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Biochemical Composition of Some Small Indigenous Fresh Water Fishes from the River Mouri, Khulna, Bangladesh

D. Kamal, A.N. Khan, M.A. Rahman and F. Ahamed

Fisheries and Marine Resources Technology Discipline, Khulna University, Khulna-9208, Bangladesh

Abstract: Biochemical composition of seven small indigenous fresh water fishes namely Magur (*Clarias batrachus*), Shingi (*Heteropneustes fossilis*), Koi (*Anabas testudineus*), Foli (*Notopterus notopterus*), Royna (*Nandas nandas*), Taki (*Channa punctatus*) and Tangra (*Mystus vittatus*) from the Mouri river Khulna, Bangladesh was studied in order to evaluate their nutritional values. The mean value of protein, fat, moisture and ash content was found as 14.87 ± 0.63 , 7.90 ± 1.91 , 73.49 ± 0.69 and $3.74 \pm 0.46\%$ in *C. batrachus*; 17.34 ± 0.51 , 3.45 ± 0.92 , 76.06 ± 2.24 and $3.15 \pm 0.25\%$ in *H. fossilis*; 19.63 ± 0.5 , 7.79 ± 2.73 , 69.27 ± 1.04 and $3.31 \pm 0.83\%$ in *A. testudineus*; 18.30 ± 0.79 , 4.98 ± 1.71 , 72.68 ± 1.08 and $5.82 \pm 0.82\%$ in *N. notopterus*; 16.09 ± 2.66 , 7.34 ± 0.49 , 75.75 ± 0.78 and $5.19 \pm 0.029\%$ in *N. nandas*; 19.13 ± 2.40 , 4.55 ± 1.18 , 70.55 ± 1.89 and $6.81 \pm 0.94\%$ in *C. punctatus* and 15.62 ± 0.32 , 7.53 ± 1.10 , 73.99 ± 3.13 and $6.50 \pm 0.63\%$ in *M. vittatus*. Considering the result of the present study, it can be concluded that all the species are rich in food value.

Key words: Biochemical composition, small indigenous fresh water fish, Mouri river

INTRODUCTION

Bangladesh is an agro based country blessed with vast inland water in the form of pond, canals, ditches, flat plain, haors (natural depression), boars (Ox bow lake), rivers, estuaries etc covering an area 43.10 million hectares which is an excellent ecological condition for the propagation of fish (BBS, 1994). About 63% animal's protein is supplied from fish (DoF, 2002). Period 1970, many different small indigenous fishes like Koi, taki, veda, pabda, gulsa, mola puti, shing, magur etc were abundant in almost all the fresh water areas of Bangladesh. These indigenous fish were favorite and popular for their taste (Moniruzzaman, 2000).

Of the 260 species (Rahman, 1989) of fresh water fishes in Bangladesh over 140 species most of which are small indigenous have been clarified critically or some what endangered (IUCN, 1998). But these species have an importance for their food value. Analysis of biochemical composition including protein, fat and ash is very important to evaluate food value. Biochemical composition of fish varies from species to species and with in the same species from one individuals to another (Stansby *et al.*, 1962).

Biochemical analysis is an index of nutritive value only because the fractions it isolates are correlated with some of the properties of organisms that are nutritionally significant. Most of the peoples of Bangladesh have no idea about the nutrient content of fish. Hence, present

study was undertaken to investigate into the biochemical composition of some small indigenous fresh water fishes namely Magur (*Clarias batrachus*), Shingi (*Heteropneustes fossilis*), Koi (*Anabas testudineus*), Foli (*Notopterus notopterus*), Royna (*Nandas nandas*), Taki (*Channa punctatus*) and Tangra (*Mystus vittatus*).

