OPEN ACCESS INTERNATIONAL JOURNAL OF SCIENCE & ENGINEERING

STUDY ON PROTEIN AND LIPID CONTENT IN FRESH WATER FISH CATLA *(CATLA CATLA)* AND TILAPIA (*OREOCHROMIS MOSSAMBICUS*) FROM PAITHAN DISTRICT: AURANGABAD, (M.S.), INDIA

***Dama L. B.[1] Deshmukh D. R.[2]**

**Department of Zoology, D.B.F. Dayanand College of Arts and Science, Solapur (M.S.), India.[1]*
Department of Zoology, Pratishthan Mahavidyalaya, Paithan.[2]
damalaxmikant@gmail.com

ABSTRACT: **In the present study protein and Lipid content of Catla (*Catla catla*) and Tilapia (*Oreochromis mossambicus*) were study to know their nutritional values. The value of Lipid content was 7.20 mg/gm in catla and 10.22 mg/gm in Tilapia. The values of protein were, 17.24 mg/gm in Catla and 15.20 mg/gm in Tilapia. Protein variation was highest in *Catla* fishes, Lipid was highest in Tilapia. The study shows that the cultures species are rich in food value.**

Key Words: Protein and Lipid content, *Catla catla and Tilapia* fish.

I INTRODUCTION

Youssouf Ali, (1999) observed that Fish plays a very significant role in nutrition, culture and economy of Bangladesh from time immemorial. Carbohydrates are the most economical and expensive sources of energy for fish diets. Fish is rich in low-fat, high protein, omega-3 fatty acids and vitamins such as D and B2 (riboflavin) also fish is rich in calcium and phosphorus and a great source of minerals, such as iron, zinc, iodine, magnesium, and potassium. Cui and Wootton [1], explain that protein is a part of fish feed and it is made by linkages of individual amino acids and helps in the protein requirements for each species. Lipids are high-energy nutrients that can be utilized partially to spare protein in aquaculture feeds. Lipids provides double source of the energy as proteins and carbohydrates. Lipids typically comprise about 15% of fish diets, supply essential fatty acids (EFA) and serve as transporters for fat-soluble vitamins. Huynh [2] observed that fish is having high poly unsaturated fatty acids then animal fat .the more content of polyunsaturated fatty acids in fish are useful in reducing serum cholesterol. Many researchers like Rodriguez Gonzalez et.al [3], Ananthi *et. al* [4] worked on biochemical content of fresh water fishes studies on biochemical composition of many commercially important fishes. This study gives the idea to find out biochemical composition of fish that we consume regularly. This study was carried out to provide information on biochemical content of *Catla* and Tilapia fish. Many researcher carried out there research on biochemical composition of fishes such as Deshmukh [5] Study on biochemical composition in Indian major carps from Paithan The protein and lipid contents of fishes species showed successive decrease in their estimated values from June to May month and shows the nutritive value of fishes.

II MATERIALS AND METHODS

The fishes were collected from Paithan fish market and brought to laboratory without any mechanical injury for the analysis of biochemical contents of fishes. Biochemical contents such as Protein and Lipids of fishes are estimated from the fishes. The Protein is estimated by using Lowry method Lowry *et al*. [6], and Lipids are estimated by Cox and Pearson [7], method. The protein and lipid contents of fish species were observed from June 2016 to May 2017.

III RESULTS AND DISCUSSION

The protein and lipid composition of fishes are shows are shown in Table 1. Reay [8] reported that deterioration of protein is linked with denaturation of fish protein are linked with frozen fish. Das [9], reported that Lipid content of Rohu (*Labeo rohita*), Grass carp (*Ctenopharyngodon idella*) and Tilapia (*Oreochromis mossambica*) were observed in fresh

condition as well as freezing condition it showed different lipid level at different condition like Temperature, Freezing time, Location size. Padmawati and Prema Kumari [10], reported that changes in biochemical contents of muscles of fish species may also be attributed to alterations is due to increased glycogenesis in muscles and accelerated conversion of liver glycogen into muscle glycogen. Chamundeshwari Devi and Vijayaragahwan [11], observed that changes in biochemical in the fishes are related to their habitat and nutritive values of each species. Shankar and Kulkarni [12] and Shengde and Mane [13]; Viswanathan and Mathew [14], studied the correlation of GSI value with increase of protein and lipids contents and they observed that the increase is found and it is due to vitellogenesis in ovary and spermatogenesis in testes this phenomenon is occurred due to harmones present during pre-breeding and breeding seasons of the fish. Deshmukh [5] observed the biochemical composition in Indian major carps from Paithan. The protein and lipid contents of fish species showed successive decrease in their estimated values from June 2016 to May 2017.

