

# Effect of Dietary Garlic on Whole Body Composition in the Fresh Water Fish *Channa Punctatus* *Batrachus*

R.A.Gulhane<sup>1</sup>, P.S.Joshi<sup>2</sup>

<sup>1</sup>Department of Zoolgy, S.S.S.K.R.Innani Mahavidyalaya Karanja (Lad) Dist. Washim Ms. India

<sup>2</sup>Department of Zoolgy, Vidyabharti Mahavidyalaya, Amravati Ms. India

## ABSTRACT

The aim of this study was to assess the effect of garlic (*Allium sativum*) on whole body composition in the fresh water fish *Channa Punctatus*. A total number of 80 fish (average weight  $20.86 \pm 0.27$  g) were used. Fish were divided into four groups fed on diets containing garlic in different levels and the control group diet was without garlic. The experiment extended for two months. A significant difference was observed in whole body composition (Carbohydrates, Proteins, Lipids, Fibers, Ash, Moisture and Gross energy) of fish at the end of the experiment which indicates the improved meat quality. The results of this study show that addition of garlic *Allium sativum* to fish diet can enrich meat quality of fish.

**Key words:** Body composition, *Channa Punctatus*, Garlic.

## I.INTRODUCTION

Feed and feeding are among the most important factors influencing growth, feed utilization and tissue composition of the fish in intensive culture (Okumus and Mazlum, 2002). Garlic is an important vegetable extensively cultivated in many countries. It is used as food for humans as well as some animals and as remedy for several diseases, as reported in folk medicine (Abou-Zeid 2002; Shalaby *et al.*, 2006). It is probably one of the earliest known antibiotics in livestock industry (Skidmore-Roth, 2003). Using of garlic in fish farming has become popular for as a growth promoter, increased body gain, feed intake and feed efficiency ratio (Diab *et al.*, 2002; Metwally, 2009).

Previously garlic is well observed as growth promoter in fresh water fish *Clarias batrachus* (Gulhane *et al.* 2015). Hence the presented work was continued to study the effect of different values of garlic on whole body compositions in *Channa Punctatus*

## II. MATERIAL AND METHODS

### 2.1 Experimental fish

The *Channa Punctatus* ( $20.86 \pm 0.27$  g) were obtained from a commercial farm and were transferred to the place of experiment and acclimated for 2 weeks. During the acclimation, fish were fed the experimental diet to satiation twice a day at 09:00 and 15:00 hours. After acclimation, fish were fasted for one day; batch weighted and randomly distributed among density of 20 fish per tank.

### 2.2 Experimental diet and feeding regime

The basal experimental diets were formulated with the commonly available ingredients. The formula and analyzed proximate composition of the basal diet are shown in Table 1. The ingredients were grinded, milled,

weighed, mixed and pelleted. After pelleting, the feeds were air dried and put in an air-tight container. During the experiment, fish were fed the experimental diet to satiation third a day at 08:00, 12:00 and 16:00 hours.

Ingredients	Allium sativum diets Ingredients (g /100g diet)			
	Control	I	II	III
Meat	25	25	25	25
Wheat	50	47	44	41
Soybean	20	20	20	20
Soybean oil	05	05	05	05
Nat. Garlic	00	03	06	09

