

УДК 613.2 – 058

K.M. Stepanov¹, U.M. Lebedeva¹, A.M. Dokhunaeva¹, L.S. Zakharova¹,
A. V. Chugunov², S.T. Efremova²

Role of Natural Food From Local Products in a Diet of the Population Of the Republic of Sakha (Yakutia)

ABSTRACT

One of the main conditions of safe human life in extreme conditions is high-quality food which compensates negative impact of climate on an organism therefore at the northern people the huge attention was paid for a long time to good healthy food.

The original ideas put in a traditional image of food of northerners: the dairy food, koumiss, saltless diet, the natural food, the increased consumption of high-calorific food in the conditions of low temperatures and many other things in the conditions of chronic tension are expedient and are propagandized around the world.

Now national sour-milk products as a healthy and nutritious product experience the rebirth and need for them at the population of Yakutia starts increasing, thereby everything is surer being defined in the food market not as a delicacy, and as a daily dietary and environmentally friendly product.

Production of the northern domestic and trade animals, nature gifts has a high nutritional value because it contains large amounts of proteins, fats, minerals, vitamins and biologically active agents (BAA). Therefore it is a valuable national resource, on the rational use of which it should be paid special attention.

High biological and nutrition value of the Yakut national products allow to include them not only in the menu of catering establishments but also in a diet of social food.

Keywords: traditional food, natural food, food ration, foodstuff.

INTRODUCTION

The metabolism which is a fundamental principle of life, in an organism is provided with the processes proceeding at the most different levels – from organismal to cellular and subcellular – and directed on homeostasis maintenance. Over millions of years of animal evolution metabolism was formed as a result of the organism's relationship with nature, part of which he was himself. More than 40 thousand generations of ancestors of the person (from them more than 15 thousand generations of people) consumed exclusively natural food which components acquired by an organism, became the integral material structures of his body. The food available to the person had natural, natural complexes of biologically active agents inherent in everyone product and a ratio of the main components.

One more circumstance distinguishing food of the modern person from created evolution, that the most various combinations of feedstuffs in one meal, having artificial character depending on addictions and traditions of the certain person and the whole communities is now consumed is. In this case, as it will be shown further, activity of a gastrointestinal path is at a loss and broken and the metabolism is broken finally [11].

Food has to satisfy need of an organism for all necessary food components: proteins, fats, carbohydrates, vitamins, water, mineral substances, cellulose, etc. It is natural that providing this condition demands accurate planning of a diet. Thus it is necessary to consider surely not only needs of the person, but also his specific, professional, household and other features, and also the current functional state. So, for people of an asthenic constitution (the thin-boned, thin person with a narrow thorax, high activity of exchange processes) it is recommended to use more than



high-calorie products: grain, sweet berries and the fruit, the poorly thermally processed vegetables, vegetable and animal fats, fowl, fish, sour-milk products and so forth. For people of a hypersthenic constitution (the powerful frame, well developed muscular system, tendency to the body weight accumulation, and the lowered activity of exchange processes) mainly easy food can be recommended: grain, vegetable oils, fruit and vegetables with the high content of cellulose, bean, spices, fowl, etc. Intermediate characteristics of food are recommended to people of a normosthenic constitution (an average constitution, intermediate activity of a metabolism). At a diet choice the special attention should be paid and on level of intellectual development of the person, and on type of its higher nervous activity [9, 4].

During the planning and a choice of a food allowance it is necessary to give preference to the products which have been grown up in the region as they bear in themselves information on features of climate and a growth place. The prerequisite of such recommendation is that plants usually develop those substances which help them to counteract adverse local conditions; – it is natural that the person consuming these products, itself being a bioparticle of this region, raises the adaptation opportunities. Not smaller value has also compliance of nature of food to seasons of a year cycle. So, at an external heat in the summer heat reproduction by an organism reduces, and heatloss is increased by the use of the crude vegetable products having considerable moisture content, low caloric content and causing rather small statistical and dynamic effect, in itself raising body temperature. On the contrary, the use of the natural products having not only high power potential (fats, porridges, nuts), but also stimulating heat generation (meat, a bird) and containing in the concentrated look abundance of biologically active agents (for example, dried fruits) is more preferable in the winter.

According to the epidemiological researches conducted in Russia, it is revealed that one of the reasons of deterioration of health of adult population, women and children, very low education level in questions of healthy food is. It is everywhere proved that low social level of the population, change of food habits lead to violations of food [14].

