Preface

Water pollution has emerged as one of the most pressing problems of this century. The pollution of aquatic ecosystems occurs worldwide includes a variety of sources and impacts, and is apparently increasing. Chemical pesticides have consistently demonstrated their worth in one hand by increasing global agricultural productivity, reducing insect-borne and endemic diseases. In the other hand the pollution of water resources by (1) the direct application of pesticides to bodies of water to control aquatic plants, (2) the indirect pollution of surface waters by air transport and/or surface water runoff of pesticides, and (3) the pollution of groundwater by pesticide seepage through soil have documented well since the 1940s. Since then, more pesticides have been developed and spread across both agricultural and urban landscapes. Thus, it is no wonder that pesticides or the residues of degraded pesticides pollute much of our water resources.

The ability to predict the effects of pollutants or chemicals on organisms and to extrapolate toxicant effects from laboratory to population and community levels has become a very important factor. There is a need for physiological and biochemical indicators of organismal health and toxicant effects. By using biological indicators it could be possible to identify environmental problems before the health of aquatic system altered seriously. For the determination of both exposure and effect of a pollutant on an organism, at biochemical, physiological, and pathological alterations can serve as markers. Chemically induced changes in biological systems are sensitive indicators than those at higher levels of biological complexity.

Recent evidence indicates that fish, an extremely valuable resource, are quickly becoming scarce. One consequence of this scarcity is the increasing concern for fish survival and a growing interest in identifying the levels of various chemical pollutants, which are safe for fish and other aquatic life. Pesticides are among the most hazardous chemicals to men and ambient. However, these chemicals may reach other ecological compartments as lakes and rivers through rains and wind, affecting many other organisms away from the primary target. The injuries of pesticides to
aquatic environments are incontestable. The significant increase of chemical emissions in the water resources has lead to deleterious effects for aquatic organisms.

Generally fish are regarded as sentinels of biointicators for aquatic pollution and are indispensable experimental models for ecotoxicological studies. Besides the fact that fish is staple food for human being. Moreover, comprehensive toxicological studies on the native species to locally or regionally used pollutant would not only help us to protect the environment as a whole. But also provides ecotoxicological data which can be used for the regulatory affairs of such chemicals in the region or elsewhere. With this view, the present investigation was designed to study the effect of synthetic pyrethroid, cypermethrin on one of the Indian major carp, Labeo rohita. In the present study an attempt has been made to address the responses from an individual to organelle levels. In broader sense the studied parameters include behavioral, physiological, biochemical, haematological, histopathological and ultrastructural changes on exposure to lethal and sublethal concentrations of cypermethrin including the reproductive studies for better understanding of "Cypermethrin Induced Pathophysiological and Some Biochemical Changes in the Freshwater Teleost, Labeo rohita (Hamilton)". Nevertheless the present research work is preliminary and a small segment of immeasurable area under discussion of pyrethroid toxicology. Some degree of limitations including time, space and facilities constrained the researcher from penetrating into the core of this study. Further studies are warranted for holistic understanding of the effect of cypermethrin from an individual to population in the studied fish in particular and fish species in general to make definite conclusions and generalizations.