



## Analysis of the current situation related to the food security of indigenous population of the Northern Russia

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### Abstract

The food security of indigenous population of the Russian Northern regions represents quite a pressing problem and there are a number of important factors that should be considered when studying the issue. The composition of food products included in the diet of indigenous population of different countries and Russia, the methods of food preparation and preservation during centuries were influenced by the natural and productive conditions of life, work and leisure, which necessitates the study of specific nature of such nutrition. Over the last years, the diet culture of the indigenous population of the Northern Russia changed significantly influenced by a number of reasons: the industrialization of the regions and the organized development of the enormous raw material resources located there (minerals, forest resources etc.); the impact of migration processes, which led to the broad northern areas of Russia being inhabited by the population from the center and south of Russia, as well as from other territories of the Soviet Union (which is particularly evident in the late 1940s and subsequent post-war years) that had own diet culture; organized access of the population to a variety of store-bought food products, which significantly replaced the traditional food. The article provides the analysis of the current aspects of food security of indigenous population of the Northern Russia aimed at identification of nutrition patterns of different ethnic groups of the Northern Russia, promoting the population's efficient involvement in life activities.

**Keywords:** indigenous population, food security, Northern Russia, nutrition, traditional diet

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### INTRODUCTION

A serious consideration was given to the issues of food security both by Russian (Shegelman et al. 2018a, 2018b) and foreign researchers (Blaauboer et al. 2016, King et al. 2017). It was stated on the international level that country should strive towards the production of sufficient amount of food products to address the population's needs.

The existing gaps in the solution to the problems of food security for the Northern indigenous people requires a particular attention. Addressing these problems, it is necessary to prevent a negative impact on the health of the indigenous people of the North (Meakin and Kurvits 2009). According to estimates made in 2011 (Egeland et al. 2011), the rate of food insecurity experienced by non-corporate aboriginal households across Canada doubles that of all Canadian households (27 %). Recent data indicate that there is a higher rate of food insecurity in Canadian households with children than in those without children, and preliminary data indicate that food insecurity is more

urgent for women than for men. The results of the International study of the condition of the Inuit in the polar region conducted in the period of 2007-2008 indicate that Nunavut has the highest level of food security problems for the indigenous population of the developed country.

The growing attention to food security has led to increased attention of governments around the world to the development and implementation of food security strategies. Their engagement in the addressing the problem in the global food market has intensified. This has resulted in an enhancement in mercantilist and protectionist policies, including export restrictions and trade barriers in international trade relations.

Researchers (Neacsu et al. 2015) focus on the fact that new technologies of treatment and preparation of new food products using natural products (plant-based)

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enable creation of new products containing fewer calories, fat, salt, phosphates and more fiber, antioxidants, vitamins and other useful components in their composition.

As noted by Singh and Chandorkar (2017), the treatment of food products facilitates sodium intake, protecting people from the risk of non-communicable diseases. Specific food safety issues in international markets of agricultural products have become the subject of increased attention in recent years (Tangermann 2016).

Kozlovskaya (2002) states, that the composition of diet for the country's population should satisfy the energy needs and needs for metabolism of various population groups and as noted by the author, the formation of such diet composition that includes proteins, fats and carbohydrates, should be correlated in traditional diets of the indigenous population of vast territories. It would be appropriate to note that the solution of the problems of food security at the present time should involve not only the issue of necessary proteins, fats and carbohydrates, but also the necessary amount of vitamins and minerals.

Another aspect that should be taken into account is that over the last years, the diet culture of the indigenous population of the Northern Russia changed significantly influenced by the industrialization of the regions and the organized development of the enormous raw material resources located there (minerals, forest resources etc.); the impact of migration processes, which led to the broad northern areas of Russia being inhabited by the population from the center and south of Russia, as well as from other territories of Soviet Union (which is particularly evident in the late 1940s and subsequent post-war years) that had own diet culture; organized access of the population to a variety of store-bought food products, which significantly replaced the traditional food.

The issues related to the studies of the nature of the state's interaction with the indigenous peoples of the North in different periods of life in Russia (USSR), as well as problems associated with the study of traditional culture of food and its transformation, its impact on food security, were studied in the works of E. K. Alekseeva, E. Atsusi, M. Boyarinov, V. A. Ivanov, M. G. Kolegov, V. A. Kudashkin, A. F. Startsev, V. G. Tarlina, G. P. Khariuchi, T. I. Chudova, L. I. Shadina, V. I. Yudin, and a lot of other scholars.