Systematic large-scale epidemiological researches of a condition of the actual food and population health in various regions of Russia and the world allowed to establish a number of the basic facts:

- The lowest level of energy consumption at the population of the developed countries of the world, including Russia;
- The most widespread violations of the food status lead to decrease in level of health and promote development of such diseases, as cardiovascular, diabetes of the second type, osteoporosis, etc. [11].

Estimating food of the population of Russia as a whole and its regions it is possible to draw a conclusion on discrepancy of the developed structure of consumption of foodstuff to the modern principles of healthy food. The package of measures is necessary for situation change towards formation of a healthy food allowance for the majority of the population. Considering considerable distinctions and possibilities of regions, in each subject of federation it is necessary to develop the program considering features and prospects of development of regions [4, 5].

In works of many scientists distinctions in types of food of the population living in different geographic latitudes are shown. So, for indigenous people of Yakutia the proteinaceous and lipidic type of food promoting formation of "polar metabolic type" is characteristic. It is characterized by the high contents in a daily diet of protein (15% and above), fat (35% and above), carbohydrates (50% and below), unlike "the European type" in which carbohydrates prevail. For a detailed assessment of a condition of food and its interrelation with health, and also for increase of efficiency of the republican programs directed on improvement of a state of health of the population, it is necessary to carry out continuous monitoring of food of various segments of the population of the Republic of Sakha (Yakutia) [10].

One of the main conditions of safe human life in extreme conditions is high-quality food which compensates negative impact of climate on an organism therefore at the northern people the huge attention was paid for a long time to good healthy food.

The Republic of Sakha (Yakutia) is one of large subarctic and Arctic regions of the Russian Federation. That emphasizes special climatogeographic, natural and landscape conditions and features of influence of these factors on a population state of health. In this regard, ensuring optimum activity of the population of Far North gains extremely important social and medical importance. The special place is taken thus by questions of catering services of various groups of the population [7]. Moreover Far North is a multicomponent extreme factor for the person and has versatile negative impact on a human body of a specific production and ecological component, causing a number of changes of a metabolism and functional activity of all its systems, as well as changes need of an organism for energy, food and biologically active components of food [14, 18]. It is known that in the course of acclimatization of the person to extreme conditions of Far North the factor of food plays exclusively large role in preservation of health and ensuring efficiency of the person.

In the analysis of consumption of food in households for 2001-2012 it is shown that the first place in food of inhabitants of Yakutsk belongs to the grain products, the second – dairy, the third – to potatoes, and meat and fish products were displaced on the fifth and eighth place, respectively. Results of this research confirm that nature of food of city (Yakut) population underwent essential changes, and the structure of consumption of food comes nearer to the European type.

To V. M. Tyaptirgyanova (2004) it is established that the actual consumption of meat products on one inhabitant of Yakutsk below recommended sizes for 56,2%, dairy products – for 60%, fishes – for 34,6%, eggs – for 52%, vegetables – for 41%, fruit – for 94%, sugar and candy stores – for 41,8%, and consumption of fats, bakeries, potatoes above recommended sizes for 4,6%, 38,3%, 13% respectively [18].

By researches of the last years it is proved that food sets of inhabitants of RS(Ya) were characterized by decrease in quantity of products of an animal origin, fruit and increase in a quota grain and sweets. In a food allowance the ratio of proteins of an animal and a phytogenesis, $\omega 6$ and $\omega 3$ polynonsaturated fatty acids is broken[8].

Irrespective of an ethnic origin of inhabitants the structure of diets, their chemical composition gets carbohydrate type, characteristic for inhabitants of the European countries. Irrespective of seasons of year, food allowances are characterized by the low content of water-soluble vitamins.

It is also established that in a carbohydrate component of a diet the refined carbohydrates prevail and the average daily power value of food allowances of the population decreased to Central European sizes – 2506 kcal. It is proved that food of inhabitants of northern regions doesn't correspond not only recommended for these areas of the republic, but also to the standard norms of food. The diet of the people of the North which differed earlier the high content of proteins, fats, comes nearer to the "European" type, generally at the expense of a carbohydrate component [10, 6].

In the analysis of mineral and vitamin structure of food allowances of adult population of RS(Ya) according to 6 uluses and 2 cities (2001-2012) considerable deficiency of mineral substances and vitamins which has nature of the combined insufficiency is revealed. Deeper deficiency of mineral substances and vitamins at the female population is noted. Deeper deficiency of potassium, magnesium, iron and vitamins A, is revealed by B2, PP, C at indigenous people. Among not indigenous people deficiency of calcium, phosphorus and B1 vitamin is noted.

