

Recieps for the Mesogastropod - *Strombus canarium*

S. Arularasan, P.S. Lyla, K. Kesavan and S. Ajmal Khan
Centre of Advanced Study in Marine Biology Annamalai University,
Parangipettai-608 502, India

Abstract: Shellfish and other aquatic organisms suitable for food and feed are of worldwide importance. The lipid components of the gastropods are attaining unpredicted popularity as important nutritional contribution to man's diet. The gastropod meat is not only tasty but also a nourishing food. As the gastropod meat is free of cholesterol, it is considered good for cardiac disorders. In the present study, the gastropod *Strombus canarium* meat is used for the preparation of good recipes such as dog conch soup, conch noodles, conch curry, conch cutlet, chilli conch. The may also be marketed as fresh, frozen, cooked (whole) or as pickled meat. The pickled gastropod meat is also marketed in the canned form. Differences in food habits over the length and breadth of the nation is so much that available food resources are not being utilized properly due to lack of knowledge about their importance. The panel of judges vouched safe for taste and delicacy of the dishes in the present study. The panel pointed out that the dishes were as good as those made out of the much sought after seafood in taste, smell and flavour.

Key words: Dog conch, gastropod, nutrition, seafood and *S. canarium*

INTRODUCTION

Seafood is an excellent source of protein of high biological value. Fish, shellfish and other aquatic organisms suitable for food and feed are of worldwide importance. They are excellent sources of high quality proteins, superior to those in meat and poultry. Man lives on land, which occupies a quarter of the surface of the planet and takes most of his food from the land. Approximately 14% of the animal protein consumed by human beings comes from marine fisheries (Pigott and Tucker, 1990).

As the world population is growing, the per capita consumption of seafood is also increasing rapidly. Because of health consciousness, the modern day man is interested in taking seafood more in view of its nutritional superiority than all other sources of food accessible to him. Seafood and its recognized important lipid components are attaining unpredicted popularity as important nutritional contribution to man's diet. Although seafood in the diets has long been considered to provide health benefits, only in the past decades has the emphasis moved from "low fat, low calories and high protein" to other positive effects such as prevention from blood clotting, make platelets less "sticky" and make red blood cells less rigid. We look increasingly to the sea in our fight against starvation and malnutrition.

Seafood is one of the thrust sectors for augmenting country's export earnings. The seafood export has grown substantially to about 541,701 tonnes worth of Rs. 76.21 billion (2007-2008). Today the seafood sector is the 8th

largest foreign exchange earner of our country. Further, this sector provides livelihood to millions of people both directly and indirectly. The world market for seafood has doubled within the last decade reaching US\$ 58 billion mark. The share of seafood in our total export of all commodities is 3.12% while our share in world seafood market is only 2.31% (Bojan, 2003).

The gastropod meat is not only tasty but also a nourishing food. Foot muscle of gastropod *Cymbium melo* cures asthma and piles. It is being consumed by fisherfolks of India. The dry meat of *Turbinella pyrum* is therapeutic. It is being taken along with milk to provide relief from asthma and other cold related allergies. Infact all gastropod curry is said to be a reputed cure for asthma. Many therapeutic properties attributed to gastropods in India and several countries of the world. As the gastropod meat is free of cholesterol, it is considered good for cardiac disorders. The gastropod meat contains high nutritive substances like vitamins B and C, carbohydrates and proteins are necessary for building up our muscular system and also iodine, phosphorus, magnesium, iron, copper, sulphur and calcium, which are essential for the general up-keep of health and stamina. The gastropod meat is used for the preparation of good recipes such as stews, soups, salads, appetizers and hotpot mixed with other seafood in high end restaurants.

Some of the earlier works on the preparations of recipes in gastropods include those of *Chicoreus ramosus* and *Fasciolaria trapezium* (Ragunathan *et al.*, 1992; Ramesh and Ayyakkannu, 1992a; *C. ramosus* (Ramesh and Ayyakkannu, 1992; Hylleberg, 1992; Ramesh and

Ayyakkannu, 1992b; Patterson Edward and Ayyakkannu, 1992; Ayyakkannu, 1994; Ramesh and Ayyakkannu, 1994; Patterson *et al.*, 1994; Ramesh and Ayyakkannu, 1995; *F. trapezium* and molluscan products (Gopakumar, 1996).

The *Strombus* may also be marketed as fresh, frozen, cooked (completely) or as pickled meat. The pickled gastropod meat is also marketed in the canned form. The present study has tried few dishes using *S. canarium* meat which have the potential to become a regular food item in the household diet, with consumer acceptance.

MATERIALS AND METHODS

Pre-cooking process: The animals were boiled in water for 30 min and the soft parts were removed from the shells. The edible portions such as foot and adductor muscles were cut into small pieces according to each dish. After thorough washing, the pieces of the meat were pressure-cooked until the meat becomes soft. The pre-cooked meat was used for preparing all dishes.

