



**International Journal of Biology, Pharmacy  
and Allied Sciences (IJBPAS)**  
*'A Bridge Between Laboratory and Reader'*

[www.jibpas.com](http://www.jibpas.com)

## TOTAL PROTEIN CONTENT IN A MARINE AND A FRESH WATER CRAB

REKHA PA\*, JAYANTHI J AND RAGUNATHAN MG

Department of Advanced Zoology and Biotechnology, Guru Nanak, College, Velachery,  
Chennai, (T.N.)

\*Corresponding Author: E Mail: [rekha.mugan@yahoo.com](mailto:rekha.mugan@yahoo.com)

### ABSTRACT

The present study was undertaken to find out the protein content in the body muscle of both marine and fresh water crabs. For marine crabs, *Scylla serrata*, *Scylla tranquebarica*, and *Portunus pelagicus* were selected from Kovalam, Kasimedu and Pulicat lake respectively. Male and female crabs were also included. For fresh water *Ozietelphusa senex senex* was selected including male and female crabs from Porur lake. The main objective of the study was to find out whether marine crabs or fresh water crabs is high in their protein content. Out of three marine crabs, *Scylla tranquebarica* male crabs contributed maximum amount of protein from Kovalam area which was found to be 321.4 mg/g than Pulicat (289.2mg/g) and Kasimedu (222.2mg/g). In fresh water crab, male crabs contributed maximum amount of protein which was found to be 106.8 mg/g than female (102.4mg/g) crabs.

**Keywords:** Marine Crab, Fresh Water Crab, Protein Content, *Scylla tranquebarica*

### INTRODUCTION

Crabs make up 20% of all marine crustaceans caught, farmed, and consumed worldwide, amounting to 1½ millions tonnes annually. Many crustaceans are consumed by humans, and nearly 10,700,000 tons are produced, the vast majority of this output is of decapod crustaceans such as crabs, lobsters, shrimp and prawns—Over 60% by weight of all crustaceans caught for consumption are

shrimp and prawns, and nearly 80% is produced in Asia, with China alone producing nearly half the world's total. Non-decapod crustaceans are not widely consumed, with only 118,000 tons of krill being caught—despite krill having one of the greatest biomasses on the planet [1].

Proteins are essential nutrients for the human body. They are one of the building blocks of body tissue, and can also serve as

a fuel source. As a fuel, proteins contain 4 kcal per gram, just like carbohydrates and unlike lipids, which contain 9 kcal per gram. Protein is essential for sustenance of life and accordingly exists in the largest quantity of all nutrients as a component of the human body [2].

An increasing demand for good quality animal protein for the exploding population has led to effective and increasing exploitation of the aquatic resources. The acceptability and easy digestibility of animal protein make it very valuable in combating protein energy malnutrition, especially in children. The protein content in crabs has a high biological value with its growth promoting capacity. Animal protein occupy an important part in the world protein supply, accounting for about 10% of the total protein supply. About 60 % of the population in the developing countries derives 40% or more of their total animal protein supplies from crab [3]. The average protein content of crabs approximately ranges from 102.4mg/g-351mg/g.

#### MATERIAL AND METHODS

The marine crabs were collected from Kovalam, Kasimedu and Pulicat lake and fresh water crabs were collected from Porur lake. The healthy crabs were brought to the laboratory and the samples were cleaned and the body muscle were dissected for extraction thereby following the estimation.

The samples were weighed, ground well with pestle and mortar in 5-10 ml of buffer, centrifuged and the supernatant was used for protein estimation. The protein content of the crab were estimated by adopting the standard method of [4]. The obtained values were expressed in mg/100g.

#### RESULTS AND DISCUSSION

The protein content in the body muscle was found to be higher in male marine crabs than that of female marine crabs. The protein content was high in marine crabs than fresh water crab in general.

