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To Study the Difference of Proximate Composition during Pre and Post- Monsoon Season of *Esomus danricus* and *Puntius sophore*

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Abstract: ***Evaluating the proximate composition of fish is the most important aspect in fish nutrition. The present study was carried out to determine the difference of proximate composition of whole fish during pre and post- monsoon season of Esomus danricus and Puntius sophore. The specimens were collected from the market and oven-dried before analyzing them in triplicate using standard procedures. Moisture, protein and ash content of both the species are found to increase in post monsoon season as compared to pre-monsoon while fat content decrease in both the species during post monsoon. The result suggests that the proximate composition of species greatly varies from season to season.***

Keywords: Fishes, protein, lipid, ash, moisture

1. Introduction

Fish is a favorite foodstuff for the majority of societies. Fish meal contains most important nutritional components and serve as a source of energy for human beings (Ojewola and Annah,2006;Sutharshiny and Sivashanthini,2011).Majority of the nutritionist recommended that human beings should eat fish every day (Blanchet et al.,;Nestel,2000;Balk et al.,2004).An increasing amount of evidence suggest that fish meat and oil contains high amount of polyunsaturated fatty acid that are valuable in decreasing the serum cholesterol to prevent a number of coronary heart diseases (Nordoy *et al*.,2001,Turkmen *et al.*,2005).Fish meal can reduce the risk of developing dementia, including Alzheimer's diseases (Grant,1997)

Breastfed babies of mothers who eat fish have better eyesight perhaps due to omega -3-fatty acid transmitted in the breast milk. Eating fish during pregnancy may help to reduce the risk of delivery of premature baby (Olsen and Secher, 2002).Fish meal is popular in majority of population of Manipur. Fish of various species don't provide the same nutrient profile to their consumer (Takama *et al*.,1999) and the nutritive value of a fish varies with season (Varljen *et al.*,2003)

Moisture, dry matter , protein, lipids, vitamins and minerals are the most important components that act as sources of nutritive value of fish meat (Steffens,2006) .Quantifying the proximate composition is important in ensuring the requirements of food regulation and commercial specification (Waterman,2000).Fish contains significantly low lipids and higher water than beef or chicken and is favoured over white or red meats (Nestle,2000).The total lipid and ash content of fish vary with the increasing weight or length of the fish; it may also vary with season and varied habitats(Hassan,1996).

Proximate body composition is the analysis of water, fat, protein and ash content of fishes. Carbohydrate and non protein compounds are present in negligible amount and are usually ignored for routine analysis (Astawan *et al*.,2004).Among the proximate composition, protein in fish is the excellent sources, because of the amino acid composition and degree of digestibility(Louka *et al* .,2004). Protein content which is an important component tend to vary little in healthy fishes (Hui and Y.H, 2001).

There are many reports on biochemical and nutritional aspect on fishes. However there is no report so far on the difference of proximate composition during pre and post monsoon season of *Esomus danricus* and *Puntius sophore* .So the aim of the present study is to evaluate the difference of proximate composition during pre and post monsoon season.

2. Materials and Methods

Fresh fish were collected from the market during the pre and post monsoon and transported to the laboratory.The length and body weight were measured to the nearest centimeter and gram for pre monsoon and post monsoon of *Esomus danricus (* 4.5-5.0 cm and 0.96-1.10gm,5.0-6.0cm and 1.0-1.5 gm respectively) and for *Puntius sophore* (7.0-9.0cm and 3.0-5.0 gm and 9.5-10 cm and11.0-15.0gm respectively).The whole body of the fishes were oven dried and the fish powdered was used for determination of proximate composition of the two season.

2.1 Proximate Composition

Proximate composition of the fishes was determined using AOAC methods (AOAC,2000).Moisture content was measured by weighing difference before and after oven drying at 70-80^{o}c until constant weight is obtained .Protein content was determined by Lowry's *et al*.,(1951).Ash content was measured by following the method of ISI(1982).Fat content was estimated by the method of Folch *et.al*.,(1959).All the analysis were done in triplicate.

Table 1: Proximate composition of *Esomus danricus* during Pre and post monsoon

Season	*Moisture %*	*Protein %*	*Fat %*	*Ash %*
Pre-monsoon	75.65± 0.064[d]	11.62± 0.026[a]	19.88± 0.021[c]	16.11± 0.101[b]
Post-monsoon	77.59± 0.043[d]	14.55± 0.043[a]	14.00± 0.000[a]	16.03± 0.100[b]

Values are mean±SD from three replicate.values within the same column not sharing the common manuscript differ significantly at p<0.05

Table 2: Proximate composition of *Puntius sophore* during Pre and post monsoon season

Season	*Moisture %*	*Protein %*	*Fat %*	*Ash %*
Pre - monsoon	72.11± 0.010[d]	9.12± 0.020[a]	21.16± 0.040[c]	14.66± 0.000[b]
Post-monsoon	74.30± 0.011[d]	9.31± 0.010[a]	15.00± 0.020[b]	24.00± 0.000[c]

Values are mean±SD from three replicate.values within the same column not sharing the common manuscript differ significantly at p<0.05

3. Result and Discussion

Table no.1 and 2 shows the proximate composition of *Esomus danricus* and *Puntius sophore* during Pre and post-monsoon season respectively. Here, in both the species a correlation in the value of protein, moisture ,fat is observed that during post - monsoon as the moisture content increased there is decrease in fat content at the same time increase in protein content as compare to pre-monsoon. The gradual increase in protein contents in the post monsoon season in both the fishes suggests a recovery of the fish from the strenuous act of spawning (Bano,1977).Decrease in lipid contents in both the species indicate mobilization of the component towards gonad development (Bano,1977 and Mansurekar and Pai,1979) during post monsoon and increase in ash content in both the species indicates higher mineral metabolism during this period(Bano,1977).It is presumed that the amount of food and concentration of minerals after the water recedes in the post-monsoon period increase considerably.

The result suggest that the proximate composition of fish species greatly varies from season to seasons. This might be due to physiological reasons and changes in environmental condition i.e spawning ,starvation, or heavy feeding. This study provides valuable information on variation in proximate composition of the fish species studied in order to take necessary precaution to distinguish their nutritional value and make a choice based on the information from consumer point of view.

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