



Chemical analysis of fresh water fish *Catla catla* and *Tilapia mossambicus* from ujani dam district Solapur Maharashtra State India.

Author Miss Aasma Shaikh¹ Dr.Sudha Bansode²

Research scholar PAH Solapur University solapur ,India.

Profesor and Head of Zoology Shankarrao Mohite college, India

Address for correspondence:

1. Ms.Aasma Shaikh

Department of zoology, PAHS University Solapur India.

2 .Prof.Dr.Sudha Bansode

Shankarrao Mohite college Akluj, India

Abstract: - In the present study to find out the biochemical content from muscles sample of fish catla catla and Tilapia from ujani dam. This fishes are regularly consumed by local people of solapur and pune district.so finding the nutritional value of this two fishes. Fishes are collected from indapur fish market local fisher man in fresh condition Lowrys method is used to find out the protein value, Folch method for Lipid content and Duboise method for carbohydrate in muscle sample of collected fish. The protein content of Catla catla 21.91mg/gm and Tilapia 12.3mg/ gm. The catla fish has more protein content as compare to Tilapia fish. The lipid content of catla 6.15 mg/gm, Tilapia 5.42 mg/gm. Lipid is more in tilapia as compare to catla. The Carbohydrat content of catla 1.97 mg/gm, Tilapia 1.04 mg/gm.Carbohydrat is approximately same in tilapia and catla the study shows Indian major carp catla catla rich in muscle protein and Tilapia in Lipid.

Key words:-muscle / Chemical Analysis/ catla catla/ tilapia/ Ujani dam.

1. Introduction

Fishes are qualitative source of protein, Lipid and it is high quality protein which is required to each and every human being growth and development of all organ and entire body. Fish food can be recover the nutritional deficiency in human body.

Fish assumes a significant part in human sustenance in India, especially to individuals of coastal regions. Great and satisfactory Sustenance assumes a vital part in the statement of mental, physical and scholarly characteristics in people. To guarantee admittance to the healthfully satisfactory nourishment for the improvement in the nature

of diet of a needy person in the general public, fish is the main medium which can serve the very reason. They can reduced blood cholesterol level, especially serum fatty substances and further more have a great hotspot for human sustenance because of their restorative job in reducing certain cardio vascular issues. Fish is the comprising the main creature protein source among provincial poor families. Some Native Fish Species rules the provincial Indian eating routine. The general methodology embraced to lessen cost has been to foster minimal expense slims down by supplanting costly creature protein sources, for example, fish feast with moderately less expensive than plant protein sources (Keembiyhetty and DenSilva, 1993). Fish require eats less generally higher in protein than those of economically raised earthly homeotherms. Protein, the most costly part in fish takes care of, is expected by fish for support and development, and the protein level required for these capabilities shifts with species and the way of life climate. Fish protein is simple for assimilation, ingestion and absorption as contrasted and establishes protein as well as creature proteins.

Development can be antagonistically impacted by both low and high protein eats less. Over the top protein content is inefficient and makes the eating regimens be superfluously costly. Thus, information on the ideal dietary protein prerequisite is fundamental for the definition of even and minimal expense counterfeit eating regimens (Mazid, 1979). Fish have high dietary protein prerequisite. The meaning of subjective and quantitative takes care of is very much perceived (Mohanty and Samantary, 1996; Kalla, 2004; Islam, 2004; Luo, 2004; Kim and Lee, 2005; Tibbetts, 2005). Level of dietary protein is of basic significance, since it essentially impacts development, endurance, and yield of fish as well as financial matters of a cultivating industry by deciding the feed cost which is ordinarily the biggest functional expense. In any case, there is a sure level past which further development isn't upheld, and may even decline. Significant examination exertion has been consumed to decide the amount and nature of dietary protein essential to accomplish ideal execution of fish. Fast expansion in total populace needs nourishment for its development. Lack of food particularly protein is intense issue for human populace. Fish is a decent wellspring of protein and furthermore has fundamental amino acids with minerals like Zinc, Magnesium, and Sodium and so on. (Barlas, 1986). Fish cultivating and hydroponics industry assume huge part in contributing fish protein to huge Asian populace (Ravenhalt, 1982).

