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VARIATIONS IN BIOCHEMICAL COMPOSITION IN LIVER OF TWO FRESH WATER PRAWNS *MACROBRACHIUM ROSENBERGII* AND *MACROBRACHIUM MALCOMSONII*

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Abstract: Fresh water prawns consists of good number of nutritional substances required for making byproducts for poultry and piggery industry and also recommended diet for human consumption. In this investigation we focused on the major biochemical constituents like carbohydrates, proteins, lipids, moisture and ash contents in two different fresh water prawns i.e. Mac*robrachium rosenbergii* and *Macrobrachium malcomsonii* with special reference to liver.Carbohydrates exhibited inverse relationship with protein content. The average values of carbohydrates, proteins, lipids, moisture and ash contents were recorded as 2.48±0.05, 11.15±0.62, 7.05±0.27, 78.15±1.49 and 78.15±1.49 respectively.
Keywords: Liver, Protein, Carbohydrate and Fresh water prawns

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Introduction

Abdul Sahib and Ajeel (2005) discussed biochemical composition in male and female shrimp of *Metapenaeus affinis.* Athiyaman and Rajendran (2013) investigated nutritional values in two fresh water prawns *Macrobrachium scabriculum* and *Macrobrachium idella idella.* Gunalan *et al.*, (2013) studied the proximate composition and mineral profile of cultured shrimp *Litopenaeus vannamei*. Rangappa *et al.*, (2012) worked on the proximate composition of two fresh water prawns namely *Macrobrachium rosenbergii* and *Macrobrachium malcomsonii*. Considerable work has been carried out on the biochemical composition, seasonal variations of biochemical components, mineral profile, fatty acids, amino acids, nutritional values in wild, frozen and cultured conditions both in shrimp aswellas prawns. But very few reports are available on percentage of biochemical components in liver of fresh water prawns. So far no reports are available on biochemical composition of the liver as it is involving in various functions like detoxification and metabolic activity, in this research attention has paid to study about the nutritional parameters of two fresh water prawns Mac*robrachium rosenbergii* and *Macrobrachium malcomsonii*.

Material and Methods

Collection of Samples and processing procedure

The fresh water prawns namely Mac*robrachium rosenbergii* and *Macrobrachium malcomsonii* were collected from local landing centers of Nellore and

brought to the laboratory by keeping in ice containing insulated boxes. Upon arrival the samples were subjected to washing with running tap water followed by distilled water. Then the samples were dissected to separate the liver tissue. The blotting paper in good condition is used to remove the blood and other adherent particles around the liver tissue and later the tissue was subjected to hominization in high speed Mortar. The properly homogenized liquid sample was used for the estimation of the below mentioned biochemical parameters. The study was conducted during the year 2016.

Methodology for proximate composition analysis

Hot air oven method is used for the analysis of the moisture content (Jain and Singh, 2000). Micro-Kjeldhal method as described in (Pearson, 1999) is used for the total protein content. Bligh and Dyer (1959) method is used for the estimation of lipid content. AOAC (1990) method is adopted for the ash content. Carbohydrate content is estimated by adopting the method as described (Roe, 1955). Triplicate readings were taken and the results were tabulated.

Results and Discussion

Table 1. Biochemical parameters in two fresh water prawns

S. No.	Name of the freshwater prawn	Biochemical constituents expressed in Percentage (%) (n = 6)				
		Carbohydrates	Proteins	Lipids	Moisture	Ash
1	*Macrobrachium rosenbergii*	2.27±0.07	11.89±0.58	7.23±0.21	77.29±1.24	1.32±0.05
2	*Macrobrachium malcomsonii*	2.69±0.04	10.42±0.67	6.87±0.34	79.01±1.75	1.01±0.02
3	Mean ± SD	2.48±0.05	11.15±0.62	7.05±0.27	78.15±1.49	1.16±0.03

