

## Effect of chloropyriphos on protein levels of *Channa punctatus*

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### ABSTRACT

Fish are important source for human consumption. Indiscriminate use of pesticides to protect crops possess a severe threat to the aquatic organisms. When *Channa punctatus* is exposed to an organophosphorous insecticide, chloropyriphos exhibited notable alterations in protein levels of muscle, liver and kidney. The decrease may be due to breakdown of proteins under toxic stress.

**Keywords:** *Channa punctatus*, pesticide, toxic stress, protein.

### INTRODUCTION

Pollutants are posing a great threat to aquatic life especially to fish (Ghosh *et al.*, 2006; Abdul *et al.*, 2010). Fish provide animal protein to mankind. Pesticide use also affects non target organisms. They effect the metabolic aspects of aquatic organisms.

Unabated use of pesticides causes bioaccumulation and bio-magnification in different organisms at different trophic levels, ultimately effecting the aquatic as well as other consumer organism and they get circulate in ecosystem.

As the fish are good bio-indicators of water bodies, an attempt has been made to analyse the protein level changes in different tissues of the fresh water fish *Channa punctatus*

### MATERIAL AND METHODS

*Channa punctatus* have food and economic value; they are available throught all seasons of the year. The fish of equal length were selected from unpolluted water bodies of Warangal region.

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Fish were divided into control and experimental groups. The experimental organism is transferred into test solution of sub lethal concentration of LC 0.008 ml/L.

The fish were scarified after 24, 48, 72 and 96 hours. Different tissues like muscle, liver and kidney were assayed for protein level variation by Lowry method (1951). Both soluble and insoluble proteins were estimated in muscle, liver and kidney 24, 48, 72 and 96 hours of exposure relative to control group.

### RESULTS AND DISCUSSION

Protein levels were decreased in all the tissues studied *i.e.* muscle, liver and muscle. There is a great decrease in soluble and insoluble proteins in muscle, liver and kidney of *Channa punctatus* after exposure to chloropyriphos relative to control. Insoluble proteins have also shown similar trend. The results obtained were presented in [table-1](#) and [Figure-1](#).

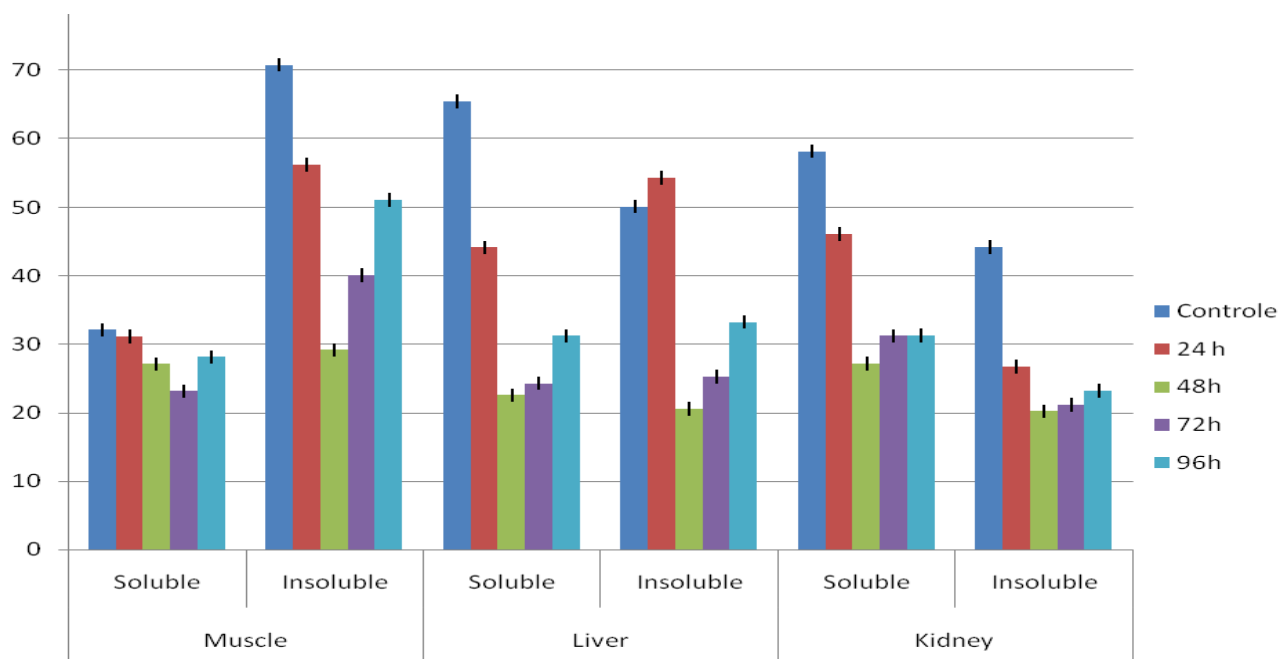
Mishra (1980) has also reported reduction in protein levels. The present work finds support from previous reports on protein level variations (Naveed *et al.*, 2010; Jaroti *et al.* 2005, Padmapriya *et al.* 2012; Ramesh Raju *et al.* 2010; Madhusudhan reddy *et al.* 2011, David *et al.* 2004).

Physiological activities of the animal reflect in metabolic status of the protein (Nelson and Cox, 2005). Proteins are involved in architecture of the cell. Jrueger *et al.* (1968) reported the possible utilisation of proteins for generation of energy.

**Table.1. Protein variation (mg/gm wet weight of tissue) in different tissues of *Channa punctatus* exposed to chloropyriphos at different time intervals (each value is a mean of six values with ± SD).**

|        | proteins  | Control    | 24 hour    | 48 hour    | 72 hour    | 96 hour    |
|--------|-----------|------------|------------|------------|------------|------------|
| Muscle | Soluble   | 32.1±1.20  | 31.11±1.50 | 27.10±1.70 | 23.12±1.50 | 28.12±1.20 |
|        | Insoluble | 70.80±1.27 | 56.21±1.90 | 29.14±2.10 | 40.10±1.20 | 51.10±2.0  |
| Liver  | Soluble   | 65.49±1.83 | 44.12±2.1  | 22.56±1.98 | 24.28±2.1  | 31.20±1.67 |
|        | Insoluble | 50.12±2.10 | 54.31±2.70 | 20.52±3.1  | 25.29±2.1  | 33.23±3.1  |
| Kidney | Soluble   | 58.20±3.1  | 46.11±1.2  | 27.21±1.99 | 31.20±1.80 | 31.23±1.2  |
|        | Insoluble | 44.21±2.3  | 26.71±2.12 | 20.19±1.62 | 21.19±1.23 | 23.20±2.12 |

**Figure-1. Protein variation in different tissues of *Channa punctatus* on pesticide exposure.**



Decreased protein levels in liver, muscle and kidney may be due to their degradation and utilisation for metabolic activities, since the fish is under toxic stress (Mastan and Ramanayya, 2010; Sushma Pallewad, 2015 and Himansu Bhusan Mahananda, 2014). The [figure-1](#) Histogram showing protein variation in different tissues of *Channa punctatus* on pesticide exposure.

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### Conflict of Interests:

The authors declare that there is no conflict of interests regarding the publication of this paper.

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