Acknowledgments

I take this opportunity to express my reverence to my Research Mentor, Dr. M David who introduced me to a fascinating realm of Aquatic Toxicology. His inspiring guidance and constant motivation have helped me to understand better and remain optimistic. I am grateful to him for giving me liberty in the work undertaken and for untiring support and encouragement during my doctoral programme. Although this acknowledgment is insufficient, I preserve an everlasting gratitude for him.

I am grateful to my teachers who inspired my interest in Science and lead me towards a career in Biological Sciences.

Factual mentors are the anonymous reviewers who showed the rationale of research to me and it has greatly helped in improving the insights, skills and taught process in the approach, design and analysis of research problems.

I am grateful to

♦ Dr. AA Hooli (Principal), Karnatak Science College, Dharwad for providing basic facilities for the present research work.
♦ The faculties: Prof. (Smt.) KB Karale, Dr. (Smt.) NV Biradar, Dr. (Smt.) AS Bellad, Dr. (Smt.) MS Nayak, Dr. CB Ganesh, Department of Zoology, Karnatak Science College, Dharwad.
♦ Prof. (Smt.) BA Shanbhag, Prof. R Nazeer Ahamad, Prof. (Smt.) K Pancharatna, Dr. (Smt.) LS Inamdar and Dr. N Shivanna, P.G. Department of Studies in Zoology, Karnatak University, Dharwad.
♦ Dr. SG Mathad (Rtd-Principal), Karnatak Science College, Dharwad.
My earnest, humble, and sincere thanks to

♦ The authorities of University Scientific Instrumentation Centre (USIC), Karnataka University, Dharwad for providing and helping me to utilize GC-MS, HPLC, AAS, UV-visible and Image Analyzer for the current research.

♦ Chief Executive Officer (CEO), Fish Farmers Development Agency, Dharwad for their timely supply of test species during this study.

♦ Dr. RH Chandan, Pathologist, Chandan Diagnostic and Dental Clinic, Dharwad for his kind and sincere guidance to me in carrying out the haematology of the experimental fish.

♦ Dr. BK Chandrashekar Sagar, Professor, Electron Microscopy Division, NIMHANS, Banagaluru.

♦ Mr. Ramesh and Mrs. Hemavathi, Technicians, Electron Microscopy Division, NIMHANS, Banagaluru.

♦ Dr. R Renate, Senior Research Biologist in the office of Research, Center for Veterinary Medicine, US Food and Drug Administration, Laurel, Maryland.

♦ Shri. Vinayak Naik and Shri. Nagaraj Naik, Proprietor, Shri. Maha Ganapati Computers, Dharwad for their excellent art and typesetting work in this thesis.

♦ Karnataka University Authorities for awarding University Research Studentship (URS).

♦ Council of Scientific and Industrial Research (CSIR), Pusa, New Delhi, for awarding Senior Research Fellowship (CSIR-SRF).

♦ Non-teaching staff of Karnataka Science College and Karnataka University for their help, genuine support and co-operation during my research work.

♦ Shri. Arun Salimath, Proprietor, Allied Scientific Agency, Bhairidevarkoppa, Hubli for timely supply of analytical grade chemicals for my research work.
My heartfelt thanks to my senior researchers: Dr. MS Prashanth, Dr. SB Mushigeri, Dr. R Shivakumar, Dr. HB Shivakumar, Dr. (Smt.) VR Naik, Prof. RM Pattar, Dr. Ramesh H, Dr. V Munaswamy and to my research colleagues Prof. G Krishnamurthy, Prof. Rafeek Ahmed Maniayar, SG Chebbi, SR Marigoudar, JB Chittaragi, VS Karigar and MY Shivaraj, SM Shivanoor, R Dasar, Mr. Lilaram, Mr. Robert, Mr. Subbu, Mr. Chabbi, Mr. Chidanand, Mr. Nagbhushan, Mr. Rahul, SG Sunagar, Mr. Sanjeev, Mr. Hiremath, Mr. Vinayak, Mr. Chitari, Mr. Narale, Mr. Amar, Dr. Mesta, Mr. B. Patil, for their motivation, subtle guidance, constant help, technical support and discussions.

Undoubtedly, immortal peoples have been associated with this thesis and for me it is impossible to mention all of them. In this regard, my honest, humble, and sincere thanks to all the individuals who have in any way been associated with the completion of this research work.

I am forever indebted to my parents, sister, brother and to my family for their love, caring, unfailing support, tremendous patience, sacrifice, and encouragement.

VINEETKUMAR