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Comparative study on nutritional value of *Macrobrachium rosenbergii* and *Macrobrachium malcolmsonii*

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Abstract

The purpose of the present study is to estimate the nutritional parameters such as protein, carbohydrate, lipid, moisture and ash content in two different fresh water prawns. The proximate composition was estimated in five different samples from each species and the values were tabulated as Mean±SD. For the proximate analysis in the present study the samples were procured from cultured and frozen conditions. It is evident from the present study findings that the highest average protein content was recorded in cultured conditions than frozen conditions. Similarly the highest lipid content was recorded in cultured conditions than frozen conditions. The highest levels of carbohydrates were seen in frozen conditions than cultured conditions.

Keywords: *Macrobrachiumrosenbergii*, *Macrobrachium malcolmsonii*, Nutritional values.

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Introduction

Ferdose and Hossain [1] studied the nutritional values in *Macrobrachiumrosenbergii* in three different categories of prawns such as wild caught, cultured and frozen conditions. Reddy and Reddy [2] reported the nutritional values of *Macrobrachiumrosenbergii*in cultured and frozen conditions of the prawns. Harinath[3] conducted a detailed study onthe biochemical constituents in the liver tissue of *M.rosenbergii*and *M. malcolmsonii*. LudiyaPodili Rani [4] studied on the proximate composition of *P.indicus.* In this study she mainly focused on the seasonal variations in protein content in the muscle tissue and intestine. The available literature on nutritional variations in cultured and frozen stages of the fresh water prawns from the Nellore is very limited. Hence in the present investigation a comparative study was conducted to estimate the nutritional parameters of *Macrobrachiumrosenbergii*and *M. malcolmsonii*.

Materials and Methods

Sample collection

The present study was mainly focused to assess the nutritional parameters such as protein, carbohydrate, transmission, and blood clotting. Fe is necessary for many proteins and enzymes that maintain good health, transport oxygen throughout the body, and enable the liver to function properly [4]. Zinc (Zn) is a component of numerous enzymes and is necessary for the proper lipid, moisture and ash content in two different fresh water prawns. The live specimens were procured from the culture ponds, and the frozen samples were purchased from the local markets in Nellore. Soon after collection the samples were stored in insulated containers and brought to the laboratory of Department of Microbiology, Yogi Vemana University for further analysis.

Sample processing Procedure

The samples which are collected from culture ponds were thoroughly cleaned with deionized water, followed by double distilled water to remove adherent particles and other debris. The frozen samples were first allowed for two to three hours to get back room temperature later the samples were processed like cultured specimens. Then the specimens were dissected with sterile scissors and muscle tissue was separated. The required amount of tissues oven dried at 90-105^{0}C. Then the samples were ground into fine power from using mortar and pestle. The powder form was used to estimate the nutritional parameters in both the species.

Proximate analysis of the prawns

The moisture and ash contents of the prawn'ssamples were analyzed by Association of Official Agrichemicals,

AOAC method [5].Proteins, carbohydrates, lipid contents were estimated by adopting standard methods of Lowry et al., [6], Dubois et al., [7], Folch et al., [8] respectively. Triplicate readings were taken for this study.

Results and Discussion

Table: 1. Nutritional values of *Macrobrachiumrosenbergii* and *Macrobrachiummalcolmsonii*in cultured conditions (% on a dry weight basis)

S/N	Name of the Species	Protein	Carbohydrate	Lipid	Ash	Moisture
1	*Macrobrachiumrosenbergii*	71.22±0.47	5.01±0.33	9.01±0.51	14.76±0.38	71.0±1.01
2	*Macrobrachiummalcolmsonii*	69.85±0.58	5.89±0.41	8.89±0.39	15.37±0.42	74.0±1.27
Average		70.53±0.52	5.45±0.37	8.95±0.45	15.06±0.4	72.5±1.14

Table: 2. Nutritional values of *Macrobrachiumrosenbergii* and *Macrobrachiummalcolmsonii*in frozen conditions (% on a dry weight basis)