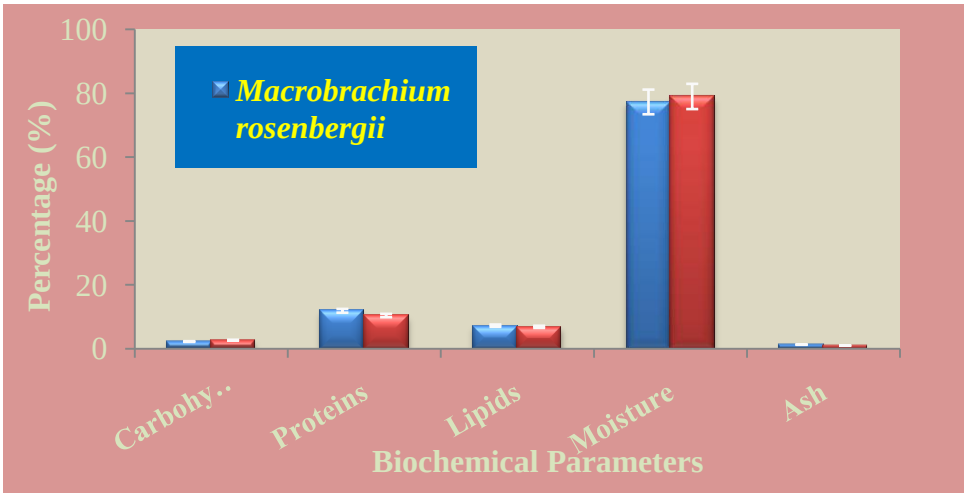

Figure 1. Variations in biochemical parameters of two fresh water prawns in Liver

Carbohydrates

The observed average carbohydrate percentage for the two species in the current investigation was 2.48±0.05% Jafri and Qasim, (1965) studied biochemical components and their variations in several kinds of fresh water fishes interestingly the carbohydrate content in *Catla catla* (2.693) was very close to the average value of this study. Carbohydrate content showed indirect relationship with protein content. Similar findings were recorded by Dinakaran *et al.*, 2009; Athiyaman and Rajendran, 2013.

Proteins

The maximum protein content was recorded in *Macrobrachium rosenbergii* (11.89±0.58), whereas minimum was noticed in *Macrobrachium malcomsonii* (10.42±0.67). According to Diana (1982) protein diet is

much important to maintain the basic functional aspects like growth and proper maintenance of the body tissues and it is also a prime tool to assess the physiological standards. Jafri and Qasim, (1965) recorded the protein content in *Labeo rohita* and *Labeo calbasu* was (10.78), for *Barbus stigma* (10.62), *Barbus sarana* (10.15) and for *Cirhinnus mrigala* (12.05) respectively. The reported protein values for two prawn species were following the similar trends of results as reported by Jafri and Qasim, (1965).

Lipids

In decapod crustaceans the lipids also contribute major proportion in formation of yolk. According to Varadrajan and Subramoniam (1982) the stored lipids in the oocytes are derived from heapatopancreas. The maximum lipid content was recorded in *Macrobrachium rosenbergii* (7.23±0.21), whereas minimum was noticed in *Macrobrachium malcomsonii* (6.87±0.34). The lipid values in two fresh water prawns were in agreement with the previous workers reported by (Jafri and Qasim, 1965; Athiyaman and Rajendran, 2013).

Moisture and Ash

The average percentage of moisture and ash content in the liver of two prawn species selected for the study was 78.15±1.49 and 1.16±0.03 respectively. Jafri and Qasim, (1965) studied moisture and ash contents in liver of various fresh water fish fishes. According to them the average moisture and ash value of the all species were reported as 75% and 1.4% respectively. The observations were made in this study following the trends of results previously reported by (Jafri and Qasim, 1965).

Conclusions

Very little information is available as per liver nutritional point is concerned, particularly in Indian fishes and prawns. Proximate composition analysis in Liver of fresh water prawns will provide nutritional information and baseline data for the future generations. Further research works should focus on the nutritional parameters in various fresh water, marine fin fish and shell fishes which give additional knowledge to the Society.

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