Fish is wealthy in low-fat, high protein, omega-3 unsaturated fats furthermore, nutrients like D and B2 (riboflavin) additionally fish is rich in calcium and phosphorus and an extraordinary wellspring of minerals, such as iron, zinc, iodine, magnesium, and potassium. Cui and Wootton, make sense of that protein is a piece of fish feed and it is made by linkages of individual amino acids and helps in the protein necessities for every species. Lipids are high-energy supplements that can be used somewhat to save protein in hydroponics takes care of. Lipids gives twofold wellspring of the energy as proteins and sugars. Lipids regularly contain around 15% of fish counts calories, supply fundamental unsaturated fats (EFA) and act as carriers for fat-dissolvable nutrients. Huynh saw that fish is having high poly unsaturated unsaturated fats then creature fat .the more happy of polyunsaturated unsaturated fats in fish are valuable in decreasing serum cholesterol. Numerous scientists like Rodriguez Gonzalez et.al, Ananthi et.al chipped away at biochemical substance of fresh water fishes concentrates on biochemical piece of numerous monetarily significant fishes. This study gives the thought to figure out biochemical substances thesis of fish that we consume consistently. This study was completed to give data on biochemical substance of Catla and Tilapia fish. Numerous specialist did there research on biochemical thesis of fishes.

2. Material methods

This research conducted on two fresh water fishes Catla catla and Oreochromis mossambicus (Tilapia) kumbhar gaon back water of ujani dam solapur district Maharashtra India. Comparing the nutritional value of this particular two fishes.

2.1. Sample collection

Fresh fishes were collected on 29/09/2023 catla catla and Oreochromis mossambicus (Tilapia) from Indapur fish market local fisher man collected early morning in between at 5 to 6 am. From Ujani dam area Solapur district

Maharashtra India. This two fishes are most commercially demandable and consuming by Solapur and Pune Districts local people.

2. 2. Structural measurement

Fishes were brought to the laboratory in fresh condition and firstly measured them size (length) by using the measuring tape noted in centimeter.

Secondly weight balancing by rough digital balance and noted the balance in gm. find the average of fishes.

Morphological parameters are needful for further experimental work for example when got the biochemical readings and calculations analysis with the morphological measurement.

2.3 Dissection

Dissect out and remove the muscles for further tests by using different methods and freshly prepared the required chemicals for performing experiment. Lowrys method is used to find out the protein value, Folch method for Lipid content and Duboise method for carbohydrate.

2.4 Carbohydrates

The tissue muscle were weight and centrifuge with TCA for 30 min at 3000rpm the supernatant were used to analysis the carbohydrate by the method of (Duboise 1956) 10ml anthron reagent was added to 1ml sample and kept in boiling water bath for 30 min. after cooling at room temp. Read the colour intensity in spectrophotometer at 650 nm. Plot the standard graph calculate the O.D. of Unknown sample in mg/gm.

2.5 Protein

The 1gm muscle sample were homogenized with 5ml TCA solution for 30 min. 3000rpm precipitate were taken for further analysis as (Lowrys 1951) method also known as Pholin phenol method using Folin-Ciocalteus reagent 1:16. Take soluble phase 0.5ml alkaline copper reagent was added incubate at room temp. Add 2ml of dilute 2N-Folin-Ciocalteus reagent after incubation read the blue color density at 560 nm using spectrophotometer. Plot the standard graph calculate the O.D. of Unknown sample in mg/gm.

2.6 Lipids

1gm muscle homogenized with chloroform: ethanol, 2:1 at 3000rpm then add 0.9% 0.2 ml NaCl. the lower layer was kept in another test tube 0.2ml mixed with conc. sulfuric acid 0.2ml mixed it. All test tube kept for hot water bath left for room temp. Add Phosphovanil reagent 5 ml leave it for develop color density read O.D. at 540nm. Using spectrophotometer. Plot the standard graph calculate the O.D. of Unknown sample in mg/gm.

2.7 Data analysis

The collected data can be analysed in descriptive form by using statistical tools mean average of morphological characteristics of fishes and biochemical calculations can be done by different methods, Lowry's method, Dubois method, Folch method.

2.8. *CATLA CATLA*Fig-1: *CATLA CATLA***Taxonomic position:**

- **Phylum:** - CHORDATA (Notochord and dorsal tubular nerve cord present and gill-slits present).
- **Group:** - CRANIATA (Cranium with brain present).
- **Subphylum:** - VERTEBRATA (Vertebral column present).
- **Division:** - GNATHOSTOMATA (Jaws and paired appendages present).
- **Super class:** - PISCES (Paired fins , gills and skin with scales)
- **Class:** - OSTEICHTHYES (Bony fishes).
- **Sub-Class:-** ACTINOPTERYGII (Ray finned fish).
- **Super Order:** - TELEOSTEI (Bony fish proper).
- **Order:** - CYPRINIFORMES (Anterior vertebrae fused. Weberian ossicles present between air bladder and ear).
- **Genus:** - Catla
Species: *Catla catla* (Hamilton,1822)

