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Impact of Fenevalerate Pesticide on the Total Protein Content of Fresh-Water Fish *Nimechilus botia*

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ABSTRACT: In the present experiment fresh water fish *Nimechilus botia* were exposed to the lethal concentrations of 3.92, 3.40, 3.10 and 2.60 ppm of fenevalerate (LC50 values of 24, 48, 72 and 96 hrs. respectively). After exposure periods total protein were estimated by using the lowery method. The results of the present investigation reveals a significant decrease in protein content. After 72 hrs. of exposure a significant decrease in protein content was observed.

Keywords: xyz, word.

Introduction

The pesticides are toxic substances which are used for pest control in agriculture. The application of pesticides has become one of the modern tools in the agriculture. But indiscriminate use of these has resulted in the contamination of aquatic bodies and affecting sincerely to the non-target organisms. These pesticides accumulated in the body of non-target organisms and damages the organs and other systems of the body and disturb the physiological and biological processes of the organisms. The freshwater fish s

Material and Materials

The fresh-water fish *Nimechilus botia* was collected from Girna Dam near Malegaon. Fishes were cleaned in the laboratory and maintained in the plastic troughs for 4-5 days for acclimatization. The fishes were fed at regular intervals and water was changed. Fishes were not fed during the experiment. The physico-chemical parameters like temperature, PH, dissolved oxygen dissolved solids and alkalinity were determined by the standard methods of APHA.

The fishes were grouped into five batches. The first batch was maintained as a control and second, third, fourth and fifth batches of fishes were exposed to 3.92, 3.40, 3.10 and 2.60 ppm LC50 values of 24, 48, 72 and 96 hrs. respectively). After exposure periods the fishes were dissected and hepatopancrease were taken out for biochemical assay of proteins by lowery method.

Results

The Physico-chemical parameters of water was used and maintained constant (Table-1). The results of the present investigation when fishes were exposed to fenevalerate pesticide for 24, 48, 72 and 96 hrs. reveals a significant decrease in protein content. In the control group the total protein content was 212.24 ± 08.14 . The protein contents in experimental fishes was noticed 206.00 ± 8.36 , 180 ± 7.86 , 140 ± 7.28 and 186 ± 6.80 after exposure to the Lc50 values of 24, 28, 72 and 96 hrs. Slight rise in protein content was observed after 96 hrs. of exposure (Table-2)

Table 1: Values of water parameters

Sr.No.	Parameters	Values (MI/L)
1	Temperature	29.5
2	PH	7.2
3	Dossolved Oxygen	4.8
4	Dissolved solids	4.58
5	Alkalinity	



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Table 2: Effect of fanevalerate pesticides on protein content of fresh-water fish *Nimechilus botia*.

Group of fish	24 hrs.	48 hrs.	72 hrs.	96 hrs.
Control	212.24±8.14	212.24 ± 8.14	212.24 ± 8.14	212.24 ± 8.14
Experimental	206.06 ± 8.36	180.00 ± 7.46	140.68 ± 7.28	186.00 ± 6.80

Discussion

Being an important organic constituent proteins play an important role in cellular metabolism. Proteins regulate the process of interactions between intra and extra cellular media.

In the present experiment when fish *Nimechilus botia* exposed to the fenevalerate pesticide a significant decrease in protein content of hepatopancreas was observed. The decrease in protein content may be due to possible utilization of protein for metabolic purposes and enhanced proteolysis to meet the higher energy demand under toxicant stress. Similar observations were made by Kulkarni *et al.* (2005). Parate and Kulkarni (2003) suggested that depletion of protein may be due to utilization of protein for the production of energy to mitigate the pesticide stress and to prevent from fatigue due to the effect of pesticide. Keshvan *et al.* (2010) reported the depletion of protein content in fresh water crab *Barytelphusa guerini* exposed to hidden pesticides. Muley (2012) noticed the decrease in protein content in a Bivalve *Lamellidens marginalis* exposed to mercuric chloride.

In the present study, rise in the protein content were observed after 96 hrs. exposure. This rise in protein content may be due to anaerobic metabolism which can be increased under stressful conditions being able to cause change in protein content. Similar results were observed by Yadav *et al.* (2010) Bhagya Lakshami *et al.* (1981) reported an increase in protein content in the tissues of the crab *Oziotelphusa senex* after scemithion exposure. Humaira (2015) showed decline in protein content in crab *Barytelphusa guerinii* after exposure to folicure, pesticide. Borane and Zambare (2006) reported that cadmium chloride induced alterations in the protein contents of fresh-water fish *Channa orientalis*. eharjan and Raja (2008) suggested that changes in total proteins exposed to fanevalerate pesticide. Dhapate *et al.* (2007) reported that endosulfan pesticide influence the protein content of fresh-water fish *Nimechilus botia*.

Acknowledgement

The author (R.K. Yadav) is thankful to the principal, V.N. Naik College Nashik for encouragement throughout the work.

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