STUDIES ON BIOCHEMICAL ANALYSIS OF *Cirrihinus reba* (Hamilton, 1822)

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ABSTRACT

Among various fish species, *Cirrhinus reba* is a fresh water edible fish which is found in large rivers, lakes and streams. It is a popular table fish due to readily available and containing good amount of protein vital for a proper diet. The nutritional characteristics of fish and fishery products are of vital interest to consumers. Fishery products are highly nutritious and an excellent means of obtaining dietary essentials like proteins, carbohydrates, vitamins and minerals. *Cirrhinus reba* species (N=10) was purchased from the local market of Cuttack. It was bought, washed, body measurements (such as length, weight) were noted down. The fish was dissected; flesh was removed out and carried to laboratory in an iced box where it was dried, powdered and stored for further proximate biochemical analysis. This experiment carried out to know the baseline data for future reference.

KEYWORDS: Biochemical, protein, carbohydrate, mineral, *Cirrhinus reba*.

INTRODUCTION

Fish is the well-known aquatic vertebrate of phylum chordate. The fishery products are highly nutritive and are significant and economically important to mankind and society. Fishery products are brilliant means of obtaining dietary essentials like proteins, minerals and vitamins, etc. (Babalola, 2011). The flesh of fish is composed of various components; among them, the most vital components include: protein, lipid, water, minerals and vitamins and fishes mainly gather proteins in their muscles (Shabir, 2018). Fishes found in natural water bodies has superior nutrition quality. It is readily available and can be consumed by every class of people including poor communities, tribes, etc. and also serves as a source of income to many families of rural and semi urban areas (Mondal, 2017). Approximately, around 30000-35000 species of fish are found in the flesh of salt waters of our planet. Fishes are very much beneficent to humans and other animals for various reasons and have a relationship of interdependence with our environment. Besides plant sources, fish forms a requisite medium of nutrient and sustenance for the crucial constituents present in it.

Cirrhinus reba (Hamilton, 1822) is a bony, ray finned fish which comes under the class actinopterygii of order cypriniformes. It belongs to the family cyprinidae. *Cirrhinus reba* is a fresh water tropical fish which is mostly found in India, Bangladesh, Nepal, Pakistan, etc. It is highly proteinaceous and nutritive in composition. The composition of this fish can cure various malnutrition diseases as it is of high food potential value (Islam, 2017).

MATERIALS AND METHODS

Fish specimen sample (N=10) were collected from local market and brought to laboratory. Fishes were thoroughly washed and measurements were noted down carefully. The flesh was removed by dissecting the fish. The flesh was kept in hot air oven for around 8-10hrs at 100’C for drying. The harden dried flesh was then powdered with the help of mortar and pestle and kept in an air tight container for further proceedings.

Protein estimation was carried out by Lowry's method by using spectrophotometer and the carbohydrate was estimated by the Hedge and Hofreiter method followed by Moisture Content Analysis. The mineral content determination by the XRF technique in laboratories

RESULTS

Table-1 Fish weight, body length, flesh weight and dry flesh weight of *Cirrhinus reba*

Specimen	Fish Weight in gm	Body length in cm	Flesh weight in gm	Dry flesh weight in gm
Mean ±SD	200±8.66	27.80±2.87	32.438±3.83	6.714±0.647