S/N	Name of the Species	Protein	Carbohydrate	Lipid	Ash	Moisture
1	*Macrobrachiumrosenbergii*	60.21±0.47	8.01±0.39	6.89±0.44	24.89±0.27	72.0±1.25
2	*Macrobrachiummalcolmsonii*	62.27±0.61	7.26±0.27	7.01±0.50	23.46±0.35	69.0±1.05
Average		61.24±0.54	7.63±0.33	6.95±0.47	24.17±0.31	70.5±1.15

Cultured conditions

In cultured conditions the protein content ranged from 69.85±0.58 to 71.22±0.47 with an average value of 70.53±0.52. Carbohydrate content ranged from 5.01±0.33 to 5.89±0.41 with an average value of 5.45±0.37. Lipid content ranged from 8.89±0.39 to 9.01±0.51 with an average value of 8.95±0.45. Ash content ranged from 14.76±0.38 to 15.37±0.42 with an average value of 15.06±0.4. Moisture value ranged from 71±1.01 to 74±1.27 with an average value of 72.5±1.14 **(Table 1).**

Frozen conditions

Similarly in frozen conditions the protein content ranged from 60.21±0.47 to 62.27±0.61 with an average value of 61.24±0.54. Carbohydrate content ranged from 7.26±0.27 to 8.01±0.39 with an average value of 7.63±0.33. Lipid content ranged from 6.89±0.44 to 7.01±0.50 with an average value of 6.95±0.47. Ash content ranged from 23.46±0.35 to 24.89±0.27 with an average value of 24.17±0.31. Moisture value ranged from 69±1.05 to 72±1.25 with an average value of 70.5±1.15 **(Table 2).**

Ferdose and Hossain[1] recorded the highest amount of proteins (74.85±0.65) in cultured prawns followed by wild (68.27±0.23) and frozen samples (60.8±0.12). Harinath [3] recorded the highest amount of protein in *M. rosenbergii* than *M. malcolmsonii.* Reddy and Reddy [2] recorded the protein content of the cultured prawn was ranged from 72.99 to 74.89 with an average value 74.24 which was greater than that of frozen prawn average protein value recorded as 60.55.Similarly in the present investigation the protein content ranged from 69.85±0.58 to 71.22±0.47 with an average value of 70.53±0.52 which was higher than that of frozen average value of 61.24±0.54.

Ferdose and Hossain [1] recorded the highest amount of carbohydrates (8.21±0.14) in frozen prawns followed by wild (6.99 ± 0.92) and cultured samples (5.61±0.37). Reddy and Reddy [2] recorded the average carbohydrate content of the cultured prawn (5.50) which was lower compared to the frozen prawn carbohydrate content recorded as 8.23±0.18.Similarly in the present investigation the Carbohydrate content ranged from 5.01±0.33 to 5.89±0.41 with an average value of 5.45±0.37which was lower than that of frozen average value of 7.63±0.33.

Ferdose and Hossain [1] recorded the highest amount of lipids (9.15±0.61) in cultured prawns followed by wild (8.44±0.10) and frozen samples (7.89±0.005). Reddy and Reddy [2] recorded the average content of the lipids in cultured prawns were greater (9.09±0.009) than that of the frozen prawn recorded as 7.98 ± 0.13.Similarly in the present investigation the Lipid content ranged from 8.89±0.39 to 9.01±0.51 with an average value of 8.95±0.45 which was higher than that of frozen average value of 6.95±0.47.

Ferdose and Hossain [1] recorded the highest amount of ash (23.09±0.39) in frozen prawns followed by wild (16.30±0.65) and cultured samples (10.14±0.55). Reddy and Reddy [2] recorded the average content of the ash in frozen prawns was greater (21.61±0.42) than that of the cultured prawn recorded as 9.71±0.19. Similarly in the present investigation the Ash content ranged from 23.46±0.35 to 24.89±0.27 with an average value of 24.17±0.31 which was higher than that of cultured average value of 15.06±0.4.

Ferdose and Hossain[1] recorded the highest amount of moisture (78.3±5.83) in wild prawns followed by cultured (77.1±1.69) and frozen samples (74.9±0.98). Reddy and Reddy [2] recorded the average content of the moisture in cultured prawn was greater (77.14±0.19) than that of the frozen prawn recorded as 74.93±0.23. Similarly in the

present investigation the moisture content ranged from 71±1.01 to 74±1.27 with an average value of 72.5±1.14which was higher than that of frozen average value of 70.5±1.15.

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