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# Effect of Chloraniliprole 18.5% W/W Pesticides on the Carbohydrate Content of the Fresh Water Fish *Oreochromis aureus* (Tilapia)

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## ABSTRACT

Agriculture is the prevalent occupation in rural India. The pest in agricultural system are one of the major causes of damage to crop production. Pesticides are generally used in agriculture to protect plants from pest, weeds or diseases. Water from excessive rainfall and irrigation cannot always be held within the soil structure. Therefore pesticide and residue can be quickly transported to contaminate ground water and fresh water supplies over a large geographical areas. These pesticide change the quality of water that effect on aquatic life such as fishes and other organism. This affected fishes human consumed that causes the various diseases such as gastrointestinal, neurological, respiratory, reproductive and endocrine diseases. The carbohydrate is a most important biochemical in all living system and plays an important role in body metabolism. The present study effect of the pesticide chloraniliprole 18.5% W/W on biochemical parameter like carbohydrate content was estimated in different organ of freshwater fish *Oreochromis aureus*(tilapia) to sub lethal concentration of 24hr, 48hr, 72hr, 92hr. The carbohydrate was estimated by the standard method of anthron reagent. The carbohydrate content in order to expressed: heart>muscle> intestine. It concludes that in case of sub lethal concentration heart is more effected and intestine organs was less effected as compared with control.

**Key words :** Carbohydrate, *Oreochromis aureus*, Chloraniliprole, Toxicity

## Introduction

In modern agriculture, pesticides are frequently employed to help produce high quality food. The pest in agriculture system are one of the major cause of damage to crop production (Tamizhazhagan *et al.* (2015) and Tamizhazhagan *et al.*, (2017). The pesticides are generally used in agriculture to protect plant from pest, weed or diseases. They also plays a significant role in food production. They protect or increase yield and the number of time per year a crop can be grown on the same land. Some pesticides have the potential to negative the ecosystem and human health. They potentially toxic to human

and can have both acute and chronic health effect. The Chlorantraniprole 18.5% W/W pesticides widely used in agriculture to prevent the disease causing pest, parasites due to their lower persistence in the environment (Todd *et al.*, 2000 and Somaiah *et al.*, 2014)

Tilapia is a cheap eating food fish. It is most commonly consumed type of freshwater fish. Many people like tilapia fish because is relatively cheap and taste is very delicious. The tilapia wild to native to Africa the fish are distributed I all over the world its farming grate quantity of countries. Tilapia are the benefits and dangers of largely adifferent in culturing practice is depend on location.

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The carbohydrate have been the high energy nutritional property are about fish diet. There are most essential glucose. The carbohydrate is a most important biochemical in all living system and play an important role in body metabolism. Polysacchrde serve for the storage of energy. Thus, the current study examined the impact of the pesticide chlorantraniliprole 18.5% W/W on the carbohydrate content of freshwater fish *Oreochromis aureus* (Tilapia) (Binukumari *et al.*, 2013).

## Materials and Methods

### Acclimatization

Healthy freshwater fish Tilapia finger links of the weight ( $10 \pm 1\text{g}$ ) and length ( $8.0 \pm 0.5\text{ cm}$ ) were selected for the experiment and were collected from the local commercially culture farm Pathare, Talsinner, Dist. Nashik fish culture pond. Glass contamination aquaria were washed with 1%  $\text{KMnO}_4$  to keep away from fungal contamination and then dried in the sun light. In good physical shape fishes were then transfer to glass aquaria (35:20:20 cm) containing dechlorinated tap water. Fish were acclimatized to laboratory conditions for 10 to 15 days prior to carrying out tests. Accumulation solution of Chlorantraniliprole 18.5% w/w pesticides with an attentiveness of 0.2 ml per liter was prepared in distilled water. After the adding together of the toxicant into the test tank with 10 litre of water have ten fish, mortality was record after 24, 48, 72 and 96 hours.

### Carbohydrate estimation

Total carbohydrate was estimation in 10% homogenate of tissue muscles, intestine and heart was equipped using 2.5N Hcl. This sample centrifuged at 3000 rpm for 10 minutes. Then samples were cooled in the dark at space temperature for 30 minutes. The supernatant was collected and the optical density was deliberate in a spectrophotometer

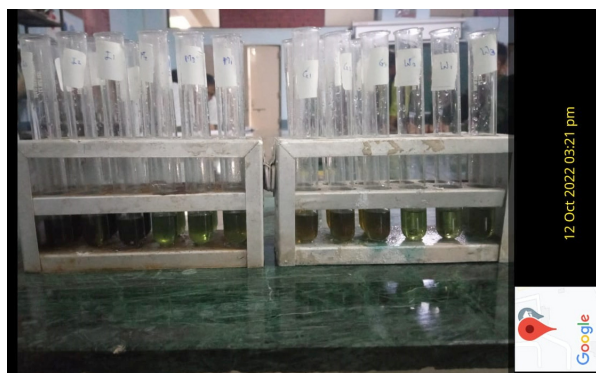


Fig. 1. Carbohydrate estimation after the effect of pesticide

(Hitachi, 2205) at a wavelength of 620 nm a blank explanation. Blank was geared up by integration 1 ml of distilled water with 4 ml of Anthron reagent. The total carbohydrate content was intended in mg/g of tissue.

