularly like to thank Mr. M. Sankaran, the incomparable individuals for having provided me with his friendship.

Manickam Paulpandi