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# Evaluation of nutritive value of local fishes in Wani region, Dist. Yavatmal, (Maharashtra)

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## Abstract

**In the present investigation an attempt has been made to evaluate nutritive values of local fishes available in Wani area from Nirgudariver and Wardhariver. The present study was carried out during the period of Nov. 2008 to Oct. 2009. During study the survey, collection, identification and biochemical analysis of local fishes was done. The results of present study showed that all the fishes were rich in protein content, maximum protein content found in *Anguilla bengalensis*29.34 % and minimum found in *Punctiuscurmuca*10.34 %. Lipid contents of fishes were low and varied from 1.23 % in *Rasboradaniconius* to 6.54 % in *Heteropneustesfossilis* Glycogen content of fishes were negligible and varies from 0.11 % in *Ostebramacotio*to 0.090% in *Cyprinuscarpio.***

***Keywords:****Biochemical analysis, Wardhariver, Nirguda river, Local fishes. Protein, Lipid, Carbohydrate*

## Introduction

Malnutrition is a big problem in many developing countries. While, deficiencies of vitamin A, iron, iodine and other micronutrients are of great concern of public health all over the world. Their consequences include nutritional blindness, poor learning capabilities, poor growth and increased morbidity and mortality rates. Development and agricultural program including fisheries and aquaculture which is mainstream nutrition issues can go a long way in alleviating the problem of malnutrition in poor countries, (Chilama, 2003).India can now claim to be self-sufficient in rice and wheat. However, these achievements do not mean that the problem of chronic malnutrition has been solved. To cope up with the challenges of malnutrition in developing countries fisheries can play a vital role in augmenting food supply and raising nutritional level.

Fish is a rich source of proteins, fats, vitamins (A, B and D), and minerals such as iron, calcium, zinc, iodine, phosphorus, selenium, fluorine, copper and magnesium. Fish bones can be used as calcium supplements for human consumption (Phira*et al*., 2006). Fish roes (eggs) were rich in phosphorous, iron and calcium contents and can be used for making pickles (Balaswamy, 2009). Fish manure tended to have a higher content of Mn, Cd, Cr, Pb. Fe and Zn than most other livestock manure.

In India potential of fish culture is yet to be fully explored and exploited. Fishes being rich source of proteins and have high nutritive value, the biochemical analysis is very essential to evaluate nutritive values of locally available small indigenous fishes having less commercial values and used by poor communities. In present study the biochemical analysis of fishes in Wani area was done to evaluate nutritional value of local fishes.

There is a wealth of literature available on biochemical composition of various fish species (Balaswamy*et al*., 2009; Balaswamy*et al*., 2007; Ismail, 2007; Kamal *et al*., 2007; Balaswamy*etal*., 2006; Al-Habib, 1990; Kent, 1987; Weatherly and Gill, 1987 *etc*.

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## Materials and Method

For the present study two water bodies includes Wardha river and Nirguda river in Wani area was selected for fish collection. Wani is located at co-ordinates $20^0$07' N latitudes and $78^0$95' E longitude, at 228 m AMSL (Above mean sea level).

The two spots on Wardhariver and two spots on Nirgudariver were selected where fishing activities were frequently carried out. Fishes were collected from these selected spots with the help of local fishermen and also from local fish markets. Fish collection was done during the period from November 2008 to October 2009 twice in every month. Fishes were identified up to the species level with the help of standard keys and book, (Day, 1967; Qureshi and Qureshi, 1983; Jhingran, 1997; Daniels, 2002 and Gupta and Gupta, 2006). Immediately after fish collection, photographs were taken with the help of digital camera, on graph paper to know the measurement of fish.

To prepare the sample for the biochemical analysis, the fishes were washed thoroughly with tap water and kept in a slanting position in a tray to remove water. Only the edible portions such as muscles were taken for the experiment. Samples were macerated with tissue homogenizer and used for investigation.

Protein contents were determined by using Lowry, *et al.,* (1951) method. Lipid contents were determined by using Bligh and Dyer, (1959) method. And glycogen contents were determined by Montgomery, (1957) method.

## Results and Discussion

The present investigation deals with biochemical composition of fishes, protein, lipids and glycogen, with an object of understanding the nutritive value of local fishes (Table-I).

**Protein Contents:-**

All fishes were found to be rich source of protein. The maximum and minimum protein contents of muscle among the thirty seven species were 29.74% in *Anguilla*bengalensis and 10.34 % in *Punctiuscurmuca*. Higher protein contents were found in *Lebeorohita* 22.21% , *Cyprinuscarpio* 21.32%, *L. calbasu* 21.23%, *Channapunctatus*21.34%., *C. striatus* 21.54% and *Barliliusbarna* 19.80%; whereas lower values were found in *Rasboradaniconius* 10.63%, *Punctiussarana* 10.44% *P.ticto* 11.83%, *P. sophor* 10.73% and *Salmostomabacaila* 11.63%.

**Lipid contents:-**

In the present study, the lipid content of muscles among the thirty seven species varies from 1.23% in *Rasboradaniconius* to 6.54% in *Heteropneustesfossilis*. Higher lipid contents were found in *Labeorohita* 5.22%, *Cirrhinusmrigala* 4.62%, *L. Calbasa* 4.84, *Rita rita* 4.21, *Calariusbatrachus* 4.32% ,*Channapunctatus* 4.63%, *C.striatus* 4.61% and *Nandusnandus* 5.39%. While lower lipid contents were found in *Bariliusbarna* 1.61%, *Cyprinusbendelinsis* 1.34%, *Punctiussarana* 1.85%, *P. sophore* 1.84%, P. ticto 1.31, *P. curmuca* 1.48%, *P. amphibius* 1.63%, *Garramullaya* 1.91%, *Ompokbimaculatus* 1.66%, *O. pobo* 1.42% and *Wallagoattu* 1.91%.