As the analysis shows, the formation of traditional diet of the indigenous population of the North of Russia is closely connected with the natural and productive conditions of population's residence and work in challenging (sometimes extreme) conditions.

As a result, the representatives of this population developed specific morphological and physiological features of the organism and a specific diet culture.

The above is confirmed by studies of Agbalian (2016), who also showed that the diet of the Northern indigenous peoples is currently transforming being combined with the so-called "European" type of diet, which involves much higher percentage of carbohydrate and fat intake, unlike the traditional diet of the Northern indigenous peoples. All this necessitates the search for ways to increase the adaptation of the population living in the North of Russia to the difficult climatic and industrial living conditions by solving the problems of diet.

The above predetermines the need to analyze present-day aspects of food security of the indigenous population of the North of Russia, aimed at identifying the organized nutrition of different groups of the population of the North of Russia, promoting their efficient involvement in life activities.

## LITERATURE REVIEW

Tobler in his work (1970) suggests the well-founded opinion, that closer food resources or opportunities have a greater impact on the intensity of the observed results than those that located farther.

The article of Volkov and Vlasova (2014) indicates the specific characteristics of the problems of food security in the North of Russia: extreme climatic features that cause low bio-productivity and, accordingly, the dependence of the Northern regions on the amount and quality of imported food products. In addition, in the North of Russia, the range of food consumed is significantly poorer than that in the regions of the South of Russia, a significant share of food for northern regions are preserved products. Among these features of the North of Russia there are a poor transport infrastructure, which operates under the limited availability, remoteness and the nature of the settlement of the population of large, medium and small administrative entities in the vast territories of the North.

Severe climatic conditions in the North of Russia have limited, and in some provinces even precluded from growing the sufficient amount of grain and vegetable cultures necessary to normal activity of the person. Therefore, it is no coincidence that the gathering of natural products suitable for consumption has become a common occupation among the rural population of Arkhangelsk, Novgorod, Olonets, Vologda and other provinces. Edible leaves, sprouts, stems of wild plants, berries and mushrooms owing to their great nutritional value were used in the diet of local residents (Zolotarev 1926).

In the traditional national diet of the Khanty people, the main sources of calories are meat and fish (in European cuisine, there are more products with a high content of carbohydrates, rich in proteins and fats), the consumption of which allows to better withstand low temperatures, but is unbalanced. That is why experts

recommend to individuals who moved to the territory of the far North from other areas to combine in the diet the established European food tradition with a specific national traditions of the Khanty, thanks to which, traditional Northern food rich in proteins and fats will supplement the diet of a newcomer with saturated carbohydrates and vegetable fats (Shardina 2014).

Researchers have identified low consumption of traditional foods among children and adolescents in extreme conditions of the North (Dokhunayeva et al. 2015). It is particularly important to take into account the physiological characteristics of special categories of the population when forming the diet system. We may include adolescents to these categories. The study showed that the increased level of exogenous carbohydrate intake in the diet of young tundra Nenets (14-17 years) leads to a decrease in lipid content and causes the formation of the phenomenon of “frequently and chronically ill” in young Nenets (Sukhovey et al. 2007).

As was noted by V. A. Kudashkin, in the 1960-1980s, the food culture in the taiga zone of Eastern Siberia was transformed and national meals were no longer the basis of the diet of most families in this zone, the store-bought products began to supplement the diet. That is, in the mentioned period the ratio of traditional food in its total volume changed and the share of store-bought food products increased, but there was no complete replacement of traditional food among indigenous peoples (Kudashkin 2014).

The regions of the European North are provided with only one fifth of the population's needs for meat products, less than 50 % of the needs for dairy products, and they are almost entirely dependent on the import of vegetables, fruits and berries. Currently, domestic agricultural producers do not have the necessary investment potential, and the existing state programs do not fully meet the needs of the regions of the European North. The results of the study on the European North of Russia show that the consumption of protein-containing milk and dairy products, meat and eggs is certainly growing, but consumption of these products still does not meet the task of providing the population with biologically-based standards of these products (Moronova 2011).

