ABSTRACT

The present investigation on the effects of malathion on Certain aspects of the biology of freshwater eel, Monopterus cuchia (Ham- Buch) presented in the thesis comprises the following aspects.

Chapter-I: This comprises the general introduction of the topic and justification of development of the specific objectives for the present investigation. Considering the demand of Monopterus cuchia, it is urgently required to explore the cause of the dearth of the species from the paddy field and wetlands. The following objectives have been planned

1. Effect of pesticides on the behaviour and growth of the fish.
2. Effects on different haematological parameters (TEC, TLC, DLC, Hb)
3. Effects on the histological aspects of the kidney, liver, stomach, intestine, skin, gonads etc.
4. Development of eggs during maturity of the ovaries of the fish along with the determination of fecundity of the fish of various ages/sizes.
5. Effect of the quality of the meat of the fish.

Chapter-II: A unit review of certain works has been presented.

Chapter-III: In this chapter the materials used and methodologies followed are discussed. The details of the use of fish, preparation of solution and others are described in details, together with procurement of fish and their rearing in cement cisterns, feeding, precaution of malathion. The blood parameters such as TCE, TCC, Hb etc. are estimated as described. Routine histological methods are followed in order to examine the organs such as liver, kidney, stomach, intestine, skin, gonads. The reproductive behaviour of the species along with the synthesis of vitellogenesis are also attempted.

Chapter-IV: In this chapter the effects of malathion on the selected hematological parameters have been described. The impact of malathion (0.06 ml/lit) on the different blood parameters such as TEC, TLC, Hb and on differential count on
eosinophil, neutrophils, basophils, lymphocytes, monocytes have been shown from content as well as in various treated groups. The effect of the sub lethal dose of malathion showed the decrease of TEC and Hb. 5-sets of experiment contains 5-8 fish. The effects are monitored for 5-25 days. Further experiment dealing with the DLC show that malathion affect the eosinophil %, neutrophil% and basophil %, where as the same resulted in a slight increase of lymphocytes and monocytes %. The experimental findings are subjected to statistical analysis.

Chapter V: The effects of malathion have been shown on skin, stomach, intestine, liver and kidney. The histological aspects of the above mentioned organs are elucidated. Histological structure of liver, kidney, stomach, intestine and skins are examined after their exposure for 5-25 days in the same concentration of malathion. There significant changes in the histological architecture of the above mentioned fishes.

Chapter VI: The effects of the pesticides are analyzed with regard to gonads; GSR, egg, histological observation on the gonads body form, shapes and its effect as vitellogenesis etc. are studied. It has been found that gonads are affected. The average weight of the testes and gonads are seriously affected by loss of weight. Histological structures are distorted, blood and lymph vessels are disorganized. Ovaries follicular cell arrangement is disturbed, showing a loss of proper sequencer. Poor vitellogenesis occurs in pesticides treated ovary.

Chapter VII: This chapter deals with the change of basic biological composition of the muscular tissue, showing the proximate composition such as moisture, protein, fat and ash, along with the status of the free fatty acids profile. The experiment set up showing the effects of malathion administration for a period of 30 days shows the changes of proximate composition along with the ω-3 fatty acids.