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The authors:
Yakutsk, Republic Sakha (Yakutia), Russia:
1. Natalya Arkhipova – Candidate of Medical Science, Senior Researcher of Laboratory of Clinical-Population and Medico-Social Research in the YSC of the Complex Medical Problems (CMP), cardiologist, nati8692@mail.ru;
2. Elena Popova – Candidate of Medical Science, Associate Professor of the Department of Propaedeutics and Endocrinology Faculty Therapy and Physiotherapy Faculty at the Medical Institute of the Federal Autonomous Educational Institution of Higher Education North Eastern Federal University M.K. Ammosov, a cardiologist.
3. Zoya Krivoshapkina - Candidate of Biological Science, senior researcher of the Laboratory of Biochemical Research in the YSC of the CMP;
4. Aitalina Egorova - Candidate of Medical Science, Chief Researcher of the Department of Epidemiology of Chronic Noncommunicable Diseases in the YSC of the CMP;
5. Nadezhda Makarova - junior research assistant of the Laboratory of Clinical-Population and Medico-Social Research in the YSC of the CMP, cardiologist of the State Budgetary Institution in Republic of Sakha (Yakutia) Republican Hospital No. 3, in-patient care No. 2;
6. Zinaida Alekseeva - junior research assistant of the Laboratory of Clinical Population and Medico-Social Research in the YSC of the CMP, a psychologist.

K.M. Stepanov, U.M. Lebedeva

BASES OF RATIONAL NUTRITION UNDER THE INFLUENCE OF LOW TEMPERATURES

ABSTRACT
In the article, based on the study of local food raw materials and traditional food, the necessity of optimizing the structure of the population's nutrition and improving the quality of food products under low-temperature conditions is substantiated. The set of factors influencing the increase of interest of food industry enterprises in the output of national specialized products is considered.
Production of northern house and trade animals, gifts of the nature differs a high nutrition value as contains a large amount of proteins, fats, mineral substances, vitamins and the biologically active agents (BAA). Therefore, meat and milk of the Yakut cattle, the Yakut horse, a reindeer, meat of trade animals and fishes, wild berries and wild-growing food plants of Yakutia are the most valuable national wealth on which rational use the special attention has to be paid.
Keywords:nutrition in the north, actual nutrition, food products, traditional food, local food raw material, national dishes.

According to domestic and foreign scientists, low ambient temperatures in themselves already violate the balance between energy expenditure and its formation in the body. On their impact, it responds with a kind of protective reaction - increased heat production. This reaction to the cold is called the German hygienist RM. Rubner «chemical heat regulation.» Soviet physiologist A.D. Slonim, for example, believes that in the conditions of prolonged exposure to low temperatures, the maintenance of body temperature at a constant level does not occur due to the processes of chemical thermoregulation, but mainly due to the regulation of heat transfer [2].

Under the influence of low temperatures, the northerners developed a specific so-called «polar», protein-lipid type of metabolism. This means that in the North, nutrition should be built with a slightly larger inclusion of proteins and fats at a lower relative energy significance of carbohydrates [3, 4].

In actual nutrition of the inhabitants of the republic, there was a replacement of the traditional for the peoples of the North protein-lipid ration for carbohydrate, characteristic for residents of European countries. The change in the historically formed structure of food causes the prevalence of alimentary-dependent pathology, especially of the hemopoiesis (anemia), the endocrine system (obesity), the circulatory system, the musculoskeletal system (osteoporosis). In the diet, the ratio of proteins of animal and vegetable origin, half-saturated fatty acids is violated, a low content of water-soluble vitamins is revealed [3, 10].

Identified by researchers the signs of nutritional deficiency in Yakutia, in particular, a deficiency of proteins, fats in the body is considered a factor that increases the risk of developing immunodeficient conditions leading to chronic non-infectious diseases. On the other hand, with a deficiency of proteins, fats and vitamin C, the propensity of development of hypochromic anemia in the inhabitants of the North is associated. In addition, with a deficiency of calcium, phosphorus is associated with a risk of osteoporosis. However, the combination of a lack of these minerals with a pronounced potassium deficiency, magnesium in the body predisposes to a breakdown of neuromuscular conduction. At the same time, the combination of established forms of mineral deficiencies is a risk factor for cardiac rhythm disturbances. Against this background,

the excess sodium in the diet of the examined can lead to the development of hypertension.

Studies have shown that the winter diet of Yakut people is represented by low-calorie food with a low content of not only basic macronutrients (proteins, fats, carbohydrates), but also with a lack of vitally important micronutrients such as Ca, K, Mg and P, as well as vitamins: A, group B and C both in the city and in the villages [10].

Correction of the revealed disturbances in the diet of Yakutia residents during the winter season requires the addition of products rich not only with proteins, fats, vitamins, but also vitally important minerals like calcium, potassium, magnesium and phosphorus and vitamins, the deficiencies of which have been established.

