Preface

Tremendous rise in the use of pesticides during recent years indicates the significant role played by pesticide in modern society. They not only formed as an important tool of modern agriculture but also saving life of millions of people in developing and underdeveloped countries suffering from several diseases spread by insect vectors. But the most unfortunate fact remains that these pesticides make the life of non target species hell, amongst them fishes are the worst victims.

Organophosphates, besides their use as insecticides, are also used as chemical warfare agents and clinical medicine. Majority of OP compounds share the common feature of being excellent inhibitors of colinesterases. The action of organophosphates is known a great deal at the cellular and molecular levels. As there is an urgent need to use non-toxic and biodegradable chemicals derived from plants, Azadirachatin a neem based pesticide emerged by offering an economic and friendly solution. Even though its persistency is less in the environment, its safety to animals is not well documented. Hence a comparative study is aimed to understand the toxic potentials of chlorpyriphos an organophosphate pesticide and azadirachtin the biopesticide on fresh water edible fish, *Tilapia mossambica* (Peters).

The findings of the present study are presented in five chapters. The first chapter comprises the toxicity evaluation and estimation of acetylcholinesterase activity and acetylcholine content. The second chapter pertains to determine the energy releasing processes by estimating the activity levels of ATPases, acid and alkaline phosphatases. The third chapter devoted to determine the energy metabolism by estimating the activity levels of dehydrogenases and transaminases. The fourth chapter deals with the detoxification mechanism studying selective enzymes. The fifth chapter devoted to histology to study cyto- architectural changes of different tissues under chlorpyriphos and azadirachtin.

The present work was not investigated in deeper way and by no means complete. It represents only a preliminary effort on the part of the author. The author may be excused for any other lacunae in this present investigation.