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ORIGINAL ARTICLE

Toxic Effects of Fungicide Ridomil on Serum Total Protein of *Channa punctatus* (Bloch.)

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ABSTRACT

Pesticides are always effective in pest control in household and agricultural practices. They are very beneficial to human beings. However, every aspect of science has both side- positive and negative. Hence pesticides are no exception for this. They finally enter in ecosystem and pose serious problems to flora and fauna. Specially they cause aquatic toxicity and affect aquatic fauna. To examine this effect the present study is designed to evaluate the effect of traditionally used fungicide ridomil on Channa punctatus (Bloch.). The serum total protein has been estimated in serum.

Keywords: *Toxic Effect, Fungicide Ridomil, Serum Total Protein, Channa punctatus*

INTRODUCTION

Man has always inhibited two words one is the 'natural world' of planet, animal, air, water and soil of which man himself is a part while the other is the 'built world' of social institution and artifacts which he created for himself by using science & technology.

The various segments of environment (air, water & soil) may most harmful biological and chemical agents that can have a significant impact upon the health of humans.

Water Pollution is a common phenomenon occurring from direct application of Pesticides. The effect of organometallic compounds on aquatic organisms is currently attracting wide spread attention, particularly in studies related to biochemical observation and envisage the toxic effects.

HISTORICAL RESUME

Chacko and Ganapati (1949) studied a case of fish mortality of large scale. Weinback (1954) observed the effect of Pentachlorophenol on oxidative phosphorylation. Fucano and Hooper (1958) selected toxaphene as a fish poison. Handerson, *et al.* (1959) noted relative toxicity of ten chlorinated insecticides to four species of fish. Harper & Row cope (1965) reported some responses of fresh water fish to herbicides. Pickering and handerson (1966) studied the acute toxicity of some pesticides to fish.

Konar (1970) examined toxicity of heptachlor to aquatic life. Agarwal and Srivastava (1980) noted haematological responses in a fresh water fish to experimental manganese poisoning. Agarwal (1991) evaluated toxicity of mercuric chloride to *Channa Punctatus*. Saxena and Chauhan (1994) noted CuSo4 introduced haematological anomalies in *Heteropheustes fossilis*. Pandey and Gopal (2000) described a review on pollution and fish physiology. Saxena and Singh (2008) assayed blood parameter of the fish.

Malla, *et al.* (2009) observed chlorophrifos induced changes in haematological parameters of fresh water fish.

MATERIAL AND METHODS

EXPERIMENTAL FISH:

The air breathing teleost *Channa punctatus* (Bloch.) had been selected for the investigation.

EXPERIMENTAL COMPOUND:

The fungicide 'Ridomil' was selected to the study. Ridomil Controls large number of disease caused by Phycomycites, Advance fungi.

Table 1: Effect of Ridomil Treatment on Serum Total Proteins in *Channa punctatus* (Bloch.)

Set	No. of Fishes	Serum total proteins in mg/dl (Mean±S.D.)			
		5ppm	10ppm	15ppm	20ppm
Control	5	230.2±0.99	230.2±0.99	230.2±0.99	230.2±0.99
1 Day	5	215.6±0.98*	211.5±0.64*	209.5±0.66*	207.4±0.66*
15 Days	5	212.0±0.64*	205.2±0.50*	203.0±0.51*	200.0±0.67*
30 Days	5	210.2±0.66*	201.0±0.33*	199.5±0.33*	195.4±0.66*
45 Days	5	200.1±0.87*	194.0±0.37*	190.0±0.40*	188.7±0.25*
60 Days	5	194.7±0.50**	190.2±0.66**	183.5±0.66**	180.0±0.33***
75 Days	5	189.4±0.50**	184.0±0.66**	179.8±0.33**	172.8±0.67***
90 Days	5	185.7±0.59**	178.0±0.50**	171.2±0.90**	167.5±0.40****

ppm- parts per million, S.D.- Standard Deviation, *Non-significant (p>0.05), **Significant (P>0.05), ***Highly Significant, (P<0.01), **** Very Highly significant (P<0.001)

