

Seasonal Variation in the Water and Fat Content in Ovaries of *Gobius biocellatus* From Kayadhu River near Hingoli (M.S).

N.R.Jaiswal

Department of Zoology, Yeshwant Mahavidyalaya, Nanded, Maharashtra.

Abstract :

Gobius biocellatus is a teleost fish, one of the species of the genus gobius and it is distributed in fresh waters throughout the plains of India (Day, F. 1878). The variation in the fat and water content of ovaries (tissue) in *G.biocellatus* was studied over a period of twelve months from January 2003- December 2003. The low water content in ovaries was observed in January, from March to July and higher from August to December also in February. The rising trend of fat percentage was observed from March to September except May. Low ovarian fat was observed from October to December and in February (except Nov.). The present study deals with the the variation in the fat and water content of ovaries of *G. biocellatus* from Kayadhu river near Hingoli ,Maharashtra.

Keywords: *G.biocellatus*, water and fat variations and ovaries.

Introduction:

Fish is an important food item and supplies animal proteins, otherwise lacking in Indian dietaries. The nutritive values in different species and in a species itself .The variations in the chemical constituents such as water, fat, protein, ash and minerals of any fish are attributed to the changes in growth, size, maturity, sex and locality. Fish being a good protein food, it is also necessary to have the knowledge of its chemical composition so that the fish fauna can be utilized as food in the regular diet to meet the protein deficiency. It is also considered worthwhile to determine how far the type of fish normally consumed by the poor class people comes up to the requirements as a first class protein food. *G.biocellatus* is one such fish, which is eaten, in large quantities by the poor sections. Investigation on the nutritive value of various food fishes has been carried out abroad by a good number of workers. First record of analysis of fishes was published by Atwater (1888).

Siddhiqui (1967) studied Seasonal variations in ascorbic acid content and calcium content of different tissues of *Ophiocephalus punctatus*. Some work on the chemical composition of the common carp, *Cirrhina mrigala* and fresh water murrel, *Ophiocephalus punctatus* was carried out by Jafri (1968) and Jafri & Khawaja (1968). Bapat (1971) investigated the nutritive value of some fishes of Marathwada. Madalpure (1973) study the chemical composition of *Barbus ticto*. Bruce, J.R. (1974) studied changes in the chemical composition of the tissue of herring in relation to age and maturity

G.biocellatus being abundant in river, ponds and estuaries of India and being very much relished by people for its taste, has a good demand in the market. The review of literature shows that the chemical composition of *G.biocellatus* has not been studied so far and hence the present investigation was undertaken to study the variations of their chemical compositions in relation to breeding cycle. As the present work deals with only adults showing seasonal variations of their chemical composition in relation to breeding cycle.

MATERIALS AND METHODS:

The material was collected every month for period from January 2003 to December 2003 from Kayadhu river near Hingoli, Maharashtra. The adult female specimens of *G.biocellatus* were taken in equal numbers and analysed separately. The ovaries was dissected out, freed from body fluid and blood by means of blotting paper and weighed accurately. Ovaries were analyzed for the determination of water and fat. The water content was estimated by drying the fresh samples in an oven maintained at 100°C to a constant weight usually for 24 to 48 hours. A known weight of sample was extracted with solvent ether in a Soxhlet apparatus for at least 6 to 8

hours. The receiver flask which was weighed accurately before the experiment was again weighed with the fat after evaporating the ether first on a water bath and finally in a current of hot air then cooling properly. The increase in weight gave the amount of the fat extracted from the known weight of the sample.

RESULT AND DISCUSSION:

It is known that water is one of the important constituents, which contributes maximum to the chemical composition in all the tissues showing high degree of variations. This variation can be precisely correlated with spawning activities.

The percentage of water in ovaries varied from 64.70 to 68.65 (Feb.) as shown in Table No.01. The low water content was observed in January and from March to July. Higher water content was observed from August to December also in February. As it is inferred that the mature ovaries were available throughout the year in this species, therefore, there is no any specific trend of water content during different seasons. The rising trend of fat percentage was observed from March (11.14) to September (10.88) except May. Low ovarian fat was observed from October to December and in February (except Nov.). Ripe gonads were found throughout the year. Due to throughout year spawning habit of the species there is no any marked trend of increasing or decreasing pattern in gonadal fat. Jafri (1968) observed the fat content in the gonads of *Mystus seenghala* during maturation. He states, "The cycle of gonadal fat seems to be entirely related to maturation and spawning. In both the sexes' advancement in maturation was accompanied with a rapid building up of gonadal fat. The lowest fat values occurred when gonads were spent and the highest when they were showing peak ripeness". Variation in fat water cycle more or less follows the same pattern in ovaries of *G.biocellatus*, showing higher values of fat during peak spawning period.

Table No. 01:
Monthly variations in the percentage of Water and Fat content in the Ovaries of *G.biocellatus*.

Month	Water	Fat
January	65.69	11.87
February	68.65	9
March	65.95	11.14
April	65.05	11.73
May	64.7	10.75
June	65.2	10.97
July	64.95	11.36
August	66.06	11.67
September	66.35	10.88
October	67.1	10.3
November	66.09	10.96
December	67.4	9.88

REFERENCES:

- Bapat,S.S. (1971),Nutritive value of some food fishes of Marathwada.Marathwada University J. Sci. 10(3): 205-207.
- Bruce, J.R.(1974) Changes in the chemical comp. of the tissue of herring in relation to age and maturity. Bio. Chem. J.18 : 469-485.
- Day, F. (1878) The fishes of India. William Dawson & Sons, London.
- Jafri, A.K. and Khawaja, D.K.(1968)Seasonal changes in the biochemical composition of the freshwater murrel, *Ophicephalus punctatus* Bloch. Hydrobiologia, 32: 206 - 213.
- Jafri, A.K. (1968).Seasonal changes in the biochemical composition of the cat fish,*Mystus seenghala* (Sykes). Broteria, 36 : 45-58
- J. F. K. Marais and T. Erasmus. (1977). Body composition of *Mugil cephalus*, *Liza domerle*, *L. richardsoni* and *L. tricaspidus* (Teleostei: Mugilidae) caught in the Swartkops estuary. Aqua 10 ,75-86.
- Madalpure,V.R. (1973) Biology of *Barbus (Puntitus) ticto* (Hamilton). Ph.D. Thesis , Marathwada University, Aurangabad. Maharashtra, India.
- M. R. Nabi and M. A. Hossain . (1989) Seasonal variation in the chemical composition and caloric content of *Macrornathus aculeatus* (Bloch) from the Chalon Beel waters. J. Asiatic Soc. Bangladesh (Sci.). 25 103-110.
- N. Dembergs. Extractions of fish muscles, 4. (1964)Seasonal variation of fat, water soluble protein and water in Cod (*Gadno morlia*) fillets. J. Fish Res. Canada 21 ,705-709.
- P. Habashy. (1972).Seasonal variation of moisture, protein, fat and ash in the mirror carp (*Cyprinus carpio* Linnaeus, 1758). A R E Zool. Listy 22 ,85-89.
- Siddiqui., M.A. (1967) Seasonal variations in ascorbic acid content and calcium content of different tissues of *Ophiocephalus punctatus* (Bloch). Indian J. Expt. Biol.,5: 54-55.