In this regard, the meat of the Yakut horses occupies a significant share in the diet of man in the conditions of the North. The best in taste and dietary qualities meat products are obtained by slaughtering young horses, grown with year-round pasture content. The meat is high in calories, has a pleasant appearance and is evenly permeated with fatty interlayers. Young horse meatis much easier to digest and assimilate than beef and is inferior only to venison [4].

Young horse meat is a high-quality meat product, the fat of which contains a huge amount of linolenic acid - 24% of the total mass. The foal meat contains a significant amount of vitamin A - up to 20 mg%, vitamin C - 0.8 mg%, vitamin E - 0.82 mg%. Of the other vitamins, it contains: thiamine 0.16 mg%, riboflavin 0.26 mg%, niacin 3.5 mg%. In comparison with this, in beef the content of these vitamins corresponds to 0.006; 0.15 and 4.7 mg%. Thus, the foalmeat for the content of the main water-soluble vitamins significantly exceeds the beef. In the foalmeat, more than in beef, potassium, calcium, copper, almost 4 times more iron, zinc, cobalt.

The fat of the Yakut horse contains the highest amount of unsaturated fatty acids (59%), including a large amount (up to 24.3%) of essential alpha-linolenic acid.

Reindeer meat has a delicate taste, high content of nutrients, and its low calorie content is ideal for those who aspire to a healthy lifestyle, as well as children, the elderly, sportsmen, representatives of «heavy» professions.

In the deer meat - 16 kinds of amino acids, vitamins B, vitamin E, as well as potassium, magnesium, sodium and iron, selenium and manganese, copper, zinc and phosphorus. A unique combination of substances in the meat of reindeer does not allow fat to accumulate in the human body.

Reindeer meat includes protein by 6.7% more than the best varieties of beef meat. Fat in the amount of deer meat is small enough, so venison enjoys high consumer demand. In addition, reindeer are reared in ecologically clean areas, and they also feed exclusively on mosses and lichens, which favors the formation of llenolic acids in wild reindeer, which protect the human body from atherosclerosis and carcinogen [4].

Traditionally, fish should be used in the diet. The caloric content of local fish is as follows: nelma - 200, omul - 164, crucian - 146, burbot - 73, pike - 83, muxun - 88 kcal / 100 g.

Fish have high nutritional value not only due to the protein, but also due to the high content of fish in fatty sorts of omega-3 and omega-6 fatty acids. These polyunsaturated fatty acids, which have high physiological activity, are extremely important for intercellular processes, have an anti-inflammatory effect, reduce the amount of lipids in the blood (thereby reducing the risk of cardiovascular diseases), to some extent contribute to weight reduction.

According to the results of studies of the biochemical composition of commercial fish, it is found that they are rich in calcium, potassium, magnesium, phosphorus, trace elements, especially iodine, fluorine, contains a sufficient number of limiting amino acids (leucine, lysine, methionine, tyrosine, cystine), rich in polyunsaturated fatty acids and vitamins [4].

The study of the chemical composition and collagen content in bone collagen-containing waste from the cutting of commercial fish showed that the skeleton of various species of commercial fish has a similar chemical composition and contains 17.0 to 18.3% protein.

Proteins of bone tissue are represented by ossein, by amino acid composition and properties close to collagen. The chemical bond between ossein and the mineral composition of the fish bone is less strong than in the bone tissue of animals and birds.

Yakut crucian is a special subspecies of goldfish and officially named as the Yakut crucian of Kirillov (CarassiusGacuticusKirillov) named after the first scientist who described the Yakut crucian carp, the doctor of biological sciences F.N. Kirillov.

A distinctive feature of the Yakut carp in comparison with the European ones is high fat content (up to 10% vs. 2.5%), high content of polyunsaturated fatty acids, macro-microelements, vitamins. Therefore, they have high energy value.

The use of carp is due to the protein content, which is easily and quickly absorbed in the body. In addition, it contains unique amino acids that are irreplaceable for humans. The composition of carrots includes a large amount of calcium, which is necessary for bone tissue, and it improves the condition of teeth and nails.

The composition of the crucian includes vitamin A, which is necessary for vision, as well as vitamin E, which has a favorable effect on the skin condition. A large amount of potassium is found in fish, which is necessary for the cardiovascular system, and it also normalizes the pressure. There is in it phosphorus, involved in the restoration of bone tissue [4].

The peoples of the Republic of Sakha (Yakutia) have developed centuries-old ethnoecological traditions in the rational use of natural resources. However, with the development of industry, especially mining, the negative impact not only on the environment, but also on the health of the population. Therefore, the problem of providing the population with high-grade food products in the extreme conditions of Yakutia is becoming a top priority. In solving this problem, traditional food products from local raw materials (dairy products, natural food plants) should occupy an important place [9].