### 2.3 Measurements and sample analysis

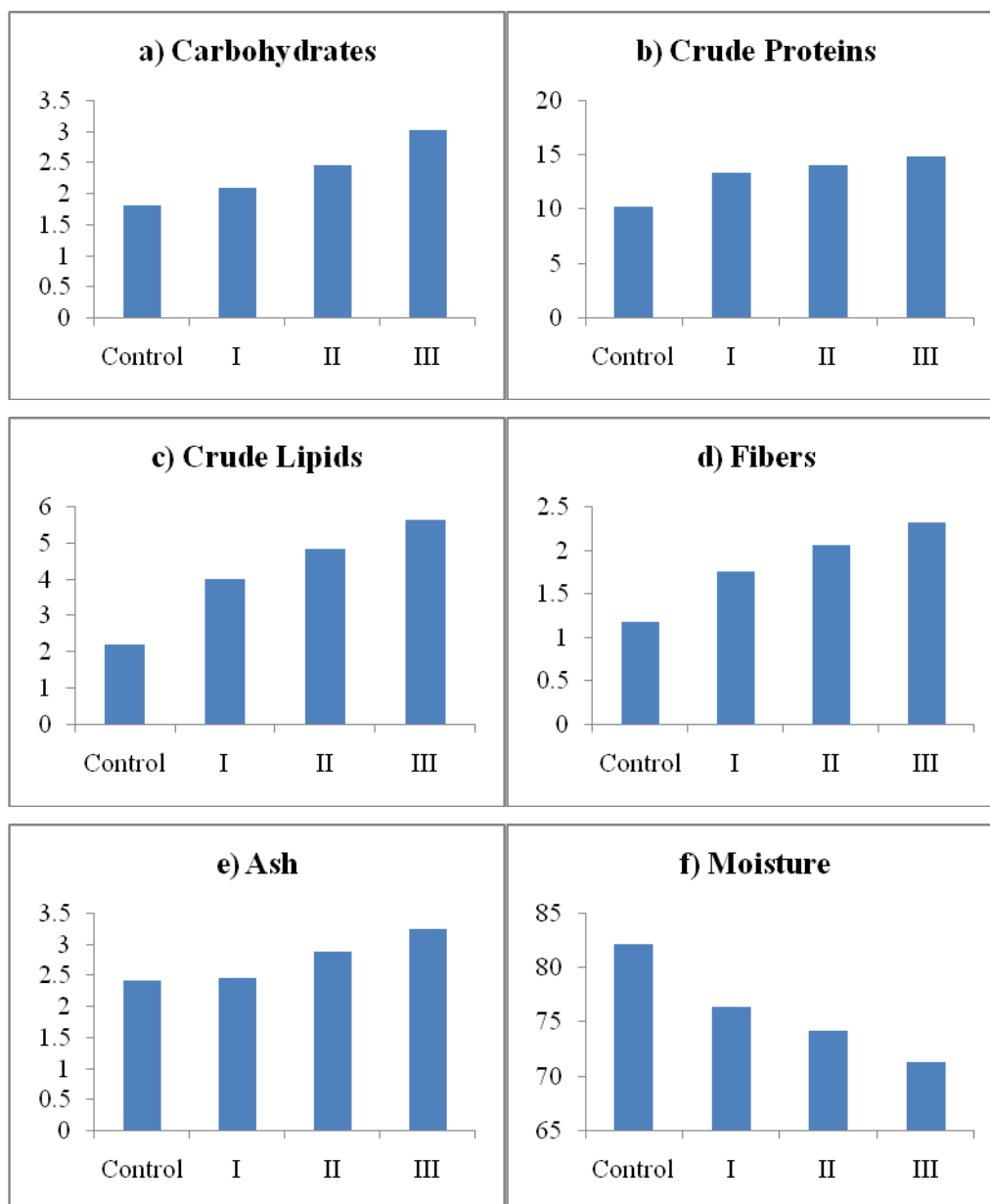
It was carried out each 20 days. Water temperature was 15°C, O<sub>2</sub> 7-8 mg l<sup>-1</sup>, pH 7-8 and light:dark cycle of 12:12 h was maintained during the feeding trial. Proximate composition of tissues was carried out using the Association of Analytical Chemists (AOAC, 1995) methods. The data obtained from the trial is expressed as mean ( $\pm$ SD).

## III. RESULTS AND DISCUSSION

In presented study, the effect of dietary garlic on body composition of *Channa Punctatus* was evaluated. The body compositions of the fishes after 60 days of feeding are summarized in Table 2. A significant difference was also found in whole body composition (Carbohydrates, Proteins, Lipids, Fibers, Ash and Moisture) of fish at the end of the experiment. Third fish group had higher nutrient values than other levels of garlic and control (Figure 1). These observations indicate the improved meat quality. These results support the findings of Farahi *et al.* (2010) in *Oncorhynchus mykiss*, Lee *et al.* (2012) and Lee *et al.* (2014) in *Oncorhynchus mykiss*.

Sr.	Parameters	Control	I	II	III
1.	Carbohydrates	1.82 $\pm$ 0.016	2.10 $\pm$ 0.020	2.46 $\pm$ 0.070	3.01 $\pm$ 0.050
2.	Crude Proteins	10.22 $\pm$ 0.09	13.32 $\pm$ 0.11	14.06 $\pm$ 0.44	14.82 $\pm$ 0.07
3.	Crude Lipids	2.19 $\pm$ 0.05	3.99 $\pm$ 0.05	4.84 $\pm$ 0.09	5.62 $\pm$ 0.14
4.	Fibers	1.18 $\pm$ 0.01	1.75 $\pm$ 0.07	2.05 $\pm$ 0.08	2.31 $\pm$ 0.04
5.	Ash	2.42 $\pm$ 0.02	2.45 $\pm$ 0.06	2.87 $\pm$ 0.08	3.24 $\pm$ 0.10
6.	Moisture	82.17 $\pm$ 0.320	76.39 $\pm$ 0.27	74.21 $\pm$ 0.48	71.29 $\pm$ 0.64

Figure 1. Effects of dietary garlic on whole body composition in *Channa Punctatus*



#### IV. CONCLUSION

From obtained results, it could be recommended that garlic (*Allium sativum*) can be used as a meat quality promoter in *Channa Punctatus* so garlic should be added to the diets of fish.

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