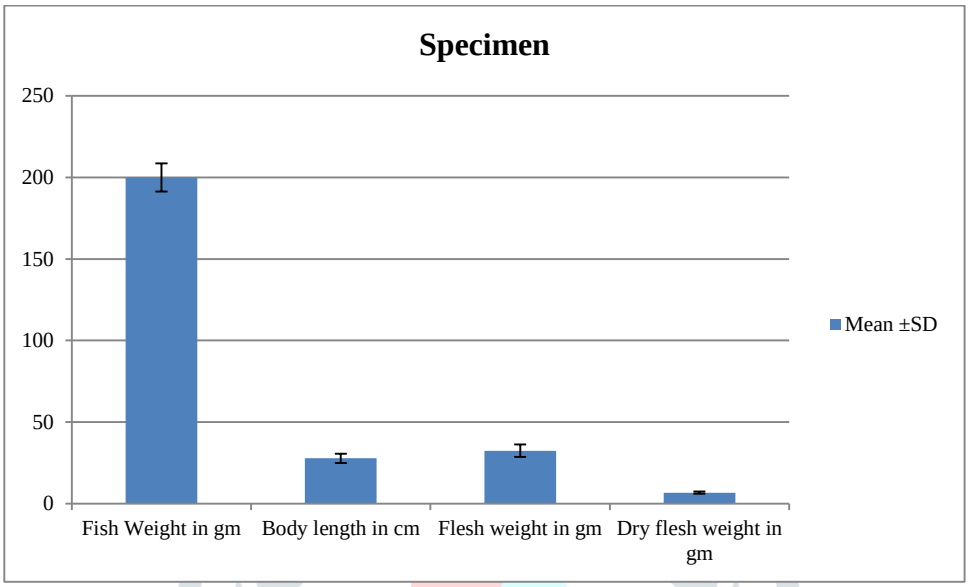

Figure-1 Showing comparison of different weight and Body length of *Cirrhinus reba*

Table-2 The Value(Mean±SD) of protein and carbohydrate content in *Cirrhinus reba*

Biochemical	Protein	Carbohydrate
Mean±SD	3.0058±0.021335	1.0902±0.32802393

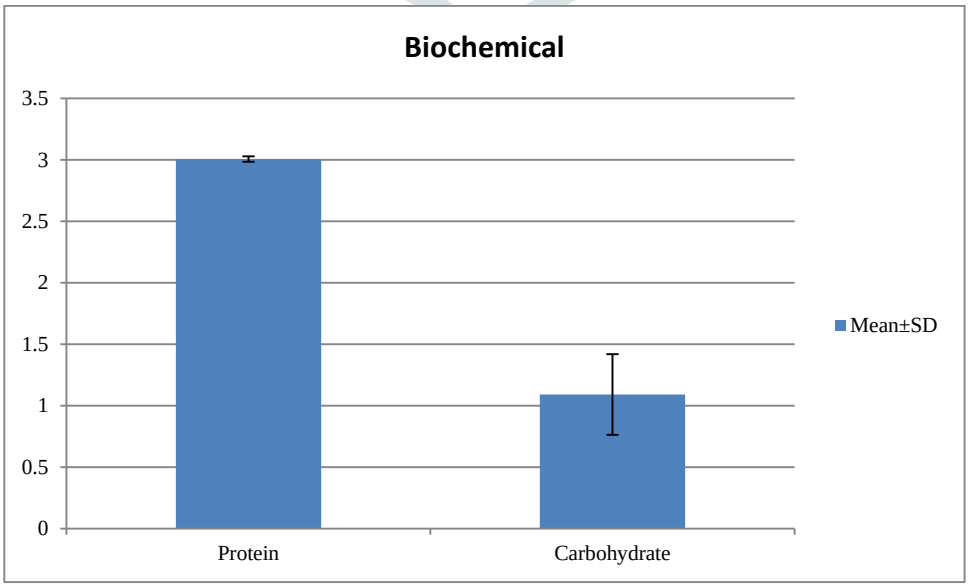

Figure-2 showing the protein and carbohydrate content in *Cirrhinus reba*

The moisture content was analysed by calculation.

Weight of moist flesh=32.4380gm and Weight of dried flesh=6.7141gm

So, Moisture content%= (32.4380-6.7141)*100/32.4380 %=79.3017%

Table-3 The mineral content by XRF method in ***Cirrihinus reba*** fish.

Compound	P_2O_5	SO_3	Cl	K_2O	MnO	Fe_2O_3	CuO	ZnO	Br	SnO_2	Er_2O_3	PtO_2	CO_2	Re
Concentration	20.182	24.796	2.973	50.856	259.6	0.521	181.8	984.5	268.8	409.6	0.455	30.9	0	37.7

