IJBPAS, February, 2014, 3(2): 239-242

ISSN: 2277–4998

International Journal of Biology, Pharmacy and Allied Sciences (IJBPAS)

'A Bridge Between Laboratory and Reader'

www.ijbpas.com

MINERAL CONTENTS IN A MARINE CRAB, *SCYLLA SERRATA* OF KOVALAM REGION, CHENNAI, TAMIL NADU

REKHA PA*, JAYANTHI J AND RAGUNATHAN MG

Department of Advanced Zoology and Biotechnology, Guru Nanak College, Velachery, Chennai-600042

***Corresponding Author: E Mail: rekha.mugan@yahoo.com**

ABSTRACT

The body muscle of the crab, *Scylla serrata* was investigated for its mineral composition which included both micro and macro minerals (Macro minerals-Calcium, Sodium, Potassium, Magnesium, Phosphorous and Micro minerals-Iron, Iodine, Zinc, Copper, Ferric, Aluminium). The minerals were subjected to dry ashing the samples at 550°C and the solution obtained were used to determine the minerals by Atomic Absorption Spectophotometer. The concentration of the mineral varied from Calcium to be the highest in the male than female. The concentration of the mineral content were within the allowed daily requirement for most of the minerals. The macro mineral contents was found to be highest than micro minerals following the highest again in male crabs. Therefore, the crab *S. serrata* could be a balanced human diet and could be employed as an alternative dietary supplement of minerals in the body. Hence, the consumption of crabs would help to prevent nutritional deficiencies.

Keywords: Crabs, Calcium, Iron, Food supplement, Nutritional supplement, *Scylla serrata*

INTRODUCTION

The use of marine resources for human consumption has improved rapidly worldwide. In general, seafood products, which include crustacean shellfish have been praised for their health supporting characteristics. Shellfish are nutritionally precious sources of various minerals and high quality protein. The chemical composition and nutritive value of crab meat have been extensively investigated in various parts of the world. Crab is highly nutritious and healthy owing to its protein and mineral composition. Therefore, determining the compositional mineral elements of crab species has a great importance due to the good effect on human health. The prospective health benefits related to crab consumption are because of the presence of proteins, vitamins, unsaturated fatty acids and minerals **[1]**. The crab, *Scylla serrata* is a good source of various minerals. Therefore, it is so essential to human health. From these minerals, Calcium, Phosphorous, Magnesium and Ferric are necessary to maintain an optimal bone development, more of being required during childhood and growing stages to prevent rickets and osteomalacia. Calcium also has an essential role in blood clotting, muscle contraction and nerve transmission. Iron (Fe) is an important mineral; it is required to help the red blood cells to deliver oxygen to the rest of the body. Iron is essential for many proteins and enzymes that maintain good health, transporting oxygen in the blood to all parts of the body as well as proper functioning of the liver. Zinc is a constituent of many enzymes and is essential for the proper functioning of these enzymes. Zinc is essential for the metabolism and structural stability of nucleic acids. Zinc has been associated with a variety of bodily functions such as wound healing, reproduction, growth and maintenance of glucose tolerance in the body **[2]**. The aim of this study is to find out the mineral content of the male and female marine crab (*S. serrata)* in Kovalam Region. The body muscle of crab, *S.serrata* was investigated for its mineral composition which included both micro and macro minerals (Macro mineral-Calcium, Sodium, Potassium, Magnesium, Phosphorous and Micro mineral-Iron, Iodine, Zinc, Copper, Ferric, Aluminium).

MATERIALS AND METHODS

The *Scylla serrata* was purchased from the fishermen at Kovalam and transported immediately to the laboratory for analysis. Crab samples were dissected and the body muscle was taken for extraction thereby following the estimation. The samples were weighed, the minerals were subjected to dry ashing the samples at 550°C and the solution obtained were used to determine the minerals by Atomic Absorption Spectophotometer. The obtained values were expressed in mg/100g. Values were compared to standards **[3-6]**.

RESULTS AND DISCUSSION

The macro-mineral contents i.e. Sodium, Potassium, Calcium, Magnesium and Phosphorous has been found in the body muscle. It is inferred that out of these macro- mineral, Calcium (male-36mg/100g and female-28.9mg/100g) shows the highest value than the other. The male crabs has higher mineral content than female crabs **(Figure 1)**.

The micro-mineral contents i.e. Zinc, Copper, Aluminium, Ferric and Iron has been found in the body muscle. It is inferred that out of these micro- minerals, Zinc (male- 11.2 mg/100g and female- 8.2 mg/100g) shows the highest value than the other. The male crabs has higher mineral content than female crabs. Aluminium was not found both in male and female crabs.

The concentration of minerals varied, Calcium ranging the highest amount in male-36mg/ 100g, female-28.9mg/100g, Sodium- male-28mg/100g and female -24mg/100g, Potassium-male- 32mg/100g and female-16.2mg/100g, Magnesium male-30.2mg/g and female -24.8mg/g, Phosphorous ,male-26mg/100g and female-25mg/100g, Zinc, male-11.2mg/100g and female-8.2mg/100g, Iron, male- 3.2mg/100g and female-2.8mg/100g, Ferric, male-9.8mg/100g and female -8.1mg/100g, Copper male-0.82mg/100g and female -0.72mg/100g and Aluminium was not detected.

CONCLUSION

The results obtained in the present study shows that mineral contenst in the body muscle of male and female marine crab (*S. serrata)* in Kovalam region is highly nutritious. It is found out that in terms of major and essential mineral elements such as Zinc (Zn), Calcium (Ca) and Iron (Fe), when compared to the recommended daily allowances in the Food and Nutrition Board National Council, the nutrients were abundant. It can then be inferred that the crab, (*S. serrata)* could be employed as a supplement of mineral matter so as to balance human nutrition. Hence, the consumption of crab (*S. serrata)* would help to prevent nutritional deficiencies.