Numerous literary data testify to characteristics of structure of food of the indigenous and alien people of the North connected with the use not carbohydrates, and a significant amount of

meat and fish, fats that causes traditionally developed proteinaceous and fatty type of food with deficiency of many micro and macronutrients. It should be noted that features of the actual food of the Republic of Sakha in modern conditions are studied insufficiently. At the same time, given about the actual food of various groups of the indigenous and alien people of the Republic of Sakha, justifications of qualitative and quantitative structure of a grocery set and development of physiological norms of food for various groups of the population of Far North are necessary for carrying out improving actions [12, 6].

The people Sakha throughout long historical time developed the original system of the balanced food with a rational ratio of all elements necessary for the correct metabolism in an organism [1, 9].

The original ideas put in a traditional image of food of northerners: the dairy food, koumiss, saltless diet, the natural food, the increased consumption of high-calorific food in the conditions of low temperatures and many other things in the conditions of chronic tension are expedient and are propagandized around the world.

Our North is famous for valuable grades of fish. Stroganina from fresh-frozen "white" fish and various fish dishes were at all times the supplier not only valuable protein, phosphorus, calcium, vitamins *rp.* And, D and others, but also the valuable cod-liver oil compensating for the deficiency of vegetable fats. Besides, in fats of the fishes living in cold waters, there are the specific polynonsaturated elements which are so necessary for a human body – for its beauty, force and endurance.

Fish is high on the list on a nutrition value among food of an animal origin (meat, a bird, milk, eggs, etc.). It is caused by existence in a product of full-fledged proteins, easily assimilable fats, vitamin-rich which prevent fragility of blood vessels, interfere with cholesterol adjournment in a liver of the person and prevent his organism from harmful effects X – beams. They are the main source of the thermal energy necessary for commission of physical and mental work. Some nonsaturated acids can be recommended as a powerful tool for atherosclerosis and coronary heart disease prevention.

Fishes present at meat not proteinaceous (extractive) nitrogenous substances play an important role in digestive processes, causing allocation of digestive juice and appetite to food. Some of these substances can serve as a plastic and power material (peptides, free amino acids) [9].

Northern fish, is rather rich with the content of calcium and the phosphorus, allowing to consider them as an additional source of receiving preparations of calcium.

Meat of northern animals, including the Yakut horse, northern domestic deer, the Yakut cattle differs a high nutrition value, protein-rich, fats, macro - and microcells, vitamins, polynonsaturated fatty acids [12, 13].

In the conditions of influence of low temperatures at northerners the specific so-called "polar", proteinaceous and lipidic type a metabolism was developed. It means that in the north food has to be based with a little big inclusion of proteins and fats at the smaller relative power importance of carbohydrates [10].

In this regard in a diet of the person in the conditions of the North the considerable share is occupied by meat products among which the important place is taken by meat of the Yakut horses. The best on flavoring and dietary qualities meat products turn out at a face of the young horses that have been grown up at the year-round pasturable contents. Meat of them is high-calorific, has a pleasant exterior and is evenly penetrated by fatty layers. Zherybyatina is much easier digested and acquired, than beef and concedes in it only to venison.

It is good in boiled form, as a main dish, especially tasty and useful in crude as stroganina [2, 13, 15].

Fat substantially causes a nutrition value of meat, his tenderness, raises tastes. Horse fat soft, yellow; at foals and young growth the almost white. The melted fat being smeared, yellow



color. On the chemical composition and organoleptic indicators it doesn't concede to fats of other lethal animals. Fat of horses has high iodine number, easily swimming trunks, is rich with fatty acids, carotene and vitamin A. The fat use жеребятины interferes with adjournment of cholesterol and development of an atherosclerotic plaque [10, 13].

Horse liver is very useful product. It contains vitamins A, B1, B2, B6, B12, C, PP, and also calcium, magnesium, phosphorus, and iron [13].

Blood has high nutritional value. Blood contains many full-fledged proteins. Its main advantage – it contains iron in easily acquired form [9].

National dairy products of Yakuts are the traditional food providing requirement of the population in nutrients in severe conditions of Yakutia. So, Yakuts at the expense of dairy products provided more than 50% of requirement for food. Therefore in old times each family tried to use milk without loss, preparing from milk in summer months oil, cottage cheese, various sour-milk products (sorat, the byyrypak), and recycled milk on choxon, the hayakh, tar which consumed in winter time in the fall [1, 9, 15, 16].

