

## STUDIES ON WATER CONTENT IN RELATION TO DIFFERENT BODY WEIGHT & SEX IN CHANNA ORIENTALIS (SCH)

M.T. Nikam

Shri Shivaji Science & Arts College Chikhli Dist. Buldana (MS), India  
meenanim66@gmail.com

### ABSTRACT

The present work was conducted to study the water content in relation to different body weights and sexes in *Channa orientalis*. The effect of body weight and sex was recorded on water content of the fish in different tissues. The water content was found to be 70.81 to 74.10, 69.77 to 76.63, 65.59 to 73.71 and 64.88 to 73.71 gm/100g in the male and 69.87 to 76.55, 70.86 to 78.68, 66.17 to 74.65 and 66.86 to 73.81 gm/100 g in the muscle, gill, liver and kidney respectively. The values showed that the water content was more in female than the male. But no significant difference was observed between water content and body weight in both sexes.

**Keywords:** Water, content, *Channa orientalis*, Weight, Male fish, Female Fish.

### Introduction

Fishes are the most abundant & yet the least known class of vertebrates. They inhabit every kind of aquatic environment and some even spend most of their time out of water. The wide distribution of fishes has resulted in many different designs for special modes of air breathing fishes have unique position in fishing industry due to their hardy nature & easy maintenance. The fish species selected for present study has economic value. *Channa orientalis* is abundantly available through nature year in the Purna river & water studies of the Amravati (Latitude 20° – 56 N, Longitude 77° – 45E). The present work has been taken to enhance the knowledge of this air breathing fish. Water is one of the important constituent which constitutes maximum to the chemical composition of fishes.

### Review of Literature

A number of investigators studied the water content in different fishes. Atwater (1888) was first to report the fat and water relationship in the species *Albosa* and *Scomber*. Milroy (1908) described water content in Herring. Lovorn and Wood (1937) studied the variations in the fat, moisture and solid content of Herring. Venkatraman and Chari (1951) showed reciprocal relationship of fat and water in *MacKerel*. Kordyl (1951) worked on water percentage in Baltic herring. Dhurairaj (1962) also observed water percentage in the muscles of spent fish. Sreenivasan et al. (1964) reported

water content in the *Labeo fimbriatus*. Iles and Wood (1965) stated inverse relationship between water and fat in sea herring *Clupea harengus*. Jafri and Khawaja (1968 & 1970) described fat water content in the muscles of *Catla* and *Rohu*. The review of literature showed that no work has been done on the water content in relation to different body weights in *Channa orientalis*. Hence the present investigation was undertaken.

### Material and Methods

#### Collection and Maintenance of fishes

The fishes *Channa orientalis* were collected from localities around Amravati region. Then they were brought to the laboratory in a live condition. They were transferred to the glass aquarium and inspected for any possible injury or infection. Injured fishes were avoided. Only healthy fishes of different weight with length group of 10 mm range were selected. These fishes were washed with dilute solution of potassium permanganate (KMnO<sub>4</sub> 1.0 mg/l) to remove dermal infection if any. Then the fishes were pithed. The fishes were cut open to ascertain the sex. The tissues like muscle, gill liver and kidney were pooled up from the fishes. After noting down the sex and weight of the fishes, the tissues were quickly weighed.

#### Estimation of water content

Each of the body tissues like muscle, gill, liver and kidney from both the sexes were weighed accurately. Then dried in an oven maintained at

80°C for 24 hrs. They were weighed again after cooling to room temperature in a dessicator. The process was continued till a constant weight reached. The water content was calculated in terms of gms/100 g. wet wt. of the tissue.

**Observation and Result**

**Water Content in Male Channa orientalis**

No any relationship was observed between water content and different body weights in the male. The water content was noted as 70.81 to 74.10, 69.77 to 76.63, 65.59 to 73.71 and 64.88 to 73.71 gm/100 gm in muscle, gill, liver and kidney of the male Channa orientalis, respectively. (Fig. 1)

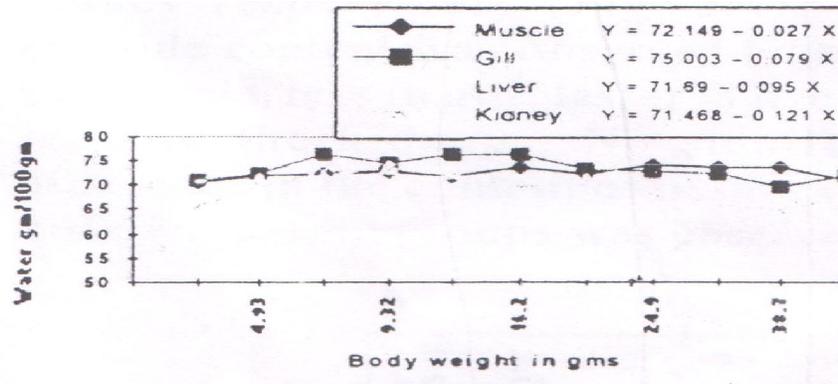


Fig. 1

The water content was obtained as 69.87 to 76.55, 70.86 to 78.68, 66.17 to 74.65 and 66.86 to 73.81 gm/100 gm in muscle, gill, liver and kidney of the female Channa orientalis

respectively. Water content did not show any relationship with different body weights in the female. (Fig. 2).