REFERENCES

[1] Nalan G, Dlua K and Yerlikayaa P, Determination of Proximate Composition and Mineral Contents of Blue Crab (*Callinectes sapidus*) and Swim Crab (*Portunus pelagicus*) Caught off the Gulf of Antalya, Food Chem., 80, 2003, 495-498.

[2] Moronkola BA, Olowu RA, Tovide OO and Ayejuo OO, Proximate and Mineral Composition of crab *(Callcinetus amnicola)* living on the shore of Ojo river, Lagos, Nigeria, *Sci. Rev. Chem. Communi.*, 1 (1), 2011, 1-6.

[3] USDA, National Nutrient Database for Standard Reference, Release **16**, Nutrient Data Laboratory, Home Page, Available http:// www.nal.usda.gov/fnic/foodcomp/search, 2003.

[4] Food and Nutrition Board, National Research Council Recommended

Dietary Allowances, 10th Ed., National Academy Press, Washington, DC, 1989.

[5] AOAC, Official Methods of Analysis, 16th Ed., Association of Official Analytical Chemists, Washington DC, 1995.

[6] AOAC, Official Method of Analysis, 15th Edition, Association of Official Analytical Chemists, Washington DC, 1990.

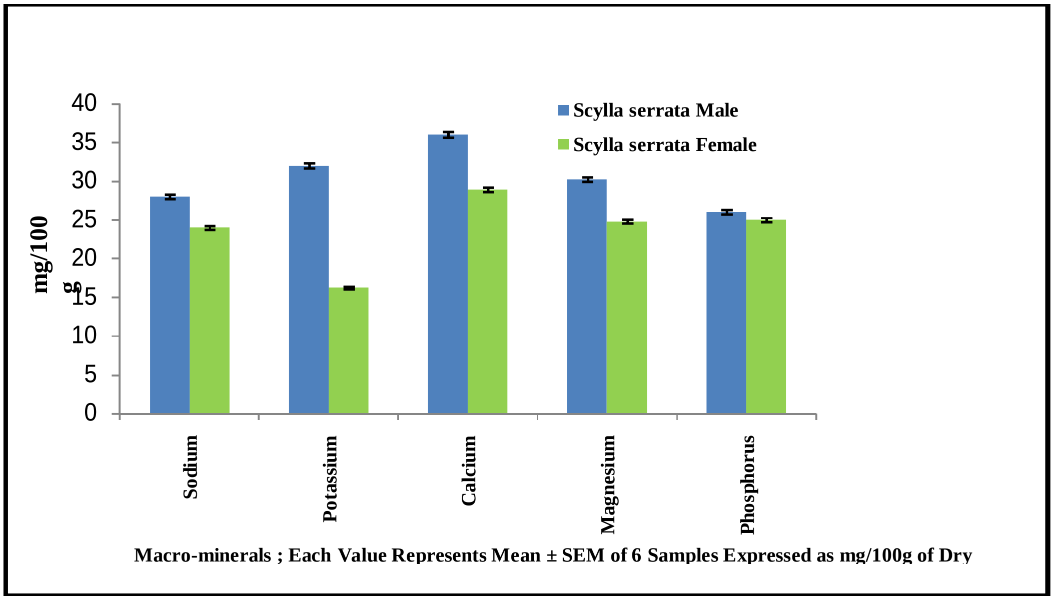

Figure 1: **Macro Mineral Contents in the Body Muscle of *Scylla serrata***

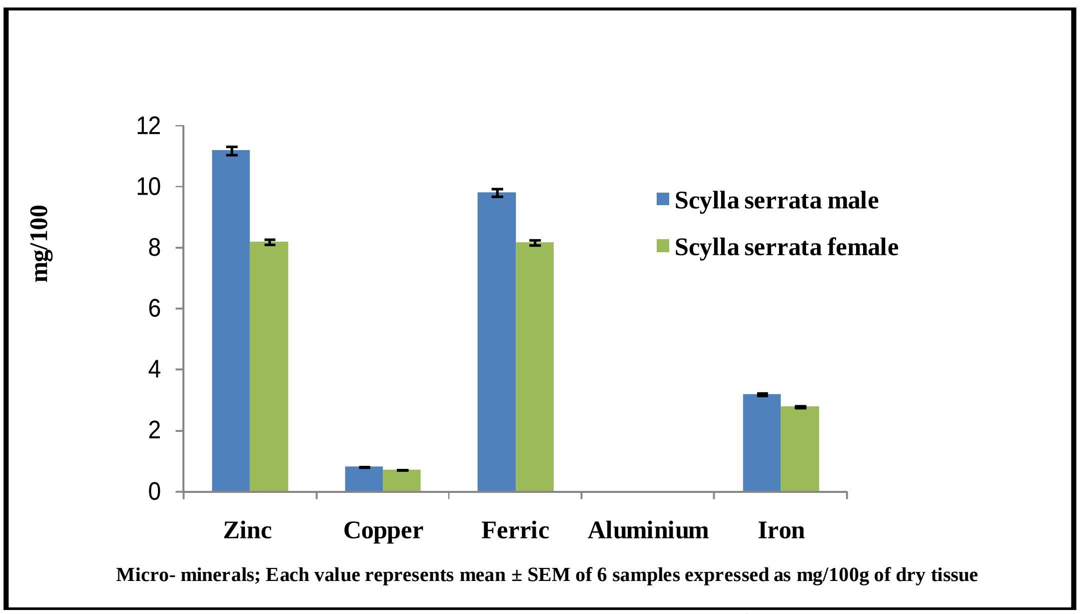

Figure 2: Micro-Mineral Contents in the Body Muscle of the *Scylla serrata*