

Seasonal Variation in Proximate Composition of Protein in indigenous fish species from Kanher dam, Satara Dist. (M.S.)

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Abstract: The proximate composition and seasonal variation in different biochemical constituents in small indigenous fish species as *Salmostoma sardinella*, *Cirrinus reba*, *Garra mullya*, *Rasbora daniconius* and *Puntius conchoniis* *Tor musallah*, *Puntius sophore*, *Salmostoma novacula*, *Garra bicornuta* and *Cirrhinus mrigala*. The proximate composition was found to be varied among the species. Protein was estimated in *S. sardinella* (25.64 %), *C. reba* (24.19 %), *G. mullya* (28.69 %), *R. daniconius* (32.79 %) and *P. conchoniis* (27.10 %). *T. musallah* (25.64 %), *P. sophore* (25.64 %), *S. novacula* (25.64 %), *G. bicornuta* (25.64 %), and *C. mrigala* (25.64 %). The present findings revealed that the highest protein content was recorded in *Rasbora daniconius* fish. The results indicate that *Rasbora daniconius* shows more protein content as compared to remaining fish. These results showed that these fishes have a good quantity of protein percentage just like the commercial fishes. So they can be safely used in food as a supplement protein. It also indicates that the proximate composition of fish depends on season but also to a great extent in reaction to size, age, sex, reproducing cycle, breeding season and region of catch.

Keywords: Protein, indigenous fish species, sex variation.

I. Introduction

Fishes are valuable sources of high grade protein and other organic products. They are most important source of animal protein and have been widely accepted as a good source of protein and other elements for the maintenance of healthy body. (Andrew 2001). Fishes are the most diverse group among all living vertebrates with more than 24,600 extant species currently known. They are identified by their morphological characters like appearance, shape, scales and fins etc.

They have significant role in nutrition, income, employment and foreign exchange earning of the country. Fish and shellfish are the primary sources of animal protein and valuable in the diet because they provide a good quantity (usually 70 % or more) of protein of high biological value, particularly sulphur containing amino acids. (Latham, 1997). Next to the meat fish is the only protein that contains all the essential amino acids in about right proportion and called complete protein. Consumption of fish provides important nutrients to a large number of people of world and makes a very significant contribution to nutrition.

Small indigenous fish species are valuable sources of macro and micronutrients and play an important role to provide essential nutrient to the people. They provide a major protein of animal protein. Hence it is essential protein of animal. Hence it is essential to know proximate composition of fish to report their nutrient composition from public health point of view. The composition of biochemical constituents of any organism varies with the variation of environmental changes. The composition in different fish species and in individuals of single species has been reported in relation to their age, sex, habitat and season.

II. Material and Methods

For the present investigation, the fishes were collected from fish market near the Kanher dam. They were brought to the laboratory and identified with the help of classical work of Datta Munshi and Srivastava (1968), Jayaram (1985) and Talwar and Jhingran (1991) and protein were analyzed with help of Lowery *et al.*, (1951).

III. Results and Discussion

A marked variation has been found in protein content of these fishes. It is ranged from 24.19 to 32.79 %. Many workers have been reported macro and micro amount of nutrient content of fish throughout the world. Stansby (1954) has established that information on the chemical composition of fish in respect to the nutritive value is important to compare with other source of animal protein, food such as meat & poultry products. Kamaluddin *et al.*, (1997), Rubbi *et al.*, (1987) mentioned proximate composition of some commercial species of fresh water fish. Naser *et al.*, (2007) stated the proximate composition of prawns & Shrimps in Bangladesh. These small indigenous fish species from Kanher dam are believed to have high degree of nutritive value. Therefore the aim of present study was to determine the composition of these fish species in relation to their food value.

The present investigation deals with proximate composition & seasonal variation in protein values in body muscles of fresh water fishes as *Salmostoma sardinella*, *Cirrinus reba*, *Garra mullya*, *Rasbora daniconius* and *Puntius conchoni* were recorded in 24 months. These results showed that in all these fishes have a good quantity of protein is present just like the commercial fishes so they can be safely used in food to supplement protein. The results indicate that proximate composition of fish depends on season, sex & reproductive cycle. It is evident that these results were in good agreement with the work of Khuda *et al.*, (1962), Somvanshi *et al.*, (1983), Jafri (1968), Naser *et al.*, (2007) S.Ravichandran *et al.*, (2011).

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IV. Conclusion

Results clearly indicated a marked fluctuation of protein in all three seasons and composition of protein in fish also depends on season, sex & reproductive cycle of fish species.