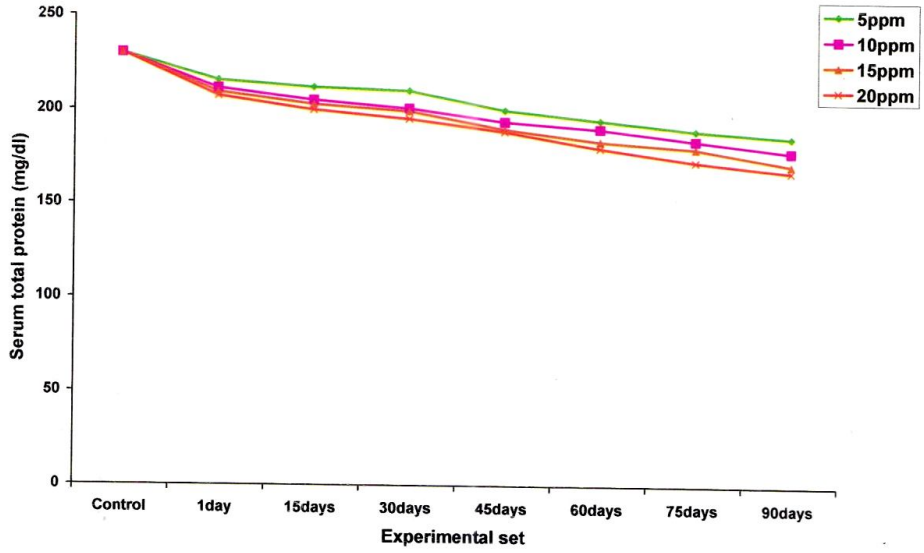

Fig. 1: Effect of Ridomil treatment of Serum Total Protein in *Channa punctatus* (Bloch.)

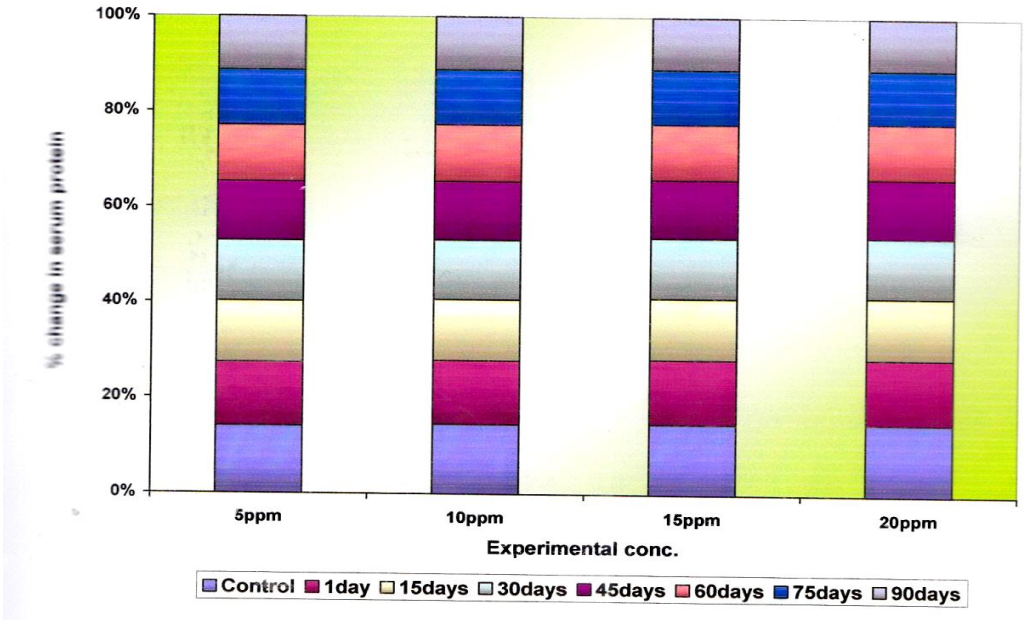

Fig. 2: Percentage change in Serum Total Protein in Channa punctatus (Bloch.) after Ridomil Treatment

TECHNICAL DESCRIPTION:
Ridomil is 75% wettable power formulation of 8% mancozeb and 64% metalaxylwp.

