

Study of the nutritional value of Persian Gulf squid (*Sepia Arabica*)

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Abstract: Cephalopoda are a group of mollusks that have substantial geographical distribution. Squid have largest fisheries value between Cephalopoda in the world. In the Persian Gulf and Oman Sea are also squid. Due to good taste and friendly meat market, exports this species has three million dollars Currency returns in year 1386. Fish meat there are the unique characteristics, including high protein content, unsaturated fatty acids (EPA, DHA), vitamins and minerals thus Fish consumption in the diet is essential. Marine biologists have extracted the new combination of some aquatic that has significant effects in prevent and treat certain illnesses. Information about the Persian Gulf is very limited in this study the nutritional value of squid was investigated. Results showed that this species, with 17 percent protein and 8.9 percent fat, having high nutritional value. To protect these stocks should pay more attention to it.

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Introduction

Cephalopoda are old animals and very successful group of mollusks. These animals there are in the different deep all of the world ocean. Between types of Cephalopoda, Sepiidae have high economic value. In Iran's waters, there are many species of the Sepiidae family. Most Cephalopoda of Oman and the Persian Gulf are the kinds of squid. Dominant species of squid in the Persian Gulf is *Sepia pharaonis*. Squid are observed from the shore to depths of 140 m. but are seen more than 40 meters in depth (fig 1).



Fig1. Persian gulf squid (*Sepia Arabica*)

In recent years the rate of Cephalopoda fishing in the world has increased. Population Increased, has been increased need for food. Aquatic resources, both usual and unusual, are food valuable resources in the Persian Gulf. Identify resources and sustainable exploitation of them is very important. Protein present in the squid meat is high. Some Cephalopoda species have large digestive glands that are rich source of lipid. Fats in aquatic due to unsaturated fatty acids such as (EPA) and (DHA) are an important role in reducing cholesterol and preventing blocked arteries.

Taste like meat Cephalopoda is desirable and non-edible parts it is low, they are the most important sources of seafood. Squid mantle, containing low levels of fatty acids and rich in vitamin C and also a good source of minerals such as calcium, potassium, zinc, iron, phosphate and copper. Cephalopoda not only fresh but also frozen and dried forms are used. Today, production and consumption of frozen squid in the world is increasing. Consumption of these animals in the South East Asian countries is very high. Japan, South Korea, Thailand, Taiwan and China are active in trade Cephalopoda products. According to the latest data from the Iranian fishery, squid per kg price of 3.4 dollars will be issued.

Squid exports in 1386 consisting of three million dollars in currency into the country. The

highest rate of squid countries Spain, France, China and South East Asia countries will be issued. Considering the economic value of squid such research in the nutritional value of, Persian Gulf squid was evaluated.

Materials and methods

Sampled monthly was performed for one year from March 1386 to January 1387 where bahregan estuary with trawl net. Determine the nutritional value, this method was performed that Part from the mantle was separated, at the plate and Moisture content was measured. Determine moisture content, drying temperature of food and determine its moisture content is an indirect method. Petri dishes were in 130 degree oven for 30 minutes. then was cold by desicatore. Petri dishes were weighed by the scale sensitive and Weighed was continued to reach constant weight. 2 gr amount of sample was in the 130 degrees oven for 90 minutes. Sample moisture content, was calculated according to the following formula:

$$\text{Dry matter percent} = \frac{(B - A) \times 100}{W}$$

$$\text{Moisture percent} = 100 - \text{Dry matter percent}$$

$W = \text{sample perception weight}$

$B = \text{weight of dry sample} + \text{Petri dish}$

$A = \text{weight of empty Petri dish}$

Methods to ash determine was based destroy sample organic matter, and then the ash was weighing. Calculated was performed based on the following formula:

$$\text{Dry matter percent} = \frac{(B - A) \times 100}{W}$$

$W = \text{ash weight} + \text{Petri weight}$

$B = \text{weight of empty Petri dish}$

$A = \text{sample perception weight}$

Fat was measured using soxselea. 2 g of sample powder was in the paper thimble and transferred to extraction apparatus section of soxselea. Then, using the following formula, fat food was calculated.

$$\text{Fat percentage} = \frac{\text{balloon weight with Fat} - \text{balloon weight without fat}}{\text{sample weight}} \times 100$$

Protein measurement method was macrokaldale. In this method, crude protein was measured. (All proteins + other materials with N). Then by the coefficient of protein, protein in food

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was estimated. Because nitrogen in animal protein is about 16 percent and conversion Nitrogen to protein ratio is 6.25. Crude protein content was calculated by the following formula:

$$\text{CP} = \frac{\text{percentage of food nitrogen (total nitrogen)}}{\times 6.25 (\text{ratio of protein})}$$

In this way, 300 grams of powdered squid mantle with filter paper were inside the digested balloons. Then were added to the balloons 20 ml concentrated sulfuric acid, and 8 g of mixture catalyst (%0.06 dry potassium sulfate, % 3.5 of copper sulfate and %0.5 selenium dioxide). Then was on the stove electric and Temperature increased by slowly.

After cooling balloon in laboratory temperature, and repeated washing with distilled water sample was transferred to the distiller. Under cooling section of distiller, was placed 50 cc Boric acid and reagent. Then was added to, enough sodium hydroxide solution 50%. Distillation continued and all the ammonia produced has been collected in the balloons.

After collecting 300 ml of solution heat was disconnected. Then the solution was neutralized with 0.1 N, HCL. Considering that each cc HCL is equals 0.0014 g N. nitrogen Percent and with regard to protein ratio, samples protein Percent was determined.

Conclusion

Chemical Analysis of squid mantle (*Sepia arabica*) is given in the below table.

Table 1. Analysis of squid mantle (*Sepia Arabica*)

Sampling place	Fat (%)	Protein (%)	Moisture (%)	Ash (%)
Persian gulf	8.90	17.00	73.02	1.00

Comparison of this study results and similar studies in the Gulf of Thailand showed there are significant differences in terms of nutritional value between Persian Gulf squid and squid in the Gulf of Thailand. In Thailand gulfs quid, protein and fat value have been reported about 14.91 and 0.47 percent. In addition, compared to other Persian Gulf species are shows significant differences in nutritional value. In fact, protein and fat percentage of this species is more than any other species. These differences may be due to different ecological conditions. In other words, perhaps food availability

and type of food is causing these differences. In Similar ecological conditions, species differences are the main factor in the incidence of biological differences, including nutrition.

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