It is found out that, the protein content in the body muscle of the Kovalam male crabs was higher than female crabs. *Scylla serrata* male has 182.6mg/g of protein and female has 140.2mg/g of protein. *Scylla tranquebarica* male has 321.4mg/g of protein female has 248.2 mg/g of protein. *Portunus pelagicus* male has 272.8mg/g of protein and female has 266.1mg/g of protein respectively. Out of the three marine crabs, *Scylla tranquebarica* male and female has higher levels of protein than the other two crabs of the Kovalam area (Figure 1).

It is found out that the protein content in the body muscle of the Pulicat marine crabs, the male crabs was higher than female crabs. *S. serrata* male has 173.6mg/g of protein and female has 129.1mg/g of protein. *S. tranquebarica* male has 289.2mg/g of protein female has 235.8mg/g of protein. *P.*

*pelagicus* male has 264.2mg/g of protein and female has 251.6mg/g of protein. Out of the three marine crabs, *S. tranquebarica* male and *P. pelagicus* female has high levels of protein than the other two crabs in Pulicat area (**Figure 2**).

It is found out that the protein content in the body muscle of the Kasimedu marine crabs, the male crabs was higher than female crabs. *S. serrata* male has 153.2mg/g of protein and female has 115.2mg/g of protein. *S. tranquebarica* male has 222.2mg/g of protein female has 212.6mg/g of protein. *P. pelagicus* male has 212.4mg/g of protein and female has 202.2mg/g of protein. Out of the three marine crabs, *S. tranquebarica* male and female has high levels of protein than the other two crabs in Kasimedu area (**Figure 3**).

It is detected that the protein content in the body muscle of the Porur fresh water crab *Oziotelphusa senex senex*, the male crabs has higher protein content than female crabs and their values are 106.8mg/g and 102.4mg/g respectively (**Figure 4**).

### CONCLUSION

From the objective point of view, the marine crabs are high in protein content than fresh water crabs. Out of all three the marine crabs i.e. Kasimedu, Kovalam and Pulicat crabs, Kovalam crabs were high in their protein content and male crabs contributed high protein levels than female crabs. Out of

the three marine crabs, *S. serrata*, *S. tranquebarica* and *P. pelagicus* ..*S. tranquebarica* male crab showed higher protein levels than the other two crabs. In these marine crabs, male crabs recorded the high levels of protein than female crab. In fresh water Porur crab *O. senex senex*, the male ones were higher in protein content than female ones. Out of three marine crabs, *S. tranquebarica* male crabs contributed maximum amount of protein from Kovalam area which was found to be 321.4 mg/g respectively than Pulicat (289.2mg/g) and Kasimedu (222.2 mg/g) crabs . In fresh water crab, again male crabs contributed maximum amount of protein from Porur area which was found to be 106.8 mg/g then female (102.4mg/g) crabs respectively.

### REFERENCES

- [1] Folch J, Lees M and Sloane-stanley GH, A simple method for the isolation and purification of total proteins from animal tissues, J. Biol. Chem., 226, 1956, 497-509.
- [2] Balasubramanian CP and Suseelan C, Biochemical composition of the deep water crab, *Charybdis smithii*, Indian J. Fish, 48 (3), 2001, 333-335.
- [3] Prasad PN and Neelakantan B, Proximate and essential amino acid composition in edible crab *Scylla*

*serrata*, Comp. Physiol. Ecol., 14 (1), 1989, 34-37.

[4] Lowry DH, Rosebrough MJ, Farr AL and Randall RJ, Protein

measurement with the folin phenol reagent, J. Biol. Chem., 193, 1951, 265-275.