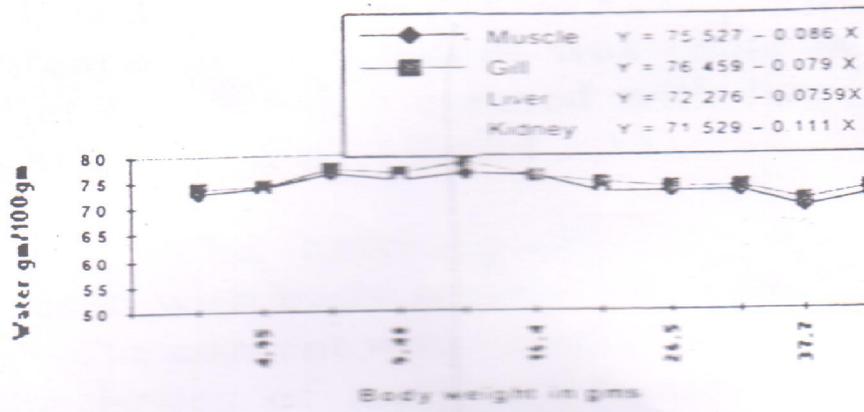


Fig. 2

The present investigation showed that the water content was more in the female Channa orientalis than male. But no significant relationship was exhibited between content and body weight in both the sexes.

**Discussion**

Water is the maximum of all the chemical content of different tissues. The inverse relationship has been noted by Atwater (1988) between fat and water in the species of Albosa and Scomber. Iles and Wood (1965); Jafri and

Khawaja (1970) in sea herring *Clupea harengus*, *Johnius carutta* and *Ophicephalus punctatus*, lipid and water content have been reported to be inversely proportional to each other in these fishes. Renukardhya and Vurghese (1986) stated that no definite relationship between fat and water was found in the muscle of *Catla* and *rohu*. Milroy (1908) observed that the water percentage in herring rises when the spawning season commences and reaches the peak value in the spent fish. Lovern and Wood (1937) stated that in herrings the water varies inversely to the fat content, which is found to be increase with the maturity. Arevalo (1949) confirms similar findings. Venkataraman and Chari (1951) state "Water and fat are the only great variable which indicate a definite reciprocal relationship". In the present investigation no relationship was exhibited between body weight and water content in the male and female *Channa orientalis*. Dhurairaj (1962) observed considerable increase in the water percentage

in the muscles and ovaries during the spent stage of fish. Increase in the water values after spawning was observed in *Labeo fimbriatus* by Sreenivas et.al. (1964). Kordyl (1951) stated that the female cod contain more water than male cod regardless of maturity state. Jafri and Khawaja (1968) showed that the water content is high in immature and maturing specimen whereas it is low in the matured specimens.

### Conclusion

The effect of body weight and sex was recorded on water content of the fish in different tissues. The water content was found to be 70.81 to 74.10, 69.77 to 76.63, 65.59 to 73.71 and 64.88 to 73.71 gm/100g in the male and 69.87 to 76.55, 70.86 to 78.68, 66.17 to 74.65 and 66.86 to 73.81 gm/100 g in the muscle, gill, liver and kidney respectively. The values showed that the water content was more in female than the male. But no significant difference was observed between water content and body weight in both sexes.

### References

1. Atwater, W. O. (1888): Proximate composition of some common marine fishes U. S. fish Common. Rept.
2. Milroy, J. H. (1908): Changes in the chemical composition of herring during the reproductive period. *Biochem. J.* 3 : 366-390.
3. Lovern, J. A. and H. Wood (1937): Variations in the chemical composition of herring. *J. Mar. Biol. Ass. U. K.* 22 : 281-293.
4. Venkataraman, R. and S. T. Chari (1951): Seasonal variations in the chemical composition of mackerel (*Rastrelliger canagurta*). *Prof. Indian Acad. Sci.*, 33(B) : 126-134
5. Kordyl, E. (1951): Chemical composition of the Baltic cod and herring in relation to the degree of sexual maturity. *Repts. Sca. Fisheries Institute Cdynia.* 6:145-147.
6. Dhurairaj, S. G. (1962): Fat and water content in the ovary during its cycle in *Cirrhina reba* (Hamilton). *J. Annamalai Univ.*, 24:101-107.
7. Sreenivasan, A., R., Sounder Raj and s. Lakshmiraghvan (1964): Variations in the composition of the skeletal muscle and gonad of maturing freshwater fish. *Proc. Indian Sci. Congr. Part III.* 455.
8. Iles, T. D. and R. J. Wood (1965): the fat/water relationship in North sea herring (*Clupea harengus*) and its possible significance. *J. Mer. Biol. Ass. U. K.*, 45:353-366
9. Jafri A. K. and D. K. Khawaja (1968): Seasonal changes in the biochemical composition of freshwater murrel, *Ophicephalus punctatus* Bloch. *Hydrobiologia*, 32:206-213.
10. Jafri, A. K. and D. K. Khawaja (1970): Seasonal variations in the fat water ratio of the liver of common pond murrels, *Ophicephalus Punctatus* (Bloch). *Broteria*, 34:135-142.
11. Renukaradhya, K. M. and T. J. Varghese (1986): Effects of various dietary protein levels on the biochemical composition of muscles of the fishes *Catla catla* and *Labeo rohita*. *Environ. & Eco.*, 4(3):452-456.