Table.1. Seasonal Changes in the levels of protein% in muscles of fish species 2013-2014

Fish Species/ Season	Rainy	Winter	Summer
<i>Salmostoma sardinella</i> (Ham.)	24.844 ±0.02621	21.189 ±0.0597	30.908 ±0.097
<i>Cirrinus reba</i> (Ham.)	17.089 ±0.01163	25.382 ±0.0339	30.126 ±0.034
<i>Garra mullya</i> (Skyles)	24.732 ±0.0350	33.744 ±0.09164	22.594 ±0.0136
<i>Rasbora daniconius</i> (Day)	26.227 ±0.0377	29.555 ±0.0573	42.599 ±0.0282
<i>Puntinus conchoni</i> (Ham.)	15.197 ±0.0074	27.936 ±0.0306	38.174 ±0.0036
<i>Tor musallah</i> (Skyles)	27.04±0.0229	11.53±0.0321	5.32±0.0564
<i>Puntius sophore</i> (Ham.)	21.17±0.0174	20.56±0.0422	16.41±0.0356
<i>Salmostoma novacula</i> (Valenciennes)	23.06±0.0354	20.89±0.0458	18.16±0.0246
<i>Garra bicornuta</i> (Rao)	19.36 ±0.0652	20.51 ±0.0921	14.19 ±0.0442
<i>Cirrhinus mrigala</i> (Ham.)	24.15±0.0231	15.49±0.065	22.96 ±0.0421

Table.2. Seasonal Changes in the levels of protein % in muscles of fish species 2014-2015

Fish Species/ Season	Rainy	Winter	Summer
<i>Salmostoma sardinella</i> (Hamilton)	19.595 ±0.0098	26.418 ±0.0112	30.175 ±0.0098
<i>Cirrinus reba</i> (Hamilton)	19.295 ±0.0135	20.979 ±0.1719	31.858 ±0.0857
<i>Garra mullya</i> (Skyles)	29.378 ±0.0251	31.632 ±0.0066	32.985 ±0.0228
<i>Rasbora daniconius</i> (Day)	26.388 ±0.0114	30.595 ±0.0092	37.538 ±0.0045
<i>Puntius conchoni</i> (Ham.)	20.016 ±0.0073	27.921 ±0.0672	26.538 ±0.0091
<i>Tor musallah</i>	30.83±0.0124	14.72±0.0321	29.79±0.0564
<i>Puntius sophore</i> (Ham.)	26.39±0.0174	20.70±0.0422	16.48±0.0356
<i>Salmostoma novacula</i> (Valenciennes)	27.42±0.0354	21.13±0.0458	18.20±0.0246
<i>Garra bicornuta</i> (Rao)	19.63 ±0.0652	20.56 ±0.0921	13.65 ±0.0442
<i>Cirrhinus mrigala</i> (Ham.)	28.51± 0.0231	15.85± 0.0654	20.18 ±0.0421

(Mean ± S.D.)

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Fig 1:- Showing the variation of protein % among the experimented fishes during 2013-14.

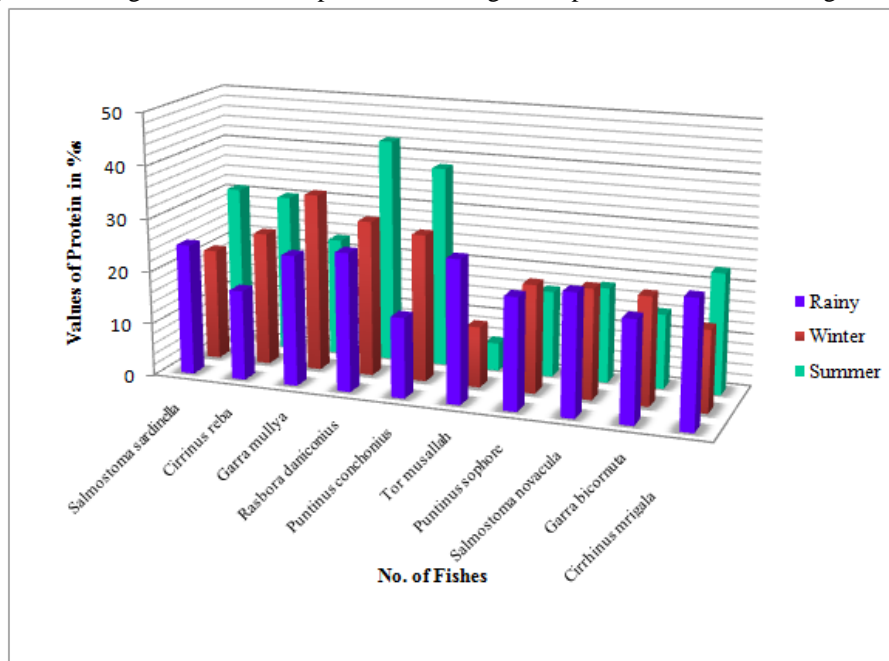


Fig 2 :- Showing the variation of protein among the experimented fishes during 2014-15