**Glycogen contents:-**

In present investigation, glycogen contents of muscle among all the thirty seven species were found negligible and varies from 0.011% in *Osteobramacotio* to 0.090% in *Cirrhinuscarpio*. Higher glycogen contents were found in Mystus*seenghala 0.085%*, *Cirrhinusmrigala* 0.078%, *Catlacatla*0.076% ,*Anguilla bengalensis*0.076% , *Heteropneustusfossilis* 0.075% and *Punctiuscurmuca* and *P. amphibius* 0.074%. Whereas lower glycogen contents were found in *Tilapia mossambicus* 0.013%, *Mastacembelusarmatus* 0.018%, *Wallagoattu* 0.019% and *Rita rita* 0.019%.

The results of present study showed that all the fishes were rich in protein content, maximumu protein content found in *Anguilla bengalensis* 29.34 % and minimum found in *Punctiuscurmuca* 10.34 %. Lipid contents of fishes were low and varied from 1.23 % in *Rasboradaniconius* to 6.54 % in *Heteropneustesfossilis* Glycogen content of fishes were negligible and varies from 0.11 % in *Ostebramacotio* to 0.090% in *Cyprinuscarpio.*

The present investigation deals with biochemical composition of fishes, protein, lipids and glycogen, with an object of understanding the nutritive value of local fishes. These results were in good agreement with previous works of Rahman*et al.,* (1994); Hossain*et al.,* (1999) and Kamal, (2007). These results also nearly similar to FAO, (1991).

## Table-1:Body composition of fishes in Wani area

| S.N. | Scientific Name | Local Name | Protein % | Lipid % | Glycogen % |
|---|---|---|---|---|---|
| 1 | *Notopterusnotopterus* | Patola | 17.43 | 3.87 | 0.023 |
| 2 | *Anguilla bengalensis* | Tambu | 29.74 | 3.34 | 0.076 |
| 3 | *Salmostomabacaila* | Chal | 11.63 | 1.82 | 0.046 |
| 4 | *Bariliusbarna* | Batri | 19.80 | 1.61 | 0.066 |
| 5 | *Cyprinusbendelisis* | Zora | 13.34 | 1.34 | 0.034 |
| 6 | *Rasboradaniconius* | Gana | 10.63 | 1.23 | 0.026 |
| 7 | *Cyprinusmola* | Nawari | 19.70 | 2.44 | 0.058 |
| 8 | *Osteobramacotio* | Bhondu | 11.90 | 2.21 | 0.011 |
| 9 | *Punctiusdorsalis* | Kodsi | 12.63 | 2.76 | 0.039 |
| 10 | *Punctiussarana* | Karwadi | 10.44 | 1.85 | 0.032 |
| 11 | *Punctiussophore* | Karwadi | 10.73 | 1.84 | 0.037 |
| 12 | *Punctiusticto* | Tepri | 11.83 | 1.31 | 0.036 |
| 13 | *Punctiuscurmuca* | Bhurungi | 10.34 | 1.48 | 0.074 |
| 14 | *Punctiusamphibius* | Ghuruti | 16.46 | 1.63 | 0.074 |
| 15 | *Garramullaya* | Mahir | 17.82 | 1.91 | 0.044 |
| 16 | *Cirrhinusmrigala* | Mrigal | 19.37 | 4.62 | 0.078 |
| 17 | *Catlacatla* | Katla | 18.62 | 3.25 | 0.076 |
| 18 | *Labeocalbasa* | Karoti | 21.23 | 4.84 | 0.048 |
| 19 | *Labeorohita* | Rohu | 22.21 | 5.22 | 0.059 |
| 20 | *Cyprinuscarpio* | Cipla | 21.32 | 3.96 | 0.090 |
| 21 | *Rita rita* | Bhokni | 14.61 | 4.21 | 0.019 |
| 22 | *Mystuscavasius* | Katwa | 13.12 | 3.84 | 0.021 |
| 23 | *Mystusseenghala* | Singat | 17.75 | 3.45 | 0.085 |
| 24 | *Ompokbimaculatus* | Barangi | 14.84 | 1.66 | 0.023 |
| 25 | *Ompokpobo* | Waddi | 13.92 | 1.42 | 0.021 |
| 26 | *Wallagoattu* | Sawda | 15.65 | 1.91 | 0.019 |
| 27 | *Clariasbatrachus* | Mangur | 16.31 | 4.32 | 0.063 |
| 28 | *Heteropneustesfossilis* | Ingur | 18.34 | 6.54 | 0.075 |
| 29 | *Xenetodoncancilla* | Chocha | 15.26 | 2.93 | 0.022 |
| 30 | *Ambasisnama* | Zanjad | 16.81 | 2.56 | 0.038 |
| 31 | *Ambasisranga* | zanjad | 16.22 | 2.37 | 0.042 |
| 32 | *Nandusnandus* | Dukkar | 13.61 | 5.39 | 0.024 |
| 33 | *Tilapia mossambicus* | Telabi | 16.47 | 2.31 | 0.013 |
| 34 | *Glossogobiusgirus* | Kaddu | 15.53 | 2.33 | 0.066 |
| 35 | *Channapunctatus* | Mallar | 21.34 | 4.63 | 0.044 |
| 36 | *Channastriatus* | Dhadak | 21.54 | 4.61 | 0.064 |
| 37 | *Mastacembelusarmatus* | Bamb. | 18.51 | 3.92 | 0.018 |

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