The biochemical contents of fish provides information, idea on physiological and nutritive values of fishes also helps in best management practices in inland fisheries and which prevent the capture of fish during breeding season to help in the diversity of fishes. These study shows that biochemical composition are varies from fish species, the species which are rich in protein content are having important source of animal protein.

Table 1. Protein and Lipids contents in fish *Catla (Catla catla) and Tilapia* (*Oreochromis mossambicus*) (mg/gm of tissue) collected from Paithan.

Sr.No	*Name of Fish*	*Protein*	Lipid
01	***Catla catla***	17.24	7.20
02	***Tilapia* (*Oreochromis mossambicus*)**	15.20	10.22

ACKNOWLEDGMENT

The authors are thankful to Principal Pratishthan Mahavidyalaya, Paithan for providing necessary laboratory facilities to carry out the work. We also thank to Principal, Dayanand College of Arts and Science, Solapur for providing laboratory facilities.

REFERENCES

[1]. Cui Y. and Wootton R. J. Effects of ration, temperature and body size on the body Composition, energy content and condition of Minnow (*Phoxinus phoxinus*). J. Fish Biol. 32: 749-764, 1988.

[2]. Huynh M.D., Kitts D.D., Hu C. and Trites A.W. Comparison of fatty acid profiles of spawning and non-spawning Pacific herring, *Clupea harengus pallasi*. Comparative Biochem. Physiol. 146: 504–511, 2007.

[3]. Rodriguez-Gonzalez Hernandez-Llamas, H. A. Villarreal,H. Sauedo P.E.. Garcia-Ulloa, M. and Rodriguez-Jaramillo. Gonadal development and biochemical composition of female cryfish *Cherax quadricarinatus* (Decapoda: Parastacidae) in relation the gonadosomatic index at first maturation. Aquaculture. 254: 634-645, 2006.

[4]. Ananthi S.,Subbulakshmi S., Joycy Joy Manoharam. Biochemical study of selected fresh water fish in Grand Anicut. International J. Advanced Res. .3(5):305-307, 2015.

[5]. Deshmukh D. R. Study on biochemical composition in indian major carps from paithan, district aurangabad (m.s).Trends in Fisheries Res. 6(1), 2017.

[6]. Lowry O.H., Rosebrough N.H., Farr, A.L. and Randall R.J. Protein measurement with folin phenol reagent. J. Biol. Chem. 193(1):265-275, 1951.

[7]. Cox, H.E. and Pearson, D. The chemical analysis of foods, Chemical Publishing Co. Inc. New York. p. 420, 1962.

[8]. Reay G.A. The influence of freezing temperature on hadock's muscle, JSOC Chem. Ind. London 52: 256, 1933.

[9]. Das K.P. Effect of ambient temperature, icing and freezing on nutrient composition of Rohu (*Labeo rohita*), Grass carp (*Ctenopharyngodon idella*) and Tilapia (*Oreochromis mossambica*). B.Sc.Thesis, Fisheries and Marine Resources Technology Discipline, Khulna University, Khulna, Bangladesh. pp. 20-30, 2009.

[10]. Padmawati G. and Prema Kumari R. Impact of starvation on tissue lipid content in climbing perch, *Anabas testudineus*. J. Aqua. Biol. 21 (2):147-150, 2006.

[11]. Chamundeshwari Devi and Vijayaragahwan, S. Biochemical composition of carcass, muscle and liver of *Labeo rohita* fed on soybean and Glycine based diets with lysine and methionine. J. Aqua. Bio. 16 (2): 81-83, 2001.

[12]. Shankar D.S. and Kulkarni R.S. Effect of cortisol on female freshwater fish *Notopterus notopterus*. J. Environ. Bio. 27 (4): 727-731, 2006.

[13]. Shengde A.N. and Mane U.H. Gonadosomatic index and spawning season of cyprinid fish, *Cirrhina reba* (Hamilton). J.Aqua. Biol. 21 (10): 127-123, 2006.

[14]. Viswanathan P. G. N. and Mathew S. Biochemical composition of fish and shellfish. Central Institute of Fisheries Technology, Cochin. CIFT Technology Advisory Series. 4-7, 2000.