In Yakutia as in the southeast regions of the CIS and in some countries of Asia, sour-milk drink from mare's milk - koumiss is widespread. In the medical purposes it is used at pulmonary tuberculosis. It improves digestion, blood formation, exchange processes in an organism, promotes suppression of putrefactive processes in intestines, to increase in stocks of all vitamins B an organism thanks to what organism resilience to diseases increases [3, 9].

These valuable qualities of koumiss are caused by all complexes of the curative substances which are its part: proteins, carbohydrates (lactose), enzymes, microcells, antibiotics, vitamins: A, B1, B2, B12, D, E, C (especially high content), etc.

Now national sour-milk products as a healthy and nutritious product experience the rebirth and need for them at the population of Yakutia starts increasing, thereby everything is surer being defined in the food market not as a delicacy, and as a daily dietary and environmentally friendly product [1, 9, 17].

The problem of dysbacteriosis becomes more and more actual in Yakutia in connection with decrease in the immunological reactivity arising at people generally owing to ecological changes. Therefore for maintenance and restoration of microflora of a digestive tract it is necessary to use the Yakut national sour-milk products. containing natural additives from unique Yakut raw materials. Follows also will emphasize that such biologically active supplements, as products of processing of wild berries, wild-growing food plants etc. have to take an appropriate place as a part of the combined dairy products having provided finishing them to the most broad masses of the population, increase of biological value of food without any increase in its caloric content that is especially important for prevention of violation of a fatty exchange and cardiovascular diseases.

High biological and nutrition value of the Yakut national products allow to include them not only in the menu of catering establishments but also in a diet of social food.

It doesn't raise doubts that food of the person is one of the most important factors of its activity. The correct catering services allow to support and strengthen health, and violation as it, unfortunately, most often and happens in the modern world, conduct to emergence of many alimentary diseases.

References

1. Abramov A.F. Stepanov K.M. Vasil'eva V.T. Tehnologija proizvodstva jakutskih nacional'nyh molochnyh produktov [Production technology of the Yakut national dairy products] Monografija [monograph]. Yakutsk: Sahapoligrafizdat, 2006, pp.108.
2. Abramov A.F. Androsov S.N. Himicheskij sostav i kalorijnost' mjaso zhrebjat jakutskoj loshadi dlja proizvodstva nacional'nyh vidov mjasnyh polufabrikatov [Chemical composition and caloric content of meat of foals of the Yakut horse for production of national



types of meat semi-finished products] V kn. Rol' sel'skohozjajstvennoj nauki v stabilizacii i razvitii APK Krajnego Severa [In book. Role of agricultural science in stabilization and development of agrarian and industrial complex of Far North]. Novosibirsk: 2003, pp.191-192.

3. Abramov A.F. Neustroev M.P. Stepanov K.M. Robbek N.S. Mjasnaja produktivnost' i pishhevaja cennost' mjasa domashnih severnyh oleney Yakutii [Meat efficiency and quality of meat of breeds of the horses divorced in Yakutia]. Moscow: FGBOU DPOS RAKO APK, 2011, pp.117.

4. Abramov A.F. Ivanov R.V. Alekseev N.D. Stepanov K.M. Mjasnaja produktivnost' i kachestvo mjasa porod loshadej, razvodimyh v Jakutii [Meat efficiency and quality of meat of breeds of the horses divorced in Yakutia] Yakutsk: Ofset, 2013, pp.84.

5. Ammosova T.V. Proizvodstvo kumysa [Production of koumiss] Yakutsk: Yakut. kn. izd-vo, 1974, pp.94.

6. Baturin A.K. Pitanie naselenija Rossii: social'nye aspekty [Food of the population of Russia: social aspects] VII Vseross. Kongress Gosudarstvennaja koncepcija Politika zdorovogo pitaniya v Rossii [The VII All-Russian congress State concept Of the politician of healthy food in Russia]. Moscow, 2003, pp.53-54.

7. Bуганов А.А. Агбалжан А.А. Ионов И.Е. Влияние фактора питания на состояние здоровья населения Крайнего Севера [Influence of a factor of food on a state of health of the population of Far North] Medicina truda i promyshlennaja jekologija [Medicine of work and industrial ecology]. № 4, 2003, pp.25-28.

8. Еганжан Р.А. Карамнова Н. С. Гамбаржан М. Г. Особенности питания жителей Крайнего Севера России [Features of food of inhabitants of Far North of Russia] Pitanie [Food]. №11, 2008, pp.78-80.