Studies of Moronova (2012) have shown that merely the physical availability of food products for the population is necessary but quite insufficient condition for solving the problems of food security in the country. The most important types of food products should be economically accessible to all groups of the population, in accordance with physiologically-based nutritional standards. Solution to this problem should be provided with a reasonable and achieved ratio of financial income and the cost of the food basket of the population (in a particular region of the North of Russia).

According to researches, it is necessary to form a new paradigm of food supply to the Northern regions including the Arctic. The new systems should provide the population of these regions with the required amount of food and take into account the needs in food main types for the Arctic (Shcheviev et al. 2016, Yazdani et al. 2018).

## MATERIALS AND METHODS

The objective of the study is to analyze the current aspects of food security of the indigenous population of the North of Russia. During the analysis, the authors collected the materials accumulated by researchers of universities and scientific organizations who studied the transformation of the diet organization in different ethnic groups of the Northern Russian population.

The geographical position of the Northern areas of the Russian Federation, their location, the enormous square occupied and the length definitely affect the issue of food security in the country's regions located on the mentioned territories. This specificity is influenced by: on the one side – the difficult natural and climatic conditions for living, nutrition, working, leisure, restoration of the energy expended; on the other side – the enormous natural resources located in these territories, including the Arctic, which are extremely necessary for the domestic market and to a large extent determine the export potential of the country.

The problems of food security of the Russian Federation can and have to be solved effectively, both at the national-ethnic and regional levels. This approach is due to the conditions of the North of the Russian Federation, where there are large territorial differences in food supply and security in various Russian regions.

At the same time, it is necessary to take into account the specifics of the distribution of the European Northern territories, which is characterized by the fact that their Northern part predetermines the need to live and work on the development of these resources in the conditions of the polar night, the Far North or similar territories, part of the Northern population lives in the tundra and forest tundra, works in permafrost. The Southern and Central part of the European Northern territories are characterized by enormous forest areas, mineral and other resources that are developed in the taiga (Northern and middle).

The analysis draws special attention to the challenges of effective life activities of the indigenous population of the Russian North during the transition from the long-standing traditional lifestyle and national diet (with the use of food resources procured in the territories of a particular population residence – hunting products, deer breeding, fishing, mushrooms and berries gathering etc.) to modern diet consisting of foods imported from other regions of the country– flour, bread,

butter, sugar, salt, tea, vegetables and fruits, as well as canned food.

Methods of research in order to achieve this goal include a detailed information retrieval and analysis of literature and regulatory documents in the studied area.

The methodology provides for reflection of the studied issues for different age groups of indigenous people, including adolescents and young people.

At the same time, the methodology provided for the collection and analysis of materials reflecting the specifics of the indigenous peoples' residence and diet in most regions of the Northern Russia: living in Karelia, in Komi, in the lower reaches of large Siberian rivers, in Chukotka, Yakutia, and Yamal. The materials relating to the traditional diet of Veps, Karelian, Chukchi, Evenk peoples were collected during the research.

The authors identified the factors causing violation of the principles of rationally organized diet of the Northern indigenous population due to lack of needed energy supply of residents, failure to meet the standards of balance for proteins, fats, carbohydrates, vitamins, minerals. During the research, the authors took into consideration the positive experience of foreign countries, Finland in particular, regarding the agriculture development in the North for providing the population with local food products.

## RESULTS AND DISCUSSION

The formation of the nutrition culture and the diets structure for the indigenous peoples of the Northern Russia was largely determined by decades-long specifics of their residence and lifestyle (such as nomadic lifestyle), their livelihoods and food resources (hunting products, breeding deer, fishing, mushrooms and berries gathering etc.).