2.9 *Oreochromis mossambicus* (Peters 1852)

Fig-2: *Oreochromis mossambicus*



Taxonomic position:

Phylum: Chordata

Class: Osteihthyes

Order: Perciformes

Family: Cichlidae

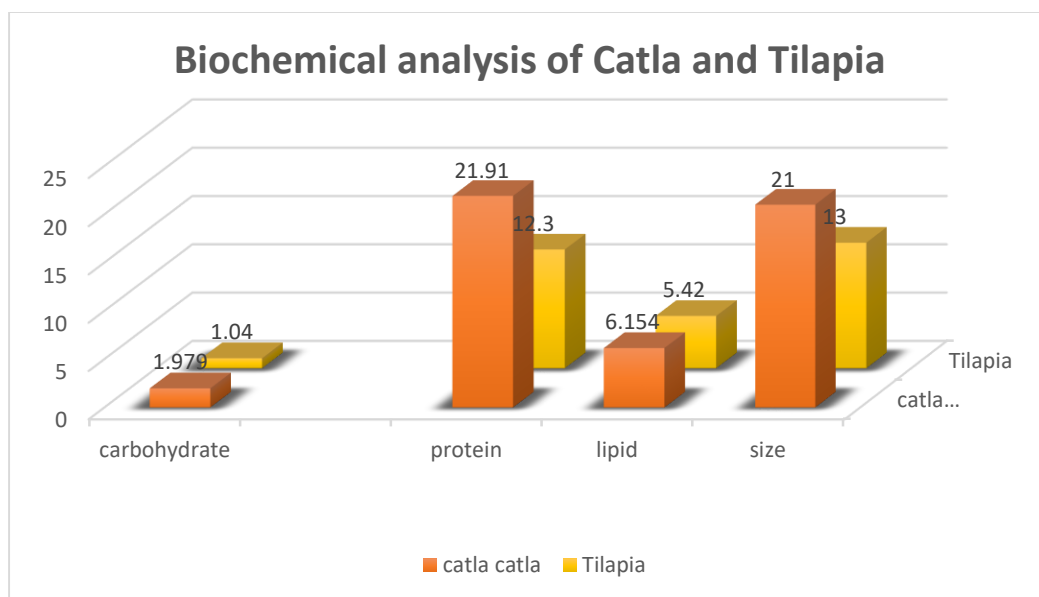
Genus: Oreochromis

Species: *O. mossambicus* (Peters 1852)

Result and Discusion

Table no.1: Biochemical Analysis of *catla catla* and *Tilapia mossambicus* fishes

Sr. no.	fish	weight	size	Carbohydrate mg/gm	Protein mg/gm	Lipid mg/gm
1	<i>Catla catla</i>	930gm	21cm	1.979	21.91	6.154
2	<i>Tilapia mossambica</i>	540gm	13cm	1.04	12.3	5.42

Table no.2: Biochemical content of *catla catla* and *Tilapia mossambicus* fishes

Proteins are perplexing particles and the atomic weight of proteins range from under 5000 Dalton to a few thousand Daltons. Proteins are by and large grouped in classified of the shape, dissolvability and substance structure. In view of dissolvability in salt arrangement proteins are characterized into three gatherings viz. (I) Sarcoplasmic proteins (egg whites and globulin) which comprise around 25-30% of protein (ii) Myofibrillar protein (actin, myosin, tropomyosin and troponin) are primary protein and comprise around 65-70% of complete protein; (iii) Stroma or connective tissue proteins (called collagen) comprise around 3% of the protein in teleosts and around 10% in elasmobranchs. Fish protein is effectively absorbable protein of extraordinary natural worth and it has every one of the fundamental amino acids in required amount.

. Lipid content different between species to species and different in organ in same individual. Mostly fish muscle having triacyl glycerol and phosphoglycerids types of lipids containing long chain fatty acids are present. Polyunsaturated fatty acids (PUFA n-6) which are compressed structural lipids and mostly affected by factors which is lipid contents, growing levels and body weight. Particularly as precursor fatty acids to eicosanoids and arachidonic acid, PUFA (n- 6) are metabolized from adipose tissues (Voss et al., 1991; Sargent et al. 1995; Wouters et al., 2001).

Carbohydrat is the basic chemical constituents it is easily precorssor to insulin in human body for digestion. most of the researcher explains about the protein and lipid fishes also has this two componants more in quantity as compare to carbohydrate.

Carbohydrat is near about same in tilapia and catla the study shows Indian major carp catla catla rich in muscle protein and Tilapia in Lipid.

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