MATERIALS AND METHODS

For the present investigation the sample of seven fish species of fish namely Magur (*Clarias batrachus*), Shingi (*Heteropneustes fossilis*), Koi (*Anabas testudineus*), Foli (*Notopterus notopterus*), Royna (*Nandas nandas*), Taki (*Channa punctatus*) and Tangra (*Mystus vittatus*) were collected from the fisherman of the Mouri River, Khulna, Bangladesh in the month February 2002. Collected samples were brought immediately to the Fish Nutrition Lab. of Khulna University.

To prepare the sample for the determination of proximate composition, the fishes were washed thoroughly with tap water and kept in a slanting position in a tray to remove water. Only the edible portions were taken for the experiment. The samples were macerated with blender and use for investigation. Three set of sample were prepared for each species of fish.

Protein and Lipid content were determined by using Pearson (1977) method. Moisture and ash content were determined by using gravimetric method with the help of Controlled oven and Muffle furnace.

RESULTS AND DISCUSSION

Protein contents: All fishes were found to be rich sources of protein. The maximum and minimum protein contents among the seven species were $19.63 \pm 0.5\%$ in *Anabas testudineus* and 14.87 ± 0.63 in *Clarias batrachus*. Higher protein contents were found in *Anabas testudineus* ($19.63 \pm 0.5\%$) and in *Channa punctatus* ($19.13 \pm 2.4\%$) where as lower values were found in *Clarias batrachus* ($14.87 \pm 0.63\%$) and in *Mystus vittatus* ($15.62 \pm 0.32\%$) (Fig. 1). CSRI (1962) reported the protein contents in *A. testudineus* (14.80%), *N. notopterus* (19.8%), *C. punctatus* (19.40%), *H. fossilis* (22.8%), *C. batrachus* (18.30%), *N. nandus* (21.13%) and *M. vittatus* (18.96%). The findings of present studies were similar in case of some species be dissimilar to others. The variation occurred may be due to habitat, season, sex and or water quality. The protein of some species found in the present study was more or less similar to the result of Hossain *et al.* (1999).

Lipid contents: In the present investigation, the lipid contents among the seven species ranged from $3.45 \pm 0.92\%$ in *H. fossilis* to $7.90 \pm 1.91\%$ in *C. batrachus*. Higher lipid contents were found in *C. batrachus* ($7.90 \pm 1.91\%$), *A. testudineus* ($7.79 \pm 2.73\%$), *M. vittatus* ($7.53 \pm 1.10\%$) and *N. nandus* ($7.34 \pm 49\%$) (Fig. 2). Hossain *et al.* (1999) reported the lipid contents of some selected fishes from Mymensingh ranged from 1.87 to 9.55%, the findings of the present study were with in the range. Rahman *et al.* (1994) reported the crude in some Bangladeshi zeol fish ranged from 2.18 to 9.38% which supported to the results obtained in the present study.

Moisture contents: It was observed that the major components of the fishes were moisture. The moisture contents varied from $69.27 \pm 1.04\%$ in *A. testudineus* to $76.06 \pm 2.24\%$ in *C. batrachus*. Higher values were found in *C. batrachus* ($76.06 \pm 2.24\%$) and *N. nandus* (75.75 ± 0.78) where as the lower values were found in *A. testudineus* ($69.27 \pm 1.04\%$) and *C. punctatus* ($70.55 \pm 1.89\%$) (Fig. 3). Chowdhury (1981) reported more or less similar result for the same species. He showed an inverse relationship between fat and moisture which was supported by the present study.