A special place among them in human nutrition in the North is occupied by the Yakut national dairy products.

National dairy products of the Yakuts are traditional food products that provide the population with a need for nutrients in the harsh conditions of Yakutia. So, Yakuts due to dairy products provided more than 50% of the demand for food. Therefore, in the old days each family tried to use milk without losses, preparing butter, cottage cheese, various sour-milk products from milk in the summer months, and in the autumn processed milk for chokhon, hayah, tar, which they consumed in the winter. This method of processing and storing dairy products has become a kind of waste-free technology that, while improving technological processes, can currently contribute to the production of high-quality national natural dairy products of a new generation [8, 9].

In Yakutia, as in the southeast regions of the CIS and in some countries of Asia, a sour-milk drink of spirit and milk fermentation is distributed - kumis. It is produced from mare's milk using leaven of thermophilic lactobacilli and yeast.

Kumis is a sour milk drink made from

mare's milk of lactic acid and alcoholic fermentation. As a result of lactic acid and alcohol fermentation, the mare's milk is enriched with lactic acid, alcohol and carbon dioxide, nitrogenous substances in koumiss contain albumin, peptones, and amino acids. Casein is in the form of small, imperceptible flakes.

For medical purposes, it is used for pulmonary tuberculosis. It improves digestion, hematopoiesis, metabolic processes in the body, suppresses putrefactive processes in the intestine, increases the reserves of all vitamins in the body, thereby increasing the body's resistance to diseases [4, 9].

A koumiss drink from cow's milk is a fermented sour foaming carbonated drink, produced by ripening milk with pure cultures of lactic acid rods and milk yeast with the addition of sugar.

Sorat is a Yakut national product, produced from whole or reconstituted milk by fermenting with direct starter cultures containing Bulgarian rods, acidophilus rod of non-slippery race, thermophilic lactate streptococci, kefir fungi, bioculture.

Igegegei is a cottage cheese. In skim milk add acid sour cream or sorate and boil on low heat. To get a soft curd, remove from heat, once the milk is well curdled. Cool, filter, mix with sugar, dry in the oven. Untreated curd is used for baking flat cakes.

Sumeyh is cheese. The finished thick sorat is placed in a special bowl of birch bark with a pointed bottom and expanding from the top. Cover and hang at room temperature for several hours, a thick mass squeeze, dry.

A drizzle. Milk boiled, put in a warm place, after a few hours it thickens, chills, add sugar, cranberries, currants or jam.

Byyrpah is a Yakut national sour-milk drink, produced from pasteurized or skimmed milk with the addition of sugar and fruit and berry fillers, by fermenting with direct starter cultures containing acidophilic rods, thermophilic lactic streptococci, lyophilized yeast culture, fermenting lactose.

Tar - the Yakut national fermented milk product, which is produced by fermenting milk or cream with pure cultures of lactic acid bacteria. The nutritional value of tare is explained by the presence of lactic bacteria in it. Getting into the intestines, they create conditions that prevent the development of putrefactive microbes. Tar contains fat-soluble vitamins AD, E, easily assimilated amino acids, calcium, magnesium, phosphorus salts.

The production of therapeutic and prophylactic dairy products is given great attention. The nature of the therapeutic effect of traditional products on the human body has been revealed. Despite a rather large assortment of described sour-milk drinks, the set of products with directed therapeutic effect is very limited. The creation of new products with more pronounced therapeutic properties will make it possible to vary widely their use depending on the nature of the diseases.

Most of the Yakut national dairy products are low-fat, produced using recycled materials, with the full use of milk nutrients and conform to the technology of combined dairy products.

The problem of dysbiosis is becoming more urgent in Yakutia in connection with a decrease in immunological reactivity, which arises in people mainly due to environmental changes. Therefore, to maintain and restore the microflora of the digestive tract, it is necessary to use the Yakut national dairy products. containing natural natural additives from the unique Yakut raw material. It should also be emphasized that such biologically active additives as products of processing of forest berries, wild-growing food plants, etc., should take the proper place in the composition of the combined dairy products, ensuring that they reach the widest masses of the population, increasing the biological value of food without any or an increase in its caloric value, which is especially important for the prevention of violations of fat metabolism and cardiovascular diseases [8].

Products with natural food plants of Yakutia are characterized by a high content of protein substances, carbohydrates, macro-microelements and biologically active compounds, so their use for human nutrition in the North will make the diet of the local population more complete and adequate due to a significant expansion of sources of food raw materials from natural resources, the use of which has been forgotten in recent years.

After all, in the diet of the Yakuts before the development of grain growing, that is, until the 80-90s. XIX century, a very large place after dairy and meat products was occupied by products of plant origin - stems and roots of wild plants, berries and wood sapwood [6, 7].