9. Егоров И.Я. Протод'яконов А.П. Чернявский В.Ф. Иванов К.И. Тжартиржанова В.М. Безопасность, этнотрадиционные подходы и современная научная обоснованность коррекции питания северян [Safety, ethnotraditional approaches and modern scientific validity of correction of food of northerners] Aktual'nye problemy reproduktivnogo zdorov'ja v uslovijah antropogennogo zagriznenija: Mat.mezhd.simp. [Actual problems of reproductive health in the conditions of anthropogenous pollution: Mat. of the intern. Symp]. Kazan', 2001, pp.148-149.

10. Ионов И.Е. Агбалжан Е.В. Витаминный и микронутриентный статус коренных жителей крайнего Севера [Vitamin and mikronutriyentny status of aboriginals of Far North] VII Vseross. Kongress. Gosudarstvennaja koncepcija. Politika zdorovogo pitaniya v Rossii [The VII All-Russian congress. State concept. Of the politician of healthy food in Russia]. Moscow, 2003, pp.207-208.

11. Габышева М.Н. Зверева А.Н. Культура питания якутов [Culture of food of Yakuts] St. Petersburg, 2012, pp.232.

12. Кривoshapkin В.Г. Питание — основа формирования здоровья человека на Севере [Food — a basis of formation of health of the person in the north] Zh. Nauka i obrazovanie [M.Science and education]. № 1, Yakutsk, 2002, pp.57-60.

13. Онисhenko Г.Г. Характеристика питания населения Российской Федерации [Characteristic of food of the population of the Russian Federation] Materialy kruglogo stola Zdorovoe pitanie — zdorov'e natsii [Materials of a round table Healthy food — nation health]. Nizhnij Novgorod, 2003, pp.14 — 16.

14. Тутел'яна В.А. Гаппарова М.М. Коганова В.С. Леcheбное питание: современные подходы к стандартизации диетотерапии [Medical foods: modern approaches to dietotherapy standardization] Moscow, 2010, pp.8-15.

15. Саввин А.А. Пishha якутов до развития земледелия [Food of Yakuts before agriculture development]. Yakutsk: IGI AN RS (Ja), 2005, pp.376.

16. Серосhevский В.Л. Якуты [Yakuts] Moscow: Izd-vo ROSSPJel, 1993, pp.297-315.



17. Stepanov K. M. Tehnologija proizvodstva jakutskih nacional'nyh kislomolochnyh produktov novogo pokolenija [The production technology of the Yakut national sour-milk products of new generation] Zhurnal Molochnoj promyshlennost' [The Magazine the Dairy industry]. № 11, 2009, pp.32-34.

18. Tjaptirgjanova V.M. Alekseev D.L. K voprosu o fakticheskom pitanii naselenija Respubliki Saha (Jakutija) [To a question of the actual food of the population of the Republic of Sakha (Yakutia)] Aktual'nye voprosy neinfekcionnoj zabolevaemosti v Respublike Saha (Jakutija): Tez.dokl. [Topical issues of noninfectious incidence in the Republic of Sakha (Yakutia): Thes. of reports] Yakutsk, 2000, pp.56.

Authors

STEPANOV Konstantin Maksimovich - the leading researcher, the doctor of agricultural sciences, Research Institute of Health, FGAO VPO "Northeast federal university of M. K. Ammosov", Stenko07@mail.ru, +79142703587

LEBEDEVA Uliana Mikhaelovna – the head of the Center of medical and preventive foods, the candidate of medical sciences, Research Institute of Health, FGAO VPO "Northeast federal university of M. K. Ammosov", ulev@bk.ru, +79246629041

DOKHUNAYEVA Alyona Mikhaelovna - the junior researcher Research Institute of Health, FGAO VPO "Northeast federal university of M. K. Ammosov", dohunaeva@list.ru, +79142303619

ZAKHAROVA Larisa Semenovna - the junior researcher Research Institute of Health, FGAO VPO "Northeast federal university of M. K. Ammosov", pitanie2012@bk.ru, +79241686138

CHUGUNOV Afanasy Vasilyevich – the doctor of agricultural sciences, professor FGBOU VPO "Yakut State Agricultural Academy" of Department of scientific and technological policy and education Ministry of Agriculture of the Russian Federation, agronb@ysaa.ru, +79243605481

EFREMOVA Svetlana Timofeevna, graduate student FGBOU VPO "Yakut State Agricultural Academy" of Department of scientific and technological policy and education Ministry of Agriculture of the Russian Federation, efremova_st@mail.ru, +79141019444