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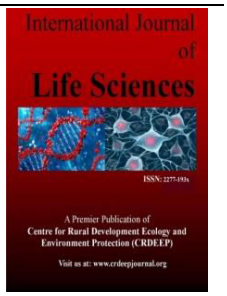

Full Length Research Paper

Biochemical Analysis of the meat of Invasive Bivalve Mollusk Anadara in the Black Sea *(Anadaraina equivalvis (Bruguière, 1789))*

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ABSTRACT

*The article presents biochemical analysis of the meat of invasive bivalve mollusk Anadara in the Black Sea-Anadara inaequivalvis (Bruguière,1789).The composition of protein, fat, carbohydrates, moisture and ash was determined, methods of determination were described. The article provides the results of size-weight percentage of invasive bivalve mollusk - Anadara inaadival (Bruguière, **1789)** in the Black Sea. The relationship of mollusk's length to body weight was determined - with raw (whole weight) meat (useful) mass, Modern and mathematical methods of determination and calculation are described. 2 categories are studied according to size.*

Introduction

Bivalve mollusks are bilaterally-symmetrical animals. Their body is unsegmented. The shape of the shellis triangular-oval. The shell, which consists of two parts, is known as thevalve **(Novikov P., Naumov S., 1989).** Mollusks, as a rule, tend to havea less movable habit, and some of them are characterized with animmovable character. The soft, skeleton deprivedbody of most of them is placed in the shell. Marine organisms are of great importance in the process of self-purification of water from various contaminants. They take various elements from sea water and collect them in the body. Bivalve mollusks are filters whose participation in the cleaning of reservoirs is related to their feeding characteristics. Mollusks are fed bydetritus and microplanktonweighted in the thickness of water (unicellular water-plants, bacteriums, and very small animals). By means of gills and a complex ciliary mechanism located close to the mouth, they filter the mineral balance from the water and large food particles for them. Mollusk-filters can be used in activities related to the protection of the aquatic environment from pollution. Bivalve mollusk - Anadara inaequivalvis is a new, opportunistic self-conditioning filter for the Black Sea (Gogmachadze T. M. & Mikashavidze E. V. 2005). The reasons for its widespread use are considered by scientists to be the massiveness of the shell and their ability to close hermatically. Also, the possibility of hypoxia in the case of oxygen deficiency in the seabed, which other mollusks lack.

Today, humanity is studying different organisms every day to use it as an alternative source of food (Zaitsev Y. 1998). The biochemistry of this hydrobiont inhabiting on the Georgian coastline is still unexplored, which has evokedour interest. Based on the above, we aimed to conduct research on the biochemical composition of the meat of the invasive bivalve mollusk of the Black Sea Georgia shelf - Anadara inaeqiuvalvis. We think in this sense it will be established to increase the diversity of the human food base, to fill the protein deficiency.

Materials and methods

For the purpose of the study, we used modern methods of known hydrobiological research. In the Black Sea shelf zone of Georgia, research material was obtained at pre-planned stationary stations. In particular, in the areas of Anaklia, Poti, Kobuleti, Chakvi, Mtsvane Kontskhi, Batumi and Gonio. The survey was conducted in 2016-2018. The material was processed in the Fisheries and Black Sea Monitoring Laboratory. Biochemical analysis was performed in the laboratory of Shota Rustaveli State University. The water content was determined by drying the sample at + 50-60 ° C (arbitration method); embersing was made by

dry method - + 550-600°C in a muffle oven; fat was determined by the soxlet method; from carbohydrates we determined the total sugar content by the caliper-cyanide method. Free carbohydrates were definedto meat; proteins were determined by the Keldal method (The Kjeldahl Method B. Vinklárková [et al.] // Crit. Rev. Anal. Chem. 2015). Quantity was determined by the titrative method (Z.I. Falunina, Moscow: Food Industry, 1978).