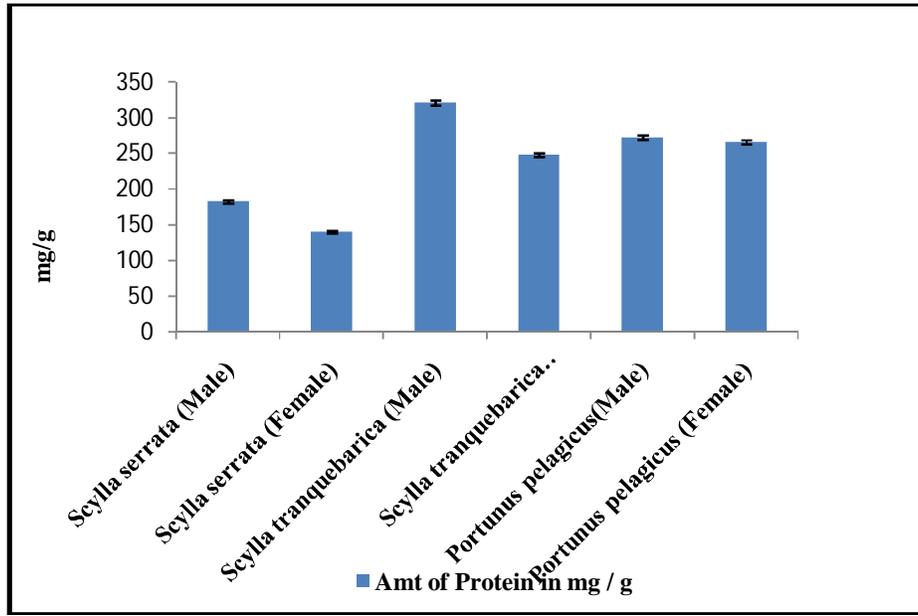


Figure 1: Protein Content in the Body Muscle of the Marine Crabs at Kovalam  
NOTE: Each Value Represents Mean ± SEM of 6 Samples Expressed as mg/100g of Dry Tissue

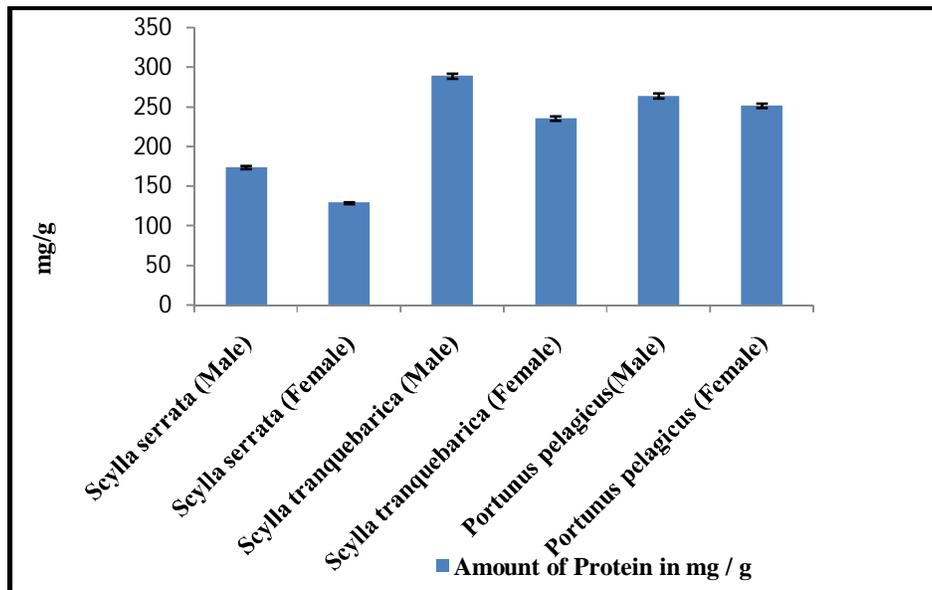


Figure 2: Protein Content in the Body Muscle of Marine Crabs at Pulicat Lake  
NOTE: Each Value Represents Mean ± SEM of 6 Samples Expressed as mg/100g of Dry Tissue