Edible wild plants, used by the Yakuts, can be divided into two groups: edible roots and edible stems and leaves.

The most commonly used of them are: Susak (Butomusumbellatus) - Unnuula. By definition, E.K. Pekarsky in the Dictionary of the Yakut language (1925), Unnuula is: a shrimp, a breadbasket, a genus of water grass, a finely ground powder of dried dried apricots, which goes to food instead of flour (actually to thicken milk) [5, 9].

Some plants have vegetative organs for food. The most important among them is Artemisia vulgaris L., Artemisia Vulgaris L., Artemisia Vulgaris L. For consumption in food, young leaves were collected before flowering, dried. Then boiled, squeezed, shredded leaves of wormwood wormwood were introduced into buttermilk or suorat. The resulting fermented milk product was called «From үөрīte». Wormwood Chernobylnik is a high-protein plant containing up to 18% protein in dry mass. Sorrel is acidic or pyramidal (rumexacetosa L., rumexthyrsiflorus F.). Sorrel was also used, as well as wormwood, the Chernobyl. Fresh or boiled leaves of sorrel (along with the decoction) were added to the buttermilk, some flour was added for thickening. People drank it cooled, sometimes added to improve the taste of sour cream. Onions (Allium dauricum F., splendens W.) - chuchunah, onion, fast, Rezun (Allium schoenoprasum L.) and onion linear (Allium lineare L.) - HonuLuug. These plants with a high vitamin content were eaten as seasoning in fresh form and conserved for the future salted [16, 9].

Consequently, the development of combined and functional products of the new generation, enriched with biologically active compounds and using new technologies, is very promising. They not only allow making nutrition in low temperatures full and balanced, but also significantly expand the sources of food raw materials, which previously were practically not used in the diet.

Thus, when feeding in low-temperature conditions, it is necessary to take into account the national peculiarities of nutrition. This primarily affects the local population. It is necessary to widely recommend all traditionally used in food groups of products, including milk and dairy products, meat of various animals, fish, fruits and berries, growing in these climatic zones. The basis of public health in extreme conditions is the preservation of ethnic nutrition.

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The authors

Yakutsk, Republic Sakha (Yakutia), Russia:

1. STEPANOV Konstantin Maksimovich - deputy director for science, the Doctor on agricultural sciences,Yakut Science Centre of complex medical problems,Stenko07@mail.ru,;

2. LEBEDEVA Uliana Mikhaelovna – head of the Center of medical and preventive nutrition, candidate of medical sciences, Research Institute of Health, FSAI HPE «Northeast federal university of M. K. Ammosov», ulev@bk.ru.

A.G. Egorova

A LOOK AT THE PROBLEM OF DEATH FROM HYPOTHERMIA on the example of cases of hypothermia-related resuscitations

ABSTRACT

In the Far North, one of the main environmental risk factors is the cold, which lasts for 8 months. The problem of the effect of cold on the human body has always been and remains relevant. Annually, about 3,000 people around the world are frozen to death, of which about 200 cases take place in Yakutia.

The article describes a unique case of resuscitation of a frozen patient, which gives grounds to revise algorhythm of actions in relation to frozen patients, both from medical and legal points of view.

Keywords: general hypothermia, frozen person, death from hypothermia, case of resuscitation.

In the Far North, one of the main environmental risk factors is the cold, which lasts for 8 months. The problem of the effect of cold on the human body has always been and remains relevant. Annually, about 3.000 people around the world are frozen to death, of which about 200 - in Yakutia.

Despite the harsh climate, indigenous peoples of the Far North are able to feel relatively comfortable here, because of innate resistance. However, under the influence of socio-economic factors (long distances between settlements, alcohol intoxications, prolonged staying outside without suitable clothes, traumas that do not allow them to move and keep warm), both the indigenous and the foreign populations die from the cold. Death from the effects of cold is usually the result of an accident. Suicide by hypothermia is extremely rare [1].

Men of working age die more often from the effects of cold. Less often people die sober from hypothermia, among others – exhausted during a blizzard or lost in the forest. According to statistics in Yakutia every year (on average) 200 people die from general hypothermia. In the Republic, cases of resuscitation of "firmly" frozen people in recorded medicine are extremely rare. Thus, according to Professor R.Z. Alekseev, engaged in cold trauma, in his 50 yrs practice there were only 2 cases when a frozen man and child came back to life after thawing in morgue.

At the same time, there are many examples in scientific literature where people who had seemed dead from hypothermia revived and were brought back to life. In all these cases, they were healthy and fairly young people who froze; this was the main factor that contributed to the resuscitation from the frozen state. However, until now there are no scientifically sound methods for revitalizing frozen people globally.

According to some Internet sources, the most effective way to revitalize frozen people is to warm the body using living