Ash contents: Maximum and minimum ash contents were found in *C. punctatus* ($6.81 \pm 0.94\%$) and *H. fossilis* ($3.15 \pm 0.25\%$), respectively. The higher values were found in *C. punctatus* ($6.81 \pm 0.94\%$) and *N. notopterus* ($5.82 \pm 0.82\%$) and the lower values were found in

H. fossilis ($3.15 \pm 0.25\%$), *A. testudineus* ($3.31 \pm 0.83\%$) and *C. batrachus* ($3.74 \pm 0.46\%$) (Fig. 4). The results of the present study showed similarity with the result of

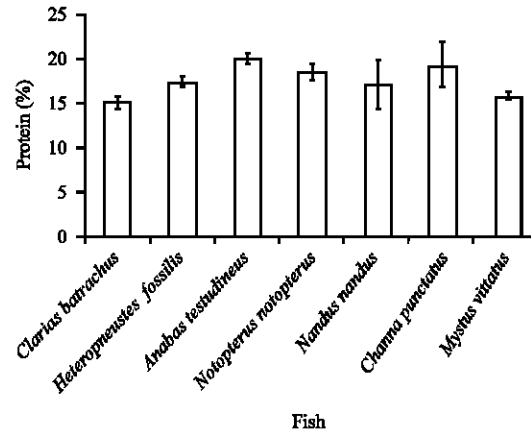


Fig. 1: Protein percentage of different species

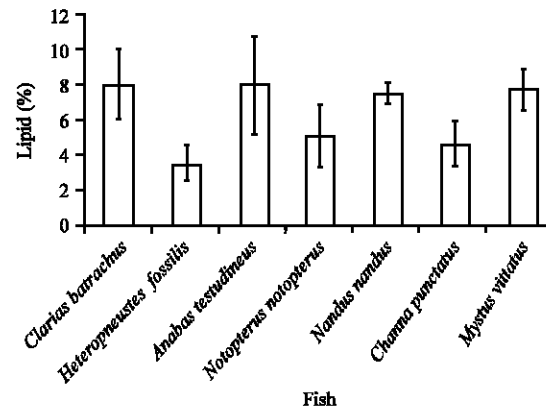


Fig. 2: Lipid percentage of different species

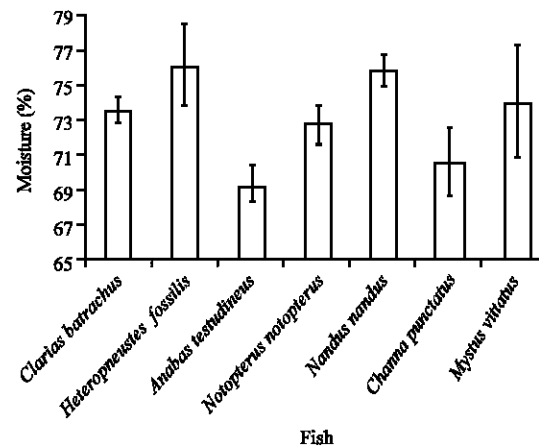


Fig. 3: Moisture percentage of different species

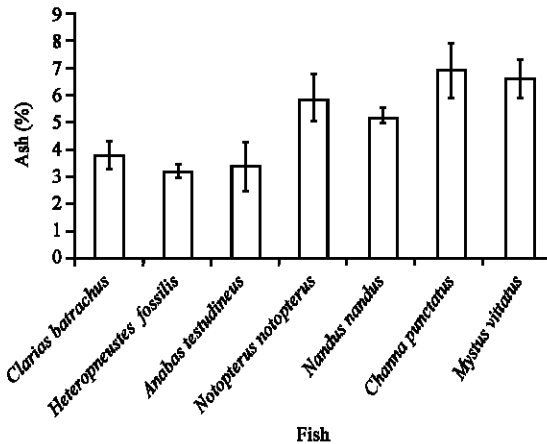


Fig. 4: Ash percentage of different species

Hossain *et al.* (1999) by a little difference. Chowdhury (1981) reported the highest value of ash content ($6.79 \pm 1.26\%$) in *A. testudineus* among five zeol fishes. In the present study, the value of ash content of *A. testudineus* was lower than the findings of Chowdhury (1981). This variation may occur due to habitat, season, sex and size.

The present study showed variation in biochemical composition in different fish species. All the seven species are rich in protein content so they are important source of animal protein. Thus Mouri river serves as an important source of animal protein for the local people.

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