



Alteration in certain Enzymological parameters in chromium induced fresh water teleost *Channa punctatus* (Bloch.)

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ABSTRACT

The effects of sublethal concentration (1/5th of LC 50) of chromium trioxide were studied after 5, 10 and 20 days. The result indicates that serum total protein was decreased whereas serum aspartate transaminase (AST) was increased after chromium trioxide exposure in all treated fishes.

Key words- Chromium trioxide, *Channa punctatus*, serum total protein, AST.

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INTRODUCTION

Heavy metals are the serious pollutants of the aquatic environment because of their environmental persistence and ability to be accumulated by aquatic organisms [1]. Heavy metals play a major role among the pollutants of environment concern [2]. Chromium is one of the essential heavy trace metals. Chromium, a hazardous heavy metal is a naturally occurring element in rocks, animals, plants, soil, volcanic dust, etc. Chromium enters the aquatic medium through the effluents discharged from tanneries, textiles, electroplating, metal finishing, mining, dyeing, ceramic and photographic industries. The present investigation is aimed to show the toxicity of chromium trioxide on the freshwater fish *Channa punctatus*.

MATERIALS AND METHODS

Group of 12 healthy specimens of *Channa punctatus* were exposed for 5, 10, and 20 days to sublethal dose (1/5th of LC 50) of chromium trioxide. In each aquarium the same physical and chemical properties of the water, as those in laboratory acclimatization were maintained. Even though the water was changed every day, the concentration of chromium trioxide remains the same within the experimental period. LC 50 was calculated by method Finny [3].

On each experimental day the blood from the control and chromium trioxide treated fishes was obtained in glass vials. Serum total protein was estimated by Biuret method of Strickland *et al.*, [5]. Where as serum AST was estimated by method of Reitman and Frankel [4].

RESULTS AND DISCUSSION

The health status of the fishes can be estimated by studying the various biochemical parameters. The comparative data of blood serum of control and chromium trioxide treated fishes are shown in table-1.

S.No.	Parameters	Control	5 Days	10 Days	20 Days
1.	Serum total protein gm/dl	5.17 ± 0.32	4.34± 0.29#	3.04± 0.23***	2.14±.026***
2.	AST iu/ml	34.60 ± 2.88	54.23± 2.53 ***	79.48 ± 2.23 ***	91.60± 2.79 ***

All values are mean ± standard error. # indicates nonsignificant, *** indicates very highly significant.

The result shows decrement in serum total protein values. This decrement is non significant at the end of 5 days exposure of *Channa punctatus* to chromium trioxide. It is highly significant after 10 days and 20 days exposure period. In case of serum aspartate transaminase the increment is very highly significant at the end of every 5 days, 10days and 20 days of exposure.

In the present study the decrease in total serum protein may be due to liver damage or kidney damage causing excess of renal secretion. This is collaborated with the finding of Garg *et al.*, [6], Oner *et al.*, [7].

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