

RESEARCH ARTICLE

Variation in the protein content of Liver of *Gobius biocellatus* from Kayadhu river near Hingoli (M.S). India

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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). This study evaluated seasonal and monthly changes in protein content of Liver (tissue) and was studied over a period of twelve months from January 2003- December 2003. There is no definite pattern of seasonal variation in the protein content in male and female *G. biocellatus*. There is no marked trend of increase or decrease in protein content in relation to the seasons due to the breeding habit throughout the year of the fish. The present study is the first to describe the seasonal variation in the protein content of Liver of *G. biocellatus* from Kayadhu river near Hingoli.

Keywords: *G.biocellatus*, protein variations and Liver tissue.

INTRODUCTION

Fish and fish products are the most important source of protein in the human diet. This protein is relatively of high digestibility compared to other protein sources. It comprises of all the essential amino acids in desirable quantity for human consumption. It is recommended by cardiologists to use generous quantities of fish in food to obtain adequate protein without taking in excessive fatty acids and lipids [1, 2]. Fish is one of the most important sources of animal protein available, and has been widely accepted as a good source of protein and other elements for the maintenance of a healthy body [3].

In general, the biochemical composition of the whole body indicates the fish quality. Therefore, proximate biochemical composition of a species helps to assess its nutritional and edible value in terms of energy units compared to other species. Variation of biochemical composition of fish flesh may also occur within same species depending upon the fishing ground, fishing season, age and sex of the individual and reproductive status. The spawning cycle and food supply are the main factors responsible for this variation [4]. Knowledge of biochemical composition of muscles of *G. biocellatus* is of great help in evaluating not only its nutritive value but also helps in quality assessment and optimum utilization of this natural recourse. This in turn can help in processing the fish into products and other byproducts without wastage or loss of constituents such as free amino acids, proteins and fats. Biochemical investigations on fish help to evaluate the impact of environment. The composition of several fish species varies from season to season due to its natural cycle, maturity stage, geographic location, etc. [5,6].

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 variation in the protein content of Liver in relation to breeding cycle..

MATERIAL AND METHODS

Sample collection:

The fishes were collected every month for a period of one year from January 2003 to December 2003 from Kayadhu river near Hingoli. The adult male and female specimens of *G. biocellatus* were taken in equal numbers and analysed separately. The liver was dissected out, freed from body fluid and blood by means of blotting paper and weighed immediately. The tissues were analysed for the determination of protein in males and females separately.

Nitrogen and multiplying it by the factor 6.25 ($N \times 6.25$)

Protien was estimated by Micro-kjeldahl method [7] by estimating total

RESULTS AND DISCUSSIONS:

Protein is one of the most important biochemical constituent and chemically complex of all substance in muscles and connective tissues of fish. Protein content of fish varies not only in relation to species, but in relation to time of year in individuals of same species [8].

The seasonal variation in the protein content may be correlated with the peak spawning and maturation of the *G. biocellatus*. [9] observed variations in the chemical composition of Herring during the reproductive period. Siddiqui [10] made a comparative study of the biochemical constituent in different tissues of some fresh water teleosts.

The seasonal variation in liver protein of male and female are shown in Table No. 1. The protein values in the liver of males varied from 20.09 (Sept.) to 23.57 (May) and in females 20.38 (Nov.) to 23.20 (May). The values of protein in liver are comparatively higher than those in muscles of both sexes. It is seen from Table No. 1 that the high value of liver protein was observed during January, May, July, August and October and low in September, November and December in males. High values of liver protein were observed during May, June and August.

Table 1 : Monthly variations in the percentage of protein content in Liver of male and female *G. biocellatus* (%)

Months	Male	Female
January	22.39	21.61
February	21.27	20.65
March	21.41	21.75
April	21.6	20.41
May	23.57	23.2
June	21.8	22.45
July	22.56	20.47
August	23.49	23.05
September	20.09	21.21
October	22.4	21.59
November	20.87	20.38
December	20.19	21.2

The maximum liver protein was found in the month of May in both sexes. Low values of liver protein were recorded in September in males and in November in females. In general high values of liver protein were

observed throughout the year in the both sexes due to the occurrence of mature fishes throughout the year, hence, there are no marked seasonal variations in the liver proteins and it is difficult to correlate with the maturity and spawning in *G.biocellatus*. Jafri [11] concluded that the immature Whittings have a higher protein content in the liver compared to those of mature. This diminishes until commencement of ripening and then becomes gradually higher in the spent stages.

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