The following dishes were prepared from the meat of dog conch *S. canarium*. The ingredients used and methods of preparations are given below:

Dog conch soup:

Ingredients

Conch foot meat - 500 g
Large onion
(finely chopped) - 200 g
Ghee - 50 g
Garlic (paste) - 25 g
Ginger (paste) - small piece
Cumin seeds - 25 g
Spices - 2 g
4 slices of dry bread, toasted
¾ cup of tomato sauce
¼ cup of sweet chilli sauce
¼ cup of soya sauce
1 ½ teaspoons of salt
All spices - required amount

Method: The conch was boiled and the juice was extracted. The spices and ajinomoto were added at required levels. The tomato, chilli and soya sauce were added in required quantities. The cooked soup was filtered well and at last the toasted dry bread was added and served hot.

Dog conch Noodles:

Ingredients

Dog conch meat - 1 cup
Ajinomotto - 1 cup
Onion - 2 (chopped)
Capsicum - 1
Carrot - 2 (chopped)
Beans - 10
Cabbage - 1 cup

Soya sauce - 2 tea spoon
Pepper powder/white pepper powder - 3 teaspoon
Egg - 3 (beaten well)

Method: Eggs were beaten well along with pepper, salt and fried in oil. Chopped vegetables were boiled by adding little salt and were then put in oil and fried. Garam masala, spices powder, ajinomotto, salt, soya sauce and chilli sauce were added to the noodles. Then all the noodles, vegetables, conch meat and eggs were put into a frying pan and stirred well. Garnished the noodles with coriander and mint leaves. The dish was hot served.

Dog conch cutlet:

Ingredients

Potato - 2
Carrot - 2
Beans - 5
Onion - 2 (finely chopped)
Coriander leaf - half bunch
Ginger garlic paste - 1 spoon
Chilli powder - 1 ½ spoon
Garam masala - 1 ½ spoon
Green chillies - 2
Dog conch meat - 1 cup
Salt - required amount

Method: Boiled tomatoes were smashed well. After frying the conch meat was added. Finely chopped and boiled carrot, beans and onion were added to the smashed potatoes. Ginger garlic paste, garam masala, chopped green chillies, pepper powder and chilli powder were added to the smashed potatoes. Conch meat was added and smashed well. Then the mixture was made into cutlet (round) shape and fried in oil. The cooked conch cutlets were served along with chatni.

Dog conch curry:

Ingredients

Dog conch - 5 Nos.
Onion - 2 (chopped)
Chillies - 2 (chopped)
Ginger garlic paste - 1 cup
Curd - 1 cup
All spices - 1 teaspoon
Chilli powder - 1 teaspoon
Turmeric powder - 1 teaspoon
Salt - required amount
Coconut paste - 1 cup
Coriander and Mint leaf - required amount

Method: Oil was taken in a pan. Spices, chopped onion, chilli, and tomatoes, ginger, garlic paste and curd were added one by one till it turned brown. Then the conch added to it by adding chilli powder, turmeric powder and salt at the required amount. Added water for boiling if necessary.

Table 1: Average organoleptic scores of the dishes prepared from *S. canarium*

S.No.	Dishes	Colour	Appearance	Flavour	Texture	Taste
1.	Dog conch soup	4	5	5	4	4
2.	Dog conch Noodles	4	4	5	4	5
3.	Dog conch curry	4	4	5	5	4
4.	Dog conch cutlet	4	5	5	4	4
5.	Chilli Dog conch	5	4	4	5	5

Excellent: 5, Very Good: 4, Good: 3, Fair: 2, Poor: 1

Coconut paste was added to the curry as per the required taste. It was boiled well and the coriander leaves were added. At last garnishing was done using mint and coriander leaves.

Chilli Dog conch:

Ingredients

- 3 tablespoons of fresh garlic
- 2 tablespoons of fresh ginger
- ½ medium onion
- 1 ½ tablespoons of oil
- 2 fresh red chillies
- ½ teaspoons of salt
- 2 ¼ cups of water
- 2 X 800 g dog conch
- 1 egg beaten
- 4 slices of white bread, toasted

Method: Oil was taken in a pan and heated. Spices, chopped onion and tomatoes were fried in oil till it became brown. Then, chilli powder, turmeric powder and salt were added to it. When it was boiling, the conch meat was added along with salt. Soya sauce, chilli sauce, tomato sauce and ajinomoto were added to it after boiling well, if necessary. Then it was garnished with lemon, coriander and mint leaves.

RESULTS AND DISCUSSION

A panel of 20 investigators evaluated the dishes. The organoleptic scores of the dishes include colour, appearance, flavour, texture and taste. The evaluated average organoleptic scores of all the recipes for the study animal *S. canarium* were shown in Table 1 and the prepared dishes are displayed in Fig 1-5.

Food security is an essential feature of country's independence and sustenance. The food availability in a country has to commensurate with population size and nutritional requirements of its people. In the year 2001-2002, India produced about 210 million tones of food grains, largely sufficient for its 1050 million populations. India has proved to be a food-secure nation for about the last four decades (Kumar, 2002). However, food grain production is affected by natural disasters such as monsoon, drought and weather patterns, which make many people to go hungry and malnourished.

