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Effect of Lead Nitrate on The Weight of Liver and Kidney of The Fish, *Rasbora daniconius*

N. V. Ingole
Dept. of Zoology, Yuvashakti Arts and Science College, Farshi Stop, Amravati.

Abstract :
In the present study it was found that a significant decrease in weight of liver of fishes and also significant decrease in weight of kidney of the cadmium chloride in the fish Rasbora daniconius.

Keywords: Cadmium, Rasbora daniconius.

Introduction :

Unplanned urbanization rapid industrialization and indiscriminate use of artificial chemicals in agriculture are causing heavy and varied pollution in aquatic environments leading to deterioration of water quality and depletion of aquatic biota.

Several trace metals are known to essential for life and other metallic elements are nonessential in a biochemical sense but they are exceedingly important to modern industry. It is a sad fact of life that heavy industrialization of the past few decades has been accompanied by health problem due to toxic effect of certain metals compound are used in pesticides, raw materials catalysis or energy are brought up as residuals in food water and air. Excessive absorption of these residuals results into hepato-toxicity renal in lead to the disturbance of ultimate accumulation of these metals in tissue level cause toxic effects.

Sharma and Singhal, (1993) demonstrated that the cadmium toxicity was responsible for the decrease efficiency of liver and alimentary tract in teleost fish, Heteropneust fossils. Acute taxicity of cadmium in alkaline and hard water to various freshwater and **Gast, 1972, Sprague 1987, Rupareliya et.al., 1987.**

The freshwater fish, Rasbora daniconius weighting about 10 to 5 gm and of size of 4 to 5 cms were selected for present study throughout the experimental period. They were brought in plastic buckets without any mechanical injury and kept in aquaria for a week to get acclimatized to the aquarium was changed everyday to ensure sufficient organ supply to fish and they wore fed with commercial diet daily so as to avoid malnutrition.

Toxicity Studies

LC 50 is concentration in which 50% of the experimental fishes survive of the experimental fishes survive estimation of LC50 by interpolation involves plating of date in a graph with concentration at which this line crosses the 50% morality line is the LC 50 value. From the 96 hrs LC 50 value 1/6 of the concentrations for 30 days separately. The Concentration was 1.33 mg LC for cadmium chloride. In this concentration the fishes did not show any morality till the end of the 30th day of exposure biochemical studies.

LC 50 value for cadmium chloride was determined a subtethal concentration corresponding to one sixth of LC50 value was taken for experiment. Fishes ware exposed to sub-lethal conantrations 10, 20 and 30 days. Control was kept simultaneously. After the completion of the experimental period the fishes were scarified and organ weight of liver and kidney were taken.

Result and Discussion :

Liver :

The weight of liver and kidney of the control fishes was found normal and steady after the treatment of 10, 20 and 30 days.

A significant decrease ($P<0.10$) in weight of liver of the fishes and 30 days was recorded. The percent changes in liver weight were -39.32, -55.29 and -62.53 percent over the control exposed for 10, 20 and 30 days respectively. The results were cited in the table 1

Kidney :

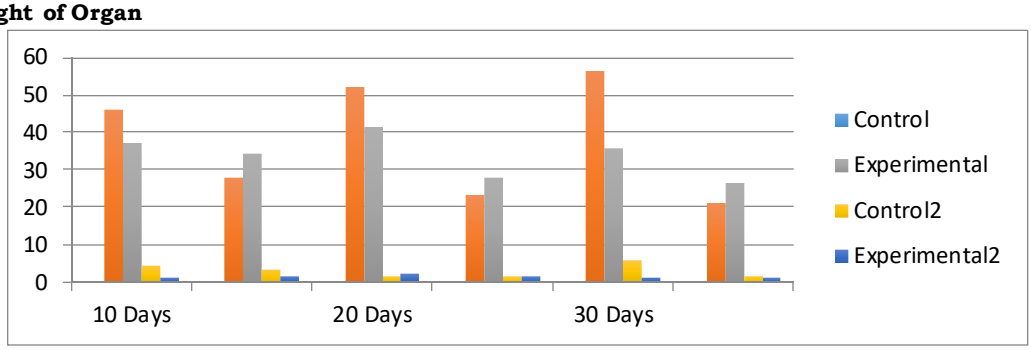
A significant decrease ($P<0.1$) in weight of the kidney of the cadmium chloride treated fishes was found after the treatment of 10, 20 and 30 days. The decrease percent in weight of kidney over control were found -15.94, -32.03 and -25.19 exposed for 10, 20 and 30 days respectively and results were shown in table 1

The effect of cadmium chloride on organ weight of the fish Rasbora daniconus for 10, 20 and 30 days was discussed by considering our observation and finding of earlier worker as under.

Table 1: Effect of cadmium chloride on organ weight (mg.) of the fish, Rasbora daniconius for 10,20 and 30 days

Duration	Group	Weight of liver (mg.)	Weight of kidney (mg.)
10 days	Control	46.147±4.46	37.508±1.40
	Experimental	28.000**±3.60 (-39.32)	34.528**±1.80 (-15.94)
20 Days	Control	52.198±1.91	41.517±1.72
	Experimental	23.335**±1.60 (-55.29)	26.217**±1.72 (-32.03)
30 days	Control	56.695±6.10	35.783±1.57
	Experimental	21.243**±1.94 (-62.53)	26.767**±1.31 (-25.19)
Value are mean of ± SE of six animals. *p<0.05, **p<0.01 and NS-Not Significant Figures in parenthesis indicate the percent change over control			

Weight of Organ



Duration and Group

A significant decrease (P<0.01) in the weight of liver of the fishes treated with cadmium chloride for recorded. The percent changes in liver weight were -39.32, -55.29 and -62.53 percent over control exposed for 10, 20 and 30 days respectively.

According to **Venkatesan and Subramanian, (2007)**, a decrease in weight of liver may be resulted due to marked proliferation and necrosis in the liver of freshwater fish Oreochromis mossombicus under the stress of copper sulphate **Chandravathy and Readdy, 1994** studies the toxicity of lead in the freshwater fish. Anabas scandens and they found a significant reduction in liver weight which may be due to significant reduced glycogen level with an elevation of active and total glycogen phosphorus activity of liver which then resulted into loss in weight of liver. The degeneration of blood vessel, vacuolation, hypertrophy, pyknotic nucel and lesion in liver tissues are reponsible in reduction in liver weight of the fish, Hypophalminethy molitrix induced by nickel toxicity **(Athikesavan et.al., 2006).** It has been reported that chemical pollutes such as heavy metals and pesticides change the tissue or organ chemistry of the aquatic organisms **(Svobodai, et.al., 2001). According to Akhare and Gudadhe (2007),** a decrease in weight of liver of albinorat may be resulted due to decreased glucose level of serum caused by the stress of azadiarachtin. A decrease in weight of liver may be due to the loss in liver glycogen, hypoglycemia and disintegration of some liver cells due to the action of anilofos **(Hazarika and Sarkar, 2001**. **According to Hodgson and Patricia, 2000**). A toxicant may affect the glycogensis in liver which results info decrease in its stored glycogen content which finally responsible for loss in weight of liver A tremendous decrease resulted in diabetic rat when treated powder of mulbery leaves **(Andallu and vardacharanlu 2002).**

Thus, in our investigation, a decrease in weight of liver was observed when the fish Rasbora daniconius treated with cadmium chloride for 10, 20 & 30 days. This loss in liver weight may be due to decrease in glycogen content, disintegration of liver cells, hypoglycemia and activation of metabolic rate under the stress of heavy metal cadmium chloride for 10,20 and 30 days.

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