Despite the relatively high content of polyunsaturated fatty acids (20:5 and 22:6) in the salmon ovaries being initiators of the lipid peroxidation (Vladimirov et al, 1972, Kagan et al, 1983), the degree of hydrolytic changes in the lipids during storage of the control and test samples is expressed in a lesser degree. Apparently, the process of freezing stabilizes the lipids of the salmon ovary hindering the processes of its deterioration during storage, which to some extent can be explained by inactivation of salmon ovary lipases at minus 180C.

One of the nutritional value indices of the caviar is the amino acid composition of its proteins.

The results of study on amino acid composition of the salmon ovary proteins showed that they contain the essential amino acids: isoleucine, leucine, lysine, methionine, cystine, phenylalanine, tyrosine, valine and threonine, the total amount of which varies from 35.5g to 37.5g, which is more than 40% of the sum of all amino acids (Table 3).

Amino acids	Standard	Control		Test	
	FAO/VOZ 1985	1 month	9 months	1 months	9 months
Essential					
Isoleucine	2.8	4.47	4.59	5.09	4.95
Leucine	6.6	8.27	8.48	8.97	8.16
Lysine	5.8	6.59	6.79	6.69	6.76
Methionine + cystine	2.5	2.53	2.65	2.56	2.78
Phenylalanine + tyrosine	6.3	4.26	4.52	4.32	4.45
Threonine	3.4	4.07	3.86	4.12	4.01
Valine	3.5	5.46	5.64	5.74	5.65
Tryptophan *	1.1				
Nonessential					
Glutamic acid		9.97	9.98	10.01	10.03
Tyrosine		3.87	3.96	3.79	3.85
Proline		4.91	5.10	4.85	4.98
Alanine		6.64	7.09	6.75	7.02
Glycine		2.38	2.32	2.42	2.45
Serene		4.52	4.85	4.57	4.71
Aspartic acid		9.52	7.11	9.45	8.36
Arginine		4.95	4.80	4.92	4.85
Histidine		2.11	2.16	2.15	2.24
Σ amino acids		84.52	83.9	86.4	85.25
Σ essential amino acids		35.65	36.53	37.49	36.76
% amounts of essential amino acids		43.4	43.5	43.4	43.1

Table 3. Amino acid composition of proteins of the control and test sample, g/100 g of protein.

* not determined

The comparison of amino acid composition of proteins of the control and test samples showed that no changes virtually occur in the amino acid composition of proteins. We note some variations in the content of individual essential amino acids, which occur without a noticeable downward trend. These data indicate the stability of the amino acid composition of proteins of the control and test samples.

As it is seen from the provided data the icing process does not affect the change in the fatty acid composition of lipids and amino acid composition of proteins. However, the icing with application of antioxidants inhibits hydrolytic processes during storage of frozen salmon ovary.

NUTRITIVE VALUE OF STERLET CAVIAR FROM OVULATED EGGS

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Since mid nineties natural stock of sturgeons has been sharply reduced. Only one possibility to maintain the species is their breeding and keeping under control in aquaculture.

Many countries which began cultivation of sturgeons in late seventies now have become big producers of sturgeon meat and caviar.

It's very well known that caviar is the most precious product from both economic and consumer points of view.

Traditional technology of caviar production supposes sturgeon female slaughter, eggs extraction, screening and salting. Thus a sturgeon female which was grown for 5–8 years has to be slaughtered for meat after taking roe only once. It's evident that such a technology is very expensive and doesn't posses high economic efficiency.

Keeping sturgeon female alive gives the possibility to get roe during its whole reproductive period of life, i.e. 10 or even more times.

Till nowadays ovulated raw eggs obtained by intravital method was used only for reproduction as a traditional technology of salting wasn't suitable for food caviar production from ovulated eggs.

A number of principle properties of eggs which differ from that produced by traditional method (slaughtering) didn't allow to use it for food purposes.

We've worked out a technology of food caviar production from sturgeon ovulated eggs which makes it possible to receive high quality ready product and a stable output not less than 90%.

The aim of this work was to study and analyze the food value of caviar products which were produced according to our new technology from ovulated eggs of sterlet.

The object of our study was sterlet caviar produced from ovulated eggs obtained by Burtsev I.A. intravital method (Moscow, Russian Federal Research Institute of Fisheries and Oceanography) at one of fish farms in Moscow Region.

Sensory study of sterlet caviar showed that after salting it has quite a firm capsule (form), tender consistency, "disassembling" eggs and a taste typical for sturgeon caviar. During storage period faulty signs such as sour taste, bitter taste, touch of oxidized fat don't appear. Stability of sterlet caviar taste is proved by absence of microflora growth, absence of autolitical processes in proteins, oxidizing and hydrolitical processes in lipids.

Protein quantity in pasteurized sterlet caviar is 25.8%. Amino acid composition of proteins in sterlet caviar includes non-essential and essential amino acids. The sum of non-essential acids is 43.7% from the total of amino acids. The content of non-essential amino acids in 100 g. of sterlet caviar proteins is higher than in 100 g. of ideal protein (recommended FAO/WHO values, 1985).

During the whole period of storage at the temperature of $2 - 4^{\circ}C$ and $-18^{\circ}C$ no changes appeared in the correlation of non-replaceable and replaceable amino acids.

The content of lipids in caviar products produced from ovulated sterlet eggs fluctuates from 10% to 12%. The results of study of fractional lipids content testify high quantity of triglycerides – 93.5%, share of phospholipids is about 2.1%, content of sterins is not more than 3%. About 1% of free fatty acids appeared in lipids after 13 months of storage.

Fatty acid composition is presented by saturated acids in the amount of 30.5% from the total of fatty acids, mono non-saturated acids -46.9% and poly non-saturated -22.6%. In the group of poly non-saturated fatty acids eicozapentaenoic and docozahexanoic acids dominate, the share of lenoleic, linolenic and arahidonic is about 5%.

Absence of accumulation of proteins and lipids products decay in sterlet caviar during the shelf-life shows that the presented technology suppresses caviar ferment system, stabilizes proteins, prevent oxidation and hydrolitic processes, provides microbiological stability of the product during its storage.

The received results testify that caviar products obtained from ovulated eggs of sterlet according to the technology worked out by the authors are characterized by a high content of proteins, lipids and a full range of non-replaceable and replaceable amino acids, being rich in poly non-saturated fatty acids. Stability of microbiological level during caviar products storage provides their safety.

The elaborated out technology is approved by aquaculturists in the Russian Federation and abroad. The technology is defended by the patent of the Russian Federation #2232523 (priority since 2002, September).

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