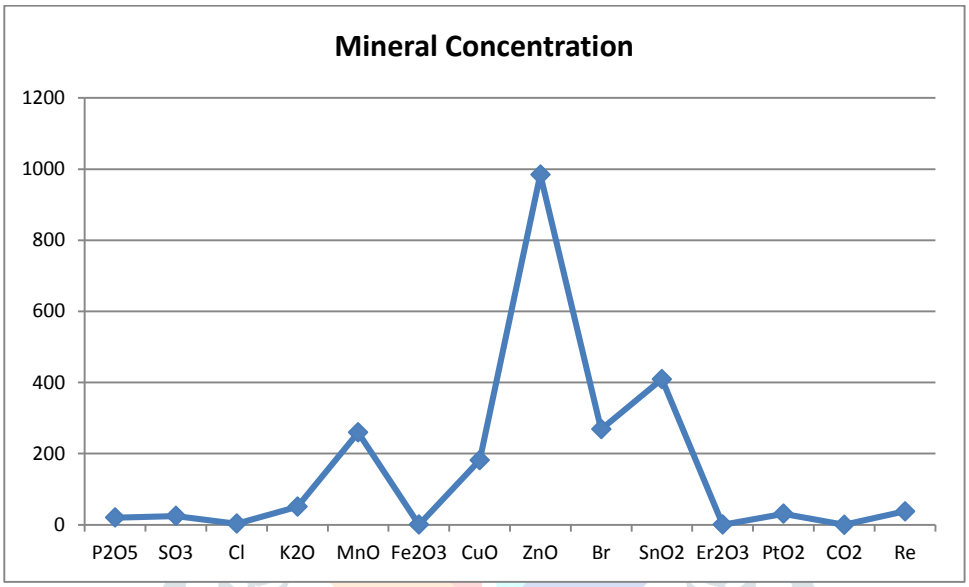

Figure-3 Showing the mineral content in *Cirrihinus reba* flesh tissue.

DISCUSSION

In nutrition, the beneficial components and elements are the chemical elements which are required by human beings for the normal maintenance of their health. These include proteins, carbohydrates, lipids, mineral elements, etc. The WHO reported that around 1billion-2billion of the world's population is suffering from various mineral and vitamin deficiencies. For this reason, fish and fishery products are a good supplement. *Cirrihinus reba,* a freshwater fish is highly proteinaceous and rich in nutrients and so is beneficial to mankind consumption. The above analysis showed that the properties are examined well. The marine organism's chemical components involve various constituents: water, proteins, lipids, minerals and sugars etc. The protein content of the fish was found out to be 3.00±0.0213 which considers it to be a quite rich in protein. The sugar or carbohydrate content is a bit less compared to protein and was found to be 1.09±0.3280.The moisture content was found out to be 79.30%. Bernard and Bolatito (2016) studied about shrimps which are a very good source of protein; they contain small amount of fat and calories and are relished in many home all over the world. This study attempts to compare the proximate composition and mineral contents of fresh *Penaeus monodon* and *Penaeus notialis* using standard analytical methods. These are the dominant invasive species in Nigeria. Results of proximate composition revealed that %mean values for carbohydrate, crude protein, fat, crude fibre, ash and moisture levels in *P. monodon* were 13.15±0.18, 9.21±0.03, 4.67±0.05, 1.21±0.12, 3.53±0.06 and 68.24±0.11 respectively while values for *P. notialis* were 9.77±0.04, 6.09±0.05,

2.68±0.06, 2.88±0.66, 4.89±0.03 and 73.71±0.18 respectively. Adenlyl *et al.*, (2012) had a study on the nutritional composition of three different fishes; *Claria gariepinus, Malapterurus electricus* and *Tilapia guineensis*. The study was carried out with standard methods. Through the results it was revealed about the presence of moisture, protein, lipid, ash, fiber and minerals including potassium, calcium, sodium, magnesium and iron and zinc in trace amount. The results revealed the presence of moisture content ranging from 52.45 to 60.05%, protein 18.35 to 20.83%, lipids 6.53%13.86%, ash 3.14 to 4.57%, fiber 1.96 to 2.65% and carbohydrate 3.85 to8.86%. Minerals included potassium (91.51-102.86 mg/kg), calcium (16.32-24.53 mg/kg), sodium (59.21-75.12 mg/kg) and magnesium (29.61-41.44 mg/kg).

CONCLUSION

Marine organisms are a good source of proteins, fatty acids, micronutrients, etc. so also fish. Fishes provide a vital component to the people residing nearer to the water bodies. Fishes of various varieties can be added to their regular diet which would improve their feeding habits and health conditions there by improving the poorer health census scenario as it improves metabolic health and play a major role in preventing metastatic disease. Not only fish but its different products are also being improved in order to provide a fruitful source of essential and vital components and minerals.

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