CHEMICAL NAMES:
IUPAC- Methyl N- (2 methoxyacetyl-N 2,6- Xylyl alaniname)
Empirical formula- $C_{15}H_{21}NO_4$
Molecular Weight- 279.33 g/mol

BIOCHEMICAL ESTIMATION IN SERUM:
Total Protein: Serum total protein was estimated by method given by Biuret and Duma (1971)
Principle: Serum total Protein reacts with copper of biuret reagent in alkaline medium to form a blue purple complex, which is measured calorimetrically at 550 nm.

REAGENTS:
1. Biuret Reagent
2. Protein Standard

PROCEDURE:
Test: 0.05 ml. of serum and 3.0 ml of biuret reagent were taken in a test tube marked as 'T' mixed well and allowed to stand for 5 minutes at room temperature.
Standard: 0.05 ml. of protein standard and 3.0 ml. of biuret reagent were taken in a test tube marked as 'S' mixed well and allowed to stand for 5 minutes at room temperature.
The optical density of standard 'S' and 'T' were read calorimetrically at 550 nm (Yellow green filter) against blank.

CALCULATION:

$$\text{Serum total Proteins (mg/dl)} = \frac{\text{O.D. (Test)}}{\text{O.D.(Standard)}} \text{X Conc. of Standard (7.2)}$$

SERUM TOTAL PROTEIN: In control set serum total proteins were- 30.2±0.99 mg/dl.

TREATMENT AND RESULT

5PPm:
The serum total proteins were observed, 215.6±0.98, 12.0±0.64, 210.2±0.66, 200.1±0.87, 194.7±0.50, 189.4±0.50, 35.7±0.59 mg/dl after 1, 15, 30, 45, 60, 75 and 90days. The decrease is non-significant (P>0.05) after l day, significant 7-<0.05) after 15 and 30days, highly significant (P<0.01) after 45days, very highly significant (P<0.001) after 60, 75 and 90 days were recorded.

10ppm:
The serum total proteins were recorded, 11.5±0.64, 5.2±0.50, 201.0±0.33, 194.0±0.37, 190.2±0.66, 184.0±0.66, 3.0±0.50 mg/ dl after 1, 15, 30, 45, 60, 75 and 90days. The decrease is non-significant (P>0.05) after l day, significant P<0.05) after 15 and 30days, highly significant (P<0.01) after 45(lays, very highly significant (P<0.001) after 60, 75 and 90 days were recorded.

15ppm: The serum total proteins were observed, 09.5±0.66, .0±0.51, 199.5±0.33, 190.0±0.40, 183.5±0.66, 179.8±0.33, .2±0.90 mg/d1 after 1, 15, 30, 45, 60, 75 and 90days. The decrease is non-significant (P>0.05) after 1 day, significant <0.05) after 15 and 30days, highly significant (P<0.01) after 45days, very highly significant (P<0.001) after 60, 75 and 90 days were recorded.

20ppm:
The serum total proteins were observed, 07.4±0.66, 200.0±0.67, 195.4±0.66, 188.7±0.25, 180.0±0.33, 172.8±0.67, 167.5±0.40 mg/dl after 1, 15, 30, 45, 60, 75 and 90days. The decrease is non-significant (P>0.05) after 1 day, significant P<0.05) after 15 and 30days, highly significant (P<0.01) after 45 days, very highly significant (P<0.001) after 60, 75 and 90 days were recorded.

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