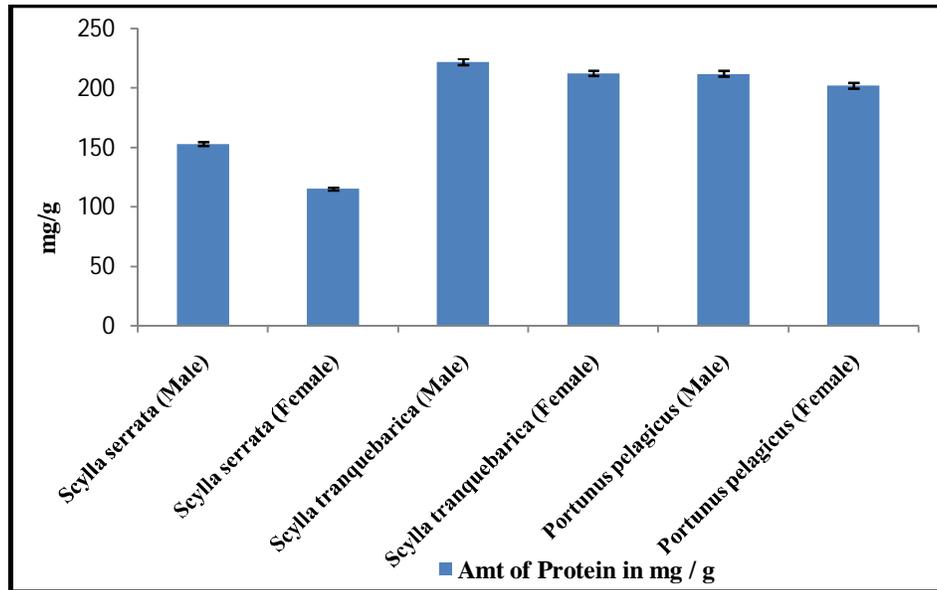


Figure 3: Protein Content in the Body Muscle of the *Kasimedu* Crabs

NOTE: Each Value Represents Mean ± SEM of 6 Samples Expressed as mg/100g of Dry Tissue

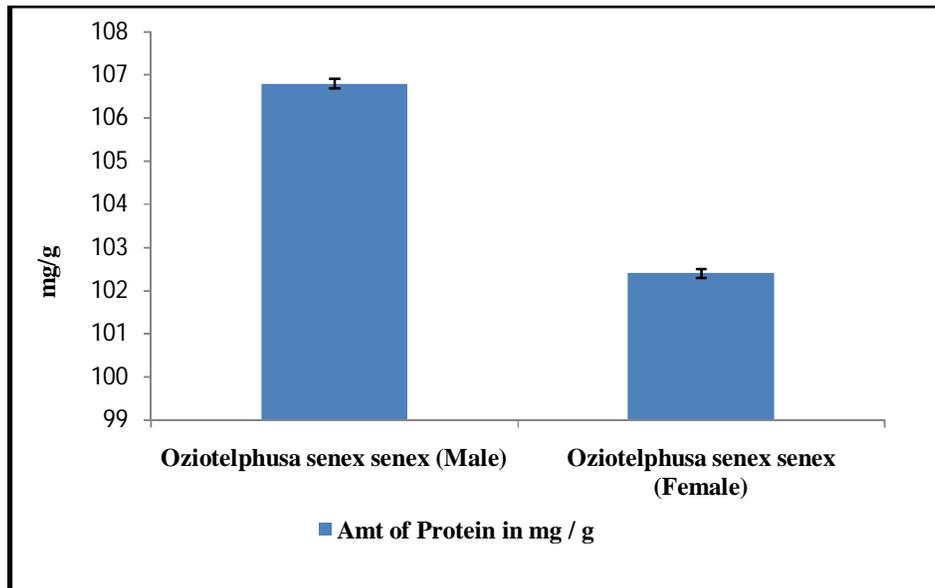


Figure 4: Protein Content in the Body Muscle of the Fresh Water Crab at Porur

NOTE: Each Value Represents Mean ± SEM of 6 Samples Expressed as mg/100g of Dry Tissue