For example, studies on the specifics of the Evens' diet showed the following. The diet of the Evens-hunters and -reindeer-herders naturally included meat products, and in certain seasons was supplemented by the caught fish. The Evens people, wandering in the lower reaches of large Siberian rivers (Lena, Yana, and Indigirka), were engaged in fishing and hence ate mostly fish. The diet composition of the Evens experienced first changes in the 17th-18th centuries, when, along with the expansion of the Russian-Yakut trade to the country's North, the import of flour, salt, cereals, tea, sugar was organized (Alekseeva, 2008). As shown by Alekseeva, by the end of the 19th – beginning of the 20th centuries, the products of own household and industries (hunting, reindeer husbandry, fishing) which included meat of forest animals, fish, milk of deer, as well as wild edible plants were the basis of food of the Evens. Up until these days the Evens and Evenks still prefer meat and fish dishes, adding macaroni products and seasonings to soups. However, by the middle of the 20th century, it became common to use food products imported from

other regions of the country (flour, bread, butter, sugar, salt, tea) along with traditional food products in the diet of the indigenous population living in the Northern regions of Russia.

Until the early twentieth century, the 80-90 % of diet of indigenous people of Chukotka consisted of meat and fat with vegetable additives (seaweed, tundra plants). The basis of Ob-Ugrians' traditional diet were fish and meat, to a lesser extent – vegetable products. Most Khanty and Mansi groups, with the exception of purely reindeer herders, preferred fish. Their diet contained fish oil in combination with fish, berries, bread. Ob-Ugrians gave preference to protein food – fish and meat of wild animals and birds, which supported the normal bodily functions under condition of a cold climate, the *Butomus* rhizomes and pine nuts were sources of carbohydrates. Most wild plants were eaten in raw form. Bark, sapwood, juice, berries, needles, timber fungus were used for traditional medicine. The traditional diet was limited in salt, the fish and meat seasoning occasionally was presented by animals and fish bile. The indigenous peoples of the North have formed a special metabolism of protein–lipid type, adapted primarily to the digestion of animal proteins and fats but not carbohydrates, which corresponds to the characteristics of the Northern indigenous inhabitants' organisms, and the rejection of the usual products adversely affects their health, according to doctors (Tarlina 2007).

The negative phenomenon peculiar to the indigenous peoples of the Far North is that when adolescents and young people move from the North to another climatic zone to study or work, their diet is rapidly changing, the carbohydrate part of the diet turns to dominating one, the protein-lipid type of metabolism is intensively transforming into protein-carbohydrate type. At the same time, the factor of metabolism type formation occurs in slower pace than the changes in nutrition nature of adolescents and young people, which can cause certain diseases (Movahhed and Omidvari 2015, Vasilkova and Mataev 2011).

Traditionally for many centuries in the diets of the Karelia people the most important place was occupied by fresh, salted, dried fish, while meat in previous years played a minor role, as the Karelian families themselves made preservations of a large number of forest berries and mushrooms for the future (Vottovaara n.d.).

Traditional cuisine of the Veps people was based on the food prepared from vegetable products, fish, animal products and gathering. The diet of the Veps was dominated by forest mushrooms and berries, as well as vegetables, cereals and legumes (barley, oats, peas, beans, turnips). Dairy products are usually used as drinks, it was a base for kneaded dough, it was used in the fillings for pies and kalittos, and was added to soups, cereals, casseroles. Cottage cheese was made from sour milk. Bread was considered expensive by the Veps

people, they ate it, mostly, as a separate dish (Ethnomuseum n.d.).

The analyses performed by Russian researchers (Sukhovey et al. 2007, 2011) showed that with the traditional diet of indigenous peoples of the North (the analysis is performed on the example of the indigenous peoples of Yamal) in the diet group of “frequently and chronically ill” there are reduced fat intake and reduced food energy value, and disruption of the traditional lifestyle and hence the change in diet from traditional protein-lipid type to the “European” carbohydrate type cause negative effects, metabolic and immune disorders.

The above is confirmed by studies of Agbalian (2016), who also stated that the diet of the Northern indigenous peoples is currently being transformed and supplemented with the so-called “European” type of diet, which, unlike the traditional diet of the Northern indigenous peoples, comprises much higher share of carbohydrate and fat. All this necessitates the search for ways to improve the adaptation of the population living in the Northern Russia to the difficult climatic and industrial life conditions by solving the problems of nutrition.

Alekseeva (2012) notes that the radical change in the diet of the Evens and the Evenks, which occurred in the late 1940s, was the result of the development of trade and economic relations in the USSR, the formation of the domestic food industry, the formation of a system of centralized organized food supply to the country's regions, including the territory of the Northern Russia, a significant development of the network of catering enterprises (canteens, cafes), etc. It would be appropriate to add that