The first appraisal of food is by sight and the colour. The shape, size and surface all register impressions. Part of the acceptance of a food depends on how it looks.



Fig. 1: Dog conch soup



Fig. 2: Dog conch Noodles



Fig. 3: Dog conch curry



Fig. 4: Dog conch cutlet



Fig. 5: Chilli Dog conch

Thus, the appearance of food plays an important factor in its evaluation. The colour must be neither too pale nor too intense. It should have a uniform natural colour.

The acceptance of the food is related to another factor, the way food is felt in the mouth. Kinesthetic sensations are the power or resistance feelings of motion in the underlying blood vessels, bones, muscles and tendons when they are stimulated.

Flavour is the total necessary impressions formed when food is eaten. It is one among the most important factors in evaluating the dishes. An impression about flavour is gained when food is eaten and it is a combination of the sensations of taste, smell and mouthful.

The panel of judges vouched safe for taste and delicacy of the dishes. The panel pointed out that the dishes were as good as those made out of the much sought after seafood in taste, smell and flavour.

The terms acceptable, unacceptable, palatable and unpalatable or lack of quality are used to describe whether the consumer likes or dislikes the given foods. Likes and dislikes are associated with the kinds of foods to which the consumer is accustomed to (Croacker, 1945).

In India, high cereal and low animal protein intake is seen. About 79% of people are suffering from acute malnutrition either qualitative or quantitative protein deficiency. This leads to higher rate of infant and child mortality, stunted physical growth, low work output, premature ageing and reduced life span. To meet the protein requirements of the ever increasing population of India and to commensurate the catch with the demand, non-conventional sources like dog conch strombid can be very well be used.

ACKNOWLEDGMENT

Authors are thankful to the Director, CAS in Marine Biology and authorities of Annamalai University for providing with necessary facilities. Corresponding author is also thankful to the Ministry of Environment & Forests, New Delhi for the financial assistance,

REFERENCES

- Ayyakkannu, K., 1994. Hand book on 'A delicacy in sea food *Chicoreus* Recipe-Series-1. Tropical Marine Mollusc Programme, A DANIDA sponsored Programme, Published by CAS in Marine Biology, Annamalai University, India.
- Bojan, J., 2003. Current status and prospects and prospects of seafood export. India International Seafood Show Souvenir. pp: 13-16.
- Croacker, E.C., 1945. Flavor. Mc-Graw Hill Book Co, New York.
- Gopakumar, K., 1996. Post harvest handling, processing and quality control of molluscan products. Processdings of the sixth workshop of the TMMP at CAS in Marine Biology, Annamalai University, India. Phuket Mar. Biol. Cent. Spec., 16: 17-22.
- Hylleberg, J., 1992. The Thai way of cooking KING ABLONE, alias *Chicoreus ramosus*, with a note on cooking in India. Phuket Mar. Biol. Cent. Spec., 10: 11-13.
- Kumar, S., 2002. An approach to sustainable food security. Curr. Sci., 83(4): 354-355.
- Patterson Edward, J.K. and K. Ayyakkannu, 1992. Economic importance of the gastropod *Fasciolaria trapezium*, an important seafood resource occurring along the southeast coast India. Phuket Mar. Biol. Cent. Spec., 10: 17-19.
- Patterson, J.K., M.X. Ramesh and K. Ayyakkannu, 1994. Recieps for the gastropod, *Chicoreus ramosus*. Proceedings of the fourth workshop of TMMP at Prince of Songkla University, Thailand. Phuket Mar. Biol. Cent. Spec., 13: 17-28.
- Pigott, G.M. and B.W. Tucker, 1990. Seafood: Effects of Technology on Nutrition, Marcel Dekker, Inc., New York and Basel, pp: 362.

- Ragunathan. C., J.K. Patterson Edward and K. Ayyakannu, 1992. Utilization of the non-edible meat of the gastropods *Chicoreus ramosus* and *Fasciolaria trapezium* as a supplementary diet for penaeid prawn *Penaeus indicus*. Phuket Mar. Biol. Cent. Spec., 11: 9-15.
- Ramesh, M.X. and K. Ayyakkannu, 1994. Softening of the *Chicoreus ramosus* foot muscle. Proceedings of the fourth workshop of TMMP at Prince of Songkla University, Thailand. Phuket Mar. Biol. Cent. Spec., 13: 13-16.
- Ramesh, M.X. and K. Ayyakkannu, 1992a. Nutritive value of *Chicoreus ramosus*: A status report. Phuket Mar. Biol. Cent. Spec., 10: 14.
- Ramesh, M.X. and K. Ayyakannu, 1992b. The effect of long term cooking on the nutritive value of the edible portions of *Chicoreus ramosus*. Phuket Mar. Biol. Cent. Spec., 11: 23-26.
- Ramesh, M.X. and K. Ayyakkannu, 1995. Smoking and sundrying of *Chicoreus ramosus* muscles. Phuket Mar. Biol. Cent. Spec., 15: 21-28.