



## EFFECT OF ORGANO PHOSPHATE PESTICIDE MALATHION ON PROTEIN CONTENT OF *LABEO ROHITA*

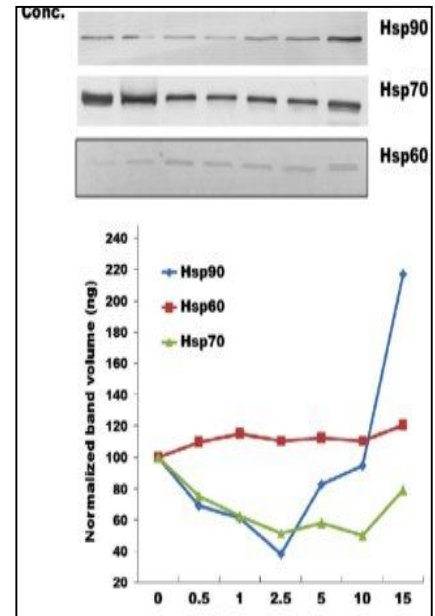
R. S. Magar

Department of Zoology, Yeshwant Mahavidyalaya  
Nanded, Maharashtra, India.

### ABSTRACT:

Pesticides have an innate capacity to cause damage to biological system. Considering above fact the present study deals with the effect of malathion for short duration(24 to 96 h) on muscle protein of *Labeo rohita*. The body muscle showed reduction in protein content during sublethal treatment.

**KEYWORDS :** *Labeo rohita*, Malathion, Muscle.



### INTRODUCTION

For centuries pesticides have been used in agriculture to enhance food production by eradicating unwanted insects and controlling disease vectors. These pesticides ultimately reach the aquatic systems through different pathways affecting various aquatic organisms. Among these pesticides, organophosphorous compounds are commonly used insecticides. Malathion is commonly used organophosphorous pesticide. While most of the malathion will stay in the areas where it is applied, some can move to areas away from where it was applied by rain, fog and wind. Once malathion is introduced into the environment, it may cause serious intimidation to aquatic organisms and is notorious to cause severe metabolic disturbances in non target species like fish and fresh water mussels (USEPA, 2005). *Labeo rohita* is common fresh water fish abundantly present in local river Godavari Dist. Nanded. It is one of the major source of food of poor population in local area. The present study was designed to study impact of sublethal concentration of 0.4,0.8,0.12 ppm of malathion on body muscle protein in fresh water fish *Labeo rohita* during exposure period of 24,48,72 and 96 h.

### MATERIAL AND METHODS

For present study, commercial grade malathion (50% EC, manufactured by Coromandal fertilizer limited, Coromandal house, pesticide division, Ranipet, Vellore (TN), India) was procured from the local market. Healthy specimens of *Labeo rohita* were collected from local river Godavari Dist. Nanded. Their average length and wet weight ( $7.5 \pm 1.7$ cm and weight  $8.2 \pm 0.5$ gm) respectively. Fishes were treated with 0.1 %  $KmNo_4$  solution for 2

min. to avoid any dermal infection. The fish stock was then maintained in 100 liter glass aquaria for 14 days to acclimatize under laboratory condition. The fishes were fed with fish pellets and rice bran on alternate days. A stock solution was prepared in acetone and mixed in water to obtain required dilutions. The LC50 value for 96 hours of malathion was determined by procedure of Finney (1971). The LC50 of malathion for 96 hours for *Labeo rohita* was 2 mg/liter. Fishes were exposed to sub lethal concentration (0.4,0.8,0.12 ppm) of malathion, simultaneously control group was also maintained. Total protein content was determined according to the method of Lowry et al.,(1951).

## RESULTS-

In the present investigation the protein content at control experiment in 24 , 48, 72 and 96 hours was 122, 121, 122 and 122 mg/gm body weight of muscles but different concentration of organophosphates malithion at 0.4 ppm the protein content in 24, 48, 72 and 96 hours was 120, 117, 112 and 110 mg/gm body weight of fish respectively. In the concentration of 0.8ppm it was 105, 103, 100 and 97 mg/gm body of weight of muscles at 24, 48, 72 and 96 hours respectively. In the concentration 1.2ppm 93.01, 91.05, 87, 83 mg/gm body weight of muscle of the fish at 24, 48, 72, and 96 hours respectively. Changes in protein of body muscle of *Labeo rohita* is presented in Table 1. The protein level of body muscle decreased during different intervals of treatment.

## DISCUSSION:

Protein is most characteristic organic compound found in the living cell while the protoplasm of the cell is composed of protein. They play vital role in the process of interaction of cellular medium. In experimentation, after 96 hours the decline in protein content was observed. This fall from the next onward day be attributed to the constantly increasing contact of the pesticide with the biosystem which ultimately resulted in protein breakdown. Kabeer (1979) showed increase in protein content in fish, *Tilapia mossambica* treated with methyl parathion and malathion. Even though most of the workers found that, there was reduction in protein contents in various tissues of the animal under different stress conditions. The decrease in protein content may be due to reduced protein synthesis and increased proteolysis. Joseph, (1987) observed the effect of copper on biochemical composition of *Cyprinus carpio* and found that total protein content of the brain, liver and muscle were declined. Ramalingam and Ramalingam (1982) stated that proteins expected to involve in the compensatory mechanism of stressed organisms similar observation were made by Jagdeesen et al. (1999). Chandravathy and Reddy (1994) suggested that decline in the muscle protein content might be due to reduced protein synthesis, increased proteolysis and also due to utilization for metabolic process under lead toxicity. Rao et al. (1987) and Baskaren et al. (1989) reported reduction in protein content could be due to its utilization to mitigate the energy demand when the fish is under stress. Decrease in protein content at sub lethal exposure of malthion to fresh water fish, *Labeo rohita* suggest the possible utilization of protein for various metabolic purposes and enhanced proteolysis to meet the high energy demand under pesticidal stress.

**Table1. Protein content (mg/gm) in body muscle of *Labeo rohita***

Concentration (ppm)	Duration			
	24	48	72	96
Control	122.00 ± 0.11	121.00 ± 0.16	122.00 ± 0.19	122.00 ± 0.21
0.4	120.00 ± 0.8	117.00 ± 0.7**	112.00 ± 0.2	110.00 ± 0.9
0.8	105.00 ± 0.11	103.00 ± 0.13	100.00 ± 0.19***	97.00 ± 0.21
1.2	93.01 ± 0.11*	91.05 ± 0.16	87.00 ± 0.17	83.00 ± 0.20

[Values are mean ± SD of six replicates, \* P<0.05, \*\* P < 0.01, \*\*\* P > 0.01, significant when student's test was applied between control and experimental groups]

### CONCLUSION:

In the present investigation the effect of organophosphate malithion of the protein content of *Labeo rohita* changes is found due to the effect of malithion.. in the different concentration of malithion concentration is increases the protein content is decreases during the study period.

### ACKNOWLEDGEMENT:

The author is thankful to Principal Yeshwant Mahavidyalaya and Head Head Dept of Zoology, Yeshwant Mahavidyalaya Nanded for providing the laboratory facilities during this work.

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