## Results and Discussion

Change in carbohydrate content (mg/g) in the Intestine, Heart, Muscle, of *Oreochromis aureus* (tilapia) exposed to pesticide chlorantraniliprole 18.5% W/W for different periods.

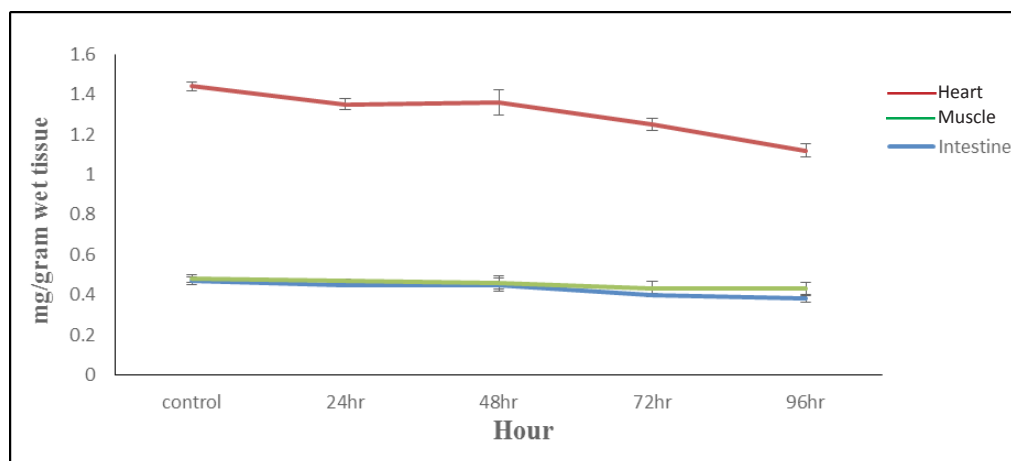
Change in carbohydrate content in fish after the effect of pesticides for is in intestine for the 24 hours is 0.45, 48 hours is 0.45, 72hours is 0.45, 96 hours is 0.38 in the heart for 24 hours is 1.35, 48 hours 1.36, 72 hours 1.25, 96 hours 1.12 and in muscle for 24 hours is 0.47, 48 hours 0.46, 72 hours 0.43, 96 hours 0.43 mg/g.

**Result are mean ( $\pm$ SD) of observations are decrease compare to control**

Chlorantraniliprole 18.5% w/w pesticides for ruminant animal enter in the aquatic system from various ways. It accumulates in the soil and pollutes the water which enter the body of fish through gills, mucous membrane of mouth or by absorption

**Table 1.** Change in carbohydrate content (mg/g) in the Intestine, Heart, Muscle, of *Oreochromis aureus* (Tilapia) exposed to pesticide chlorantraniliprole 18.5% W/W for different periods.

| Tissue    | Exposed time     |                  |                  |                  |                  |
|-----------|------------------|------------------|------------------|------------------|------------------|
|           | Control          | 24 hours         | 48 hours         | 72 hours         | 96 hours         |
| Intestine | 0.47 $\pm$ 0.018 | 0.45 $\pm$ 0.010 | 0.45 $\pm$ 0.033 | 0.40 $\pm$ 0.010 | 0.38 $\pm$ 0.015 |
| Heart     | 1.44 $\pm$ 0.021 | 1.35 $\pm$ 0.026 | 1.36 $\pm$ 0.064 | 1.25 $\pm$ 0.031 | 1.12 $\pm$ 0.031 |
| Muscle    | 0.48 $\pm$ 0.020 | 0.47 $\pm$ 0.010 | 0.46 $\pm$ 0.033 | 0.43 $\pm$ 0.040 | 0.43 $\pm$ 0.030 |



Graph 1

through body surface. Pesticides are the change the physiological and biological mechanism and finally death may be due to metabolic inhibition imposed by the precipitant of toxicant in the animal system. *Oreochromis aureus* (Tilapia) is the edible fish. Human consumed this fishes for the nutritional purpose.

Varma and Rawat (2017), also reported that the effect of chlorpyrifos on protein and carbohydrate content of heteropneustes fossilsies. The chlorpyrifos pesticides is commonly used in agriculture. The cat-fish shows varied degree of mortality with different concentration of chlorpyrifos. The carbohydrate concentration of ovary tissue was varied with concentration of chlorpyrifos. The control fish shows maximum protein and carbohydrate content in ovary.

Similar result were reported by Tamizhazhagan, *et al.*, 2017. They have reported the toxic effect of monocrotophos on the biochemical change in the fish muscle, liver and kidney. After sub lethal exposure the protein carbohydrate and lipid content decreased as compare to control when exposed to monocrotophos. Total carbohydrate level in liver, muscle and kidney was decreased. The present study form a frame work for research on the biochemical content of fish our study thus underline the important role of carbohydrate in the fish body.

## Conclusion

The results in the present study showed that the various hours of exposure in Tilapia (*Oreochromis aureus*) fresh water fish against Chlorantraniliprole 18.5% w/w caused by various physiological changes in their organs muscles, intestine and heart

they were associated with various cell signals and metabolic activity in the exposure. It can be used as a model organism to monitor the aquatic pollution, aquatic animals. Using chlorantraniliprole 18.5% w/w pesticides causes various via human genetic disorders in young one generation

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