ACKNOWLEDGEMENTS

I would like to express sincere thanks to my Research Supervisor, Professor N. Sakthivel, Head, Department of Biotechnology for providing me an opportunity to carry out Doctoral Programme. His constant encouragement, valuable discussions were vital in developing the key concepts, interpretation of results and played key role and resulted into this thesis.

I sincerely thank my Doctoral committee members, Professor N. Parthasarathy and Dr. V. Arul for providing valuable suggestions during course of study.

I am very much indebted to Prof. S. Jayachandran, Dr. N. Arumugam, Dr. Hannah Rachel Vasanthi, Dr. B. Sudhakar, Dr. Lata Shukla, Dr. Prashanth, K., Dr. Venkateswara Sarma, Mr. V. Balasubramanian and Dr. Arunkumar Dhayalan for their support and encouragement.

I indeptedly thank Prof. G. Govindaraj, Co-ordinator, Central Instrumentation Facility, Puducherry and their staffs Mr. S. Ramasamy, Mr. Elumalai, Ms. Elisa, Ms. Jayanthi, Mr. Gopalakrishnan, and Mr. Thillaimani for their help and support.

I am thankful to Dr. Pradeep, Sophisticated Analytical Instrumentation Facility, IIT Madras, for helping me with the high resolution transmission electron microscopy and Dr. Suresh, CECRI, Karaikudi for inductively coupled plasma mass spectrometry experiments.

I am grateful to Prof. Linda S. Thomashow, USDA-ARS, Washington State University, Pullman, WA, USA.; Prof. Genevieve Defago, Institute of Plant Sciences, Swiss Federal Institute of Technology, Zurich, Switzerland; Prof. J. M. Risede, France, for supplying microbial cultures.

I am thankful to my seniors, Drs. R. Sunish Kumar, N. Ayyadurai, S. Isaac Kirubakaran and Popavath Ravindra Naik for the guidance through out my course of study.

I am thankful to Department of Biotechnology office staffs, Mr. C. Balakrishnan, Mr. P. Ramalingam, Mr. S. Vadivelou, Ms. D. Sarala, Ms. Vimala and Ms. Vinothini for their co-operation during my course of study.
I am thankful to all my Colleagues, Mr. Raman, Jean Cletus, Kennedy, Kanmani, Sathesh, Yuvraj, Paari, Pattukumar, Sundar, Aravind, Bala, Saranathan, Abjith, Zubair, Ajez, Abidh, Wasim, and Ms. Subashri, Asha, Pathma, Revathi, Veena, Piriya Tharshini, Moushumi Priya and Lalitha for their company and co-operation and support.

I am thankful to all my Friends and well wishers, Mr. Perumal, Durai, Vinoth, Nallamuthu, Vasanth, Venkataramaiah, Rajendran, Prakash, Rajesh, Shanmugavelu, Paneer, Saravanan, Sabari, Kalidass, Udaya and Govind for the company and Drs. Kallidass, Vivekananan, Vaithinathan, and Karthikeyan for their co-operation and support.

I am thankful to my friends, Jayaprakash, Kanagaraj, Ganesh, Sathish, Prem, Murali, Venki, Arun, Vinodh, Ravi Shankar, Rajesh, Ganesh, Suresh, Farooq, Sahul, Sundar, Suffed, Sudeer, Mohanan, Rajinish, Rahul, Manikandan, Shoji, Uma, Pasha, Krishna and Mani for their constant encouragement, support, love and care.

I acknowledge the financial support received from University Grants Commission (UGC), New Delhi and Department of Biotechnology (DBT), New Delhi for providing me with Project Fellow and Junior Research Fellowships.

I am thankful to my Parents, Sisters and Brothers for their blessings, support, love and care.

Puducherry (K. BADRI NARAYANAN)
Date: