

Category 3 – drugs, using the least demand or having a delayed treatment (1 to 5 packs per day);

Category 4 – medicinal products are not in demand.

As a result of the study revealed the extent of the demand and speed of medicines.

On the first section of the minimum range, mandatory for pharmacies finished dosage forms, manufacturing, production with the right production of aseptic medicinal products, of the 57 items of the first category of drugs 20 – 35,09 %, to 2 category included 24 drug – 42,11%, to 3 category 11 drug – 19,3%, 4 to a category 2 drug product is -3.5%.

In the second section, the minimum of the range mandatory for pharmacy points, kiosks and individual entrepreneurs, of the 27 items of the first category included 13 drug – 48,15%, to 2 category 12 drug – 44%, 3 to a category 2 drug product is 7.4%.

Tested in pharmacies were no drugs as the highest demand and lowest demand or having delayed treatment. In order to maintain the presence of the minimum assortment of medicinal preparations in accordance with the standards requires continuous monitoring of the movement of drugs from the list. To determine the

optimal stock of item minimum list of drugs in quantitative terms, it is advisable to consider the velocity or quantity of a drug sold during a certain period. These criteria are directly dependent on the location, profile and format of the pharmacy, and must be set taking into account the actual pattern of sales.

#### CONCLUSION

In the result of the study drugs were classified according to their degree of demand and the rate of circulation of medicinal products. Thus, in the category of drugs which are not marketable on the first section of the minimum range 2 drugs referred, that is 3.5% of the whole item. From the second section to this category 2 drugs referred, which is 7.4% of the entire item.

Wherein in pharmacy organizations at the time of the inspection drugs in this category, but also those in greatest demand and sustainable, were not available. Due to the fact that the absence of drugs, which are included in the list of mandatory minimum range required for the provision of medical care, is a gross violation of the licensed activity, the leaders of pharmacy organizations need to continuously monitor for the presence of these drugs.

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## NUTRITION IN THE NORTH

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## THE BIOLOGICAL VALUE OF THE YAKUT CARP'S PROTEINS BY AGE

#### ABSTRACT

The article presents the results of studies of the biological value of Yakut carp's proteins by age of Lake Nigili in the Kobyaisky District of the Republic Sakha (Yakutia). It is concluded that the meat of carp under the age of 5 by the protein content significantly inferior to the meat of adult carp. Yet carps in the age of 5 have a high biological value - the amount of the amino-acid score is higher than standard (more than 100%).

**Keywords:** Yakut carp, meat, amino-acids, amino-acid score.

#### Introduction

Yakut Carp (*Carassius carassius jacuticus*, Kirillov) is the most common commercial species of fish in the lakes of Yakutia. Due to low demands for oxygen it occurs in almost all the lakes in Yakutia, including the northern lakes to 70° 30' N latitude. In this regard, commercial stocks of carp can reach very large volumes [5]. The main commercial stocks available in 20 districts of Yakutia: in the northern, central, western and southern areas. In these areas, the proportion of carp in the annual fish catch is 60-70% [6]. The increases in carp catch are due to the increase in its demand, and most importantly with favorable

ecological conditions of reservoirs for natural reproduction of carp. Over the last decade throughout the water level rises in the lake waters, this is conducive to the further intensification of the growth and development of the food carp.

According to Kirillov A.F. (2002), the largest Yakut carp exceeds by weight 2-3 kg. However, the majority are small carps of 100-200 grams. Carps reach puberty by the age of 3-5 years, the individual fertility is high - 118.5 thousand eggs. They belong to the fish of portion spawning and spawn during the summer 2-3 times, from June until autumn. For one spawning female lays about 40 thousand eggs that stick to the

stems of aquatic plants. The eggs which fell to the bottom die. The larvae from the eggs begin to hatch within a week. At the age of 10 days, the larvae begin to make small swimming movements, and on the 13th day they become active at all. Their length by that time is 12 mm, the larvae begin to feed actively.

Since ancient times, the Yakut carp is almost the most popular product among the population of Yakutia, and remains so today, as it is a valuable source of protein with easily digestible fatty acid fractions, vitamins and mineral elements. Eating fish, including carp, our ancestors have maintained youth and health for a long time.

Large stocks of carp are in the lakes of Kobyaisky District [4, 9]. However, up to date there are very few studies on the nutritional value of carp.

With this in mind, it was set a goal to explore the biological value of Yakut carp's meat proteins on content of essential amino-acids by ages.

#### MATERIALS AND METHODS

Yakut carps (*Carassius carassius* ja-cuticus Kirillov) were sampled in the field conditions in Kobyaisky District in Lake Nigili. The selection of product samples was carried out directly on the place of catches by sampling from each batch of specific instances in accordance with GOST 7631-2008. [2] The samples obtained from all parts of the fish were combined in homogeneous parties and led to an average sample of each type according to GOST 31339-2006 [3].

Whole carcasses of frozen fish prethawed at room temperature, were purified from scales and entrails, surface of carcasses were wiped with gauze from top to bottom. Bones and cartilages were removed from the selected samples. Muscle tissue from the dorsal and ventral parts of the 6 fish was taken for the study.

Determination of the chemical composition of fish and fish products was determined by infrared spectroscopy on infrared analyzer SpectraStar model 2200 of Unity Scientific USA Company, calibrated on the basis of generally accepted standard chemical methods in the laboratory of biochemistry and mass analysis of Federal State Budgetary Institution "Yakut Scientific Research Institute of Agriculture".

Food and biological value of meat and fish belly were determined on the basis of the biochemical composition study [8].

Amino-acid (AA) score was calculated by the formula: (mg AA per 1 g of protein test) / (mg AA per 1 g of ideal protein x 100) [7], biological effectiveness was defined ratio of unsaturated fatty acids to saturated [1].

The obtained data were processed biometrically using a personal computer (Microsoft Excel 2003, Microsoft Windows XP).

#### THE RESULTS OF THE STUDY

The data presented in the table shows that the meat of Yakut carp under the age of 5 years on the protein content significantly inferior to older carp. Thus, the protein content in the meat of carp over the age of 7 years is 16.59±1.917 g/100 g, from 5 to 7 years – 17.12±1.596, under the age of 5 years – 11.20±0.32 g/100 g.

Meat proteins of carp under the age of

Table 1

The biological value of Yakut carp's fillet proteins from Yakutian Lake Nigili by age

| Amino-acids                           | Yakut carp           |                     |                       | Ideal amino-acid (FAO/WHO), g/100 g |
|---------------------------------------|----------------------|---------------------|-----------------------|-------------------------------------|
|                                       | large (over 7 years) | average (5-7 years) | small (under 7 years) |                                     |
| Proteins, g/100 g                     | 16.59±1.917          | 17.12±1.596         | 11.20±0.320           |                                     |
| Valine, g/kg fillet                   | 11.30±0.460          | 11.43±0.387         | 10.01±0.075           |                                     |
| g/100 g protein                       | 6.8                  | 6.7                 | 8.9                   | 5.0                                 |
| score, %                              | 136                  | 132                 | 178                   |                                     |
| Isoleucine, g/kg fillet               | 10.95±0.691          | 11.14±0.574         | 9.01±0.114            |                                     |
| g/100 g protein                       | 6.6                  | 6.5                 | 8.04                  | 4.0                                 |
| score, %                              | 165                  | 162.5               | 201                   |                                     |
| Leucine, g/kg fillet                  | 13.72±0.841          | 13.95±0.703         | 11.35±0.139           |                                     |
| g/100 g protein                       | 8.2                  | 8.1                 | 10.1                  | 7.0                                 |
| score, %                              | 117.1                | 115.7               | 144.2                 |                                     |
| Lysine, g/kg fillet                   | 17.67±1.535          | 18.09±1.278         | 13.36±0.256           |                                     |
| g/100 g protein                       | 10.6                 | 11.0                | 11.9                  | 5.5                                 |
| score, %                              | 192.7                | 200                 | 216.3                 |                                     |
| Threonine, g/kg fillet                | 9.18±0.535           | 9.33±0.447          | 6.58±0.121            |                                     |
| g/100 g protein                       | 5.5                  | 5.4                 | 5.8                   | 4.0                                 |
| score, %                              | 137.5                | 135                 | 145                   |                                     |
| Tryptophan, g/kg fillet               | 2.27±0.153           | 2.31±0.129          | 9.01±0.114            |                                     |
| g/100 g protein                       | 1.3                  | 1.3                 | 8.04                  | 1.0                                 |
| score, %                              | 130                  | 130                 | 804                   |                                     |
| Phenylalanine, g/kg fillet            | 9.22±0.841           | 9.47±0.703          | 11.35±0.139           |                                     |
| g/100 g protein                       | 5.5                  | 5.5                 | 10.1                  | 3.0                                 |
| score, %                              | 183.3                | 183.3               | 336.6                 |                                     |
| Phenylalanine + tyrosine, g/kg fillet | 12.67±1.535          | 13.08±1.278         | 13.36±0.256           |                                     |
| g/100 g protein                       | 7.6                  | 7.6                 | 11.9                  | 6.0                                 |
| score, %                              | 126.6                | 126.6               | 198.3                 |                                     |

5 years compared with an ideal protein of chicken eggs are high in essential amino-acids (valine, isoleucine, leucine, lysine, threonine, tryptophan and phenylalanine), an amino-acid score of which is much higher than score of ideal protein amino-acids. Score of these amino-acids in the meat of carp under the age of 5 years is from 144.2 to 804 per cent. The content of the phenylalanine amino-acid + tyrosine in carp's meat over 7 years old and at the age of 5-7 years is the same, and in the meat of carp under the age of 5 years contained 11.9 g/100 g.

#### CONCLUSIONS

The following conclusions can be drawn from these data:

- Meat of carp under the age of 5 years is significantly inferior to the meat of adult carp on the protein content;
- Carps under the age of 5 years have a high biological value - the amount of the amino-acid score is higher than standard (more than 100%).

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## SCIENTIFIC REVIEWS AND LECTURES SCIENTIFIC REVIEWS AND LECTURES

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### THE USE OF «DNA-COMET» METHOD FOR THE DETECTION AND ASSESSMENT OF DAMAGE TO THE BLOOD MONONUCLEAR CELLS INDUCED BY ENDOGENOUS INTOXICATION AT THE ACUTE DESTRUCTIVE PANCREATITIS

#### ABSTRACT

The method of analysis of DNA damage («DNA comet», DNA-comet assay, method of gel electrophoresis of individual cells DNA) found its application in clinical practice as a method of monitoring the effectiveness of treatment and the severity of genotoxicologic effect in the development of endogenous intoxication. The literature review data suggest a possible clinical application of the method in determining the level of endogenous intoxication in patients with acute destructive pancreatitis.

**Keywords:** DNA damage, mutations, repair, apoptosis, genotoxicity.

Most researchers dealing with human adaptation in the Far North have noted that for the majority of the inhabitants of the Republic Sakha (Yakutia) the reduction or distortion of most of biochemical processes and the violation of homeostasis of the body are indicative, which are expressed by changes in carbohydrate, protein and lipid metabolism, immunological reactivity [1, 2, 3, 4, 5], balance of prooxidant and antioxidant systems, the activity of enzymes involved in detoxification and protective processes of the body [1,3, 4, 7].

There is no doubt that all these pathological changes affect the

homeostasis for any disease and require accounting and analysis for decision-making of their correction in a comprehensive program of treatment [2, 5, 10, 11]. It should be noted that these body systems are the most important in the pathogenesis of inflammation and also play a significant role in the development and progression of various complications [5,10]. For this reason, research aimed at studying the pathogenesis of significant violations homeostasis, their dynamics in order to control the efficiency and timely correction of the complex therapeutic measures have significant value.

The impact of adverse factors on

any biological system (including the human body) is accompanied by the accumulation of DNA damage and repair systems activity change that may cause mutations, lesions and body cells. The review assessed the effectiveness of the method of «comet assay» to detect DNA damage caused by endogenous intoxication (including that causes , and acute destructive pancreatitis), which was the reason for choosing this method.

The method has a sensitivity required for registration of DNA damage at the level of individual cells, and can be used to evaluate the integrity of the integrated genome. Application method «comet assay»: any biological system [9].