

Acknowledgements

Quest for knowledge is the eternal passion of human race which help us to evolve faster and in a smarter way than any living organism in the earth. It's indeed our learning that makes us probably the noblest creature in this habitable part of universe.

I am grateful to my guide Dr Bijay Kumar Behera and Dr. Pradip Kumar Das Mohapatra, whose guidance, suggestions and encouragement helped me throughout my research work. I am very fortunate to have them as my research guide. A person of few words with an impeccable integrity, honesty and dedication towards work, both of them left a deep impression on me and helped me to become not only a keen researcher but overall a better human being.

I am grateful to the Dr. B. K. Das, Director, ICAR-Central Inland Fisheries Research Institute, Barrackpore for providing the necessary laboratory facilities to conduct my research work. I am also grateful to the former director, Prof. A. P. Sharma, ICAR-Central Inland Fisheries Research Institute, Barrackpore for giving me permission to register myself for Ph.D. programme.

I would like to take this opportunity to sincerely thank Head and the members of the PhD Review Committee, Microbiology Department, Vidyasagar University for supporting and appreciating my work.

I acknowledge the research fellowship support (SRF) under the grant in project "National Surveillance Programmer for Aquatic Animal Diseases" from the National Fisheries Development Board (NFDB), Hyderabad.

I wish to thank Dr. Pranya Kumar Parida and Mrs. Shaya Manoharmayum Scientist, ICAR-CIFRI, Barrackpore for proving intellectual support and reviewing my manuscripts that have helped in timely publications.

I sincerely appreciate help and support of my colleague Sudip Pakrashi, Samiran Pal, Abhishek Das, and Ajaya Rout. Their words of wisdom especially during tough times helped me to stay focused towards the research.

I am fortunate to get constant motivation and support of my seniors specially Dr. Swaraj Priyaranjan Kunal, Dr. Hirak Jyoti Chakraborty, Dr. Soma Bhattacharjee and Dr. Nandeibam Samarjit Singh. Special thanks to Hirak Da for his constant interaction and support throughout my stay at ICAR-CIFRI.

I sincerely appreciate help and support rendered by my dear friends Subhankar Mukherjee, Satabdi Ganguly, Souvik Pal, Chinmay Bandopadhyay, Anwasha Banerjee and Biswajit Das who always motivated me to conquer any challenges. Our constant interaction and critical discussion has always intrigued me to do improve even further. They also provide valuable suggestions while reviewing my manuscripts that have helped in timely publications.

I would like to acknowledge Shri Asim Kumar Jana, Technical staff member of Biotechnology Laboratory, FREM division, ICAR-CIFRI, Barrackpore for assisting me during my sampling and helping me during my research work.

I would like to thank all the instruments in the lab used during my research. They sincerely and dedicatedly work with me and never let me down.

I will be ever grateful to the teachers from school level to University who loved me a lot and motivated me to excel in anything I do and always showered their choicest blessings on me.

I am indebted to Mr. Atanu Jana, Mr. Kousik Maity, Mr. Gopal Chapte, Kamalesh for providing necessary support during sampling in different states. Without their help and support it is impossible to get sample from so far.

I am also grateful to Mr. Sunil Kumar Banerjee (kaku) and Mrs. Ranjana Banerjee (Kakima) for their love and support. Without their help it would be difficult to stay away from home. They look after me like their own child.

Lastly, nothing would have been possible without the constant support and sacrifice of my parents, who always believed in whatever I did and supported me in all my endeavors. And, I have no words to express my feelings for my family for endless love, encouragement and eternal support.

I would like to thank everybody who was important to the successful realization of thesis, as well as expressing my apologies to those, I could not mention over here.

Last but not the least this chain of gratitude will not be complete without showing my deep sense of gratitude to the creator, the silent force, the supreme energy, the Almighty.

Prasenjit Paria