Results

In the biochemistry laboratory of Batumi Shota Rustaveli State University, in July 2019, we handed over 2 kg of raw weight samples in frozen condition.Based on a biochemical study, the percentage composition of moisture, ash, fat, carbohydrates and protein in mollusk's meat was studied.

Determination of moisture

The water content was determined by drying the sample at + 50-60°C (arbitration method). This method is used to determine the content of fish, marine mammals, invertebrates, algae, as well as the water produced in them.Mollusk meat was weighed and placed in BioBase sublimation laboratory drying cabinet (Fig.1), where we made a reduction to a constant weightat +50 - + 60°C temperature mode.As a result of the arbitration method, it was found that the mass fraction of moisture per 100 g of product was 80.22% on average from both samples, accordingly, 19.78% comes on dry matter.

Fig.1. Bio Base Sublimation laboratory drying cabinet

Embers.

Embersing was made by dry method - + 550-600°C in a muffle oven; The percentage of ash was determined on dry and raw materialby dry weight method.The average for both samples was 1.1% for the raw sample and 5.56% for the dry sample.

Fat

Fat was determined by the soxlet method (Fig. 2).In particular, the percentage composition of fat was determined by the weight method. We poured 200 ml of diluent into the prepared soxlet, placed the pre-made sample in the capsule, checked the apparatus for hermetic seal and connected the cooling pipes (necessary to create condensate). We put it on the stove.

We used chloroform as a diluent.Sample extraction took approximately 24 hours until the liquid inside was discolored. Then we placed *"Biuks"* with the extract in a water bath until diluent evaporation –until smell disappearing which is characterised for diluent, then we placed it in a preheated dryerat + 100°C for 10 minutes, cooled in a desiccator and weighed the obtained fat on a laboratory scaleAs a result, the average fat content was 1.20% for raw materials and 6.04% for dry matter.

Fig.2 Soxlet

Carbohydrates

The total sugar content was determined by the caliperi-cyanide method, free carbohydrates were defined in the meat, to which belongs sugar. As a result, the average carbohydrate content was 2.45% for raw weight and 12.39% for dry matter.

Albumen (protein)

The Keldal method determined the protein substitution in mollusk meat, while the titration method determined a specific quantity.As a result, the average amount of protein was 13.8% from the raw material and 69.77% from the dry matter.

The data obtained from the analysis of the research results are presented in the table, where a detailed analysis of mollusk meat (sample) was carried out simultaneously.The percentage ratio of dry andraw weight of the substance was determined.

Table 1: Biochemical research result of *Anadara inequivalvis*

Sample№	Mass fraction of moisture %	Dry matter by drying %	Embers, %		Fat %		Carbohydrates%		Protein %	
			raw	dry	raw	dry	raw	dry	raw	dry
1	80,14	19,86	1,04	5,26	1,22	6,17	2,5	12,64	14,1	71,28
2	80,30	19,70	1,16	5,86	1,17	5,92	2,4	12,13	13,5	68,25
Average	**80,22**	**19,78**	**1,1**	**5,56**	**1,20**	**6,04**	**2,45**	**12,39**	**13,8**	**69,77**

The table in the first column shows the parallel analysis of two samples, N1 and N2. The third line shows the arithmetic mean percentage

Conclusion

Anadara's bio-ecological study of Anadara inaequivalvis was conducted on the territory of the Black Sea shelf in Georgia, in particular at the pre-planned stationary stations: Poti, Kobuleti, Chakvi, Mtsvane Kontskhi, Batumi and Gonio, for which we used traditional and modern methods of hydrobiological research. The study determined the content of energy substances: proteins, fats, carbohydrates in the muscular part of Anadara (meat). Suitability of meat as one of the food products in the human food ration. It is especially important in filling the deficiency of protein and natural amino acids, which is several times higher in it than in other sea hydrobionts.

Based on the above, Anadara - Anadara inaequivalvis is a fairly rich natural seafood. It is distinguished from a biochemical point of view and also with containing substances with many positiveproperties.That is why we consider it expedient to obtain and craft it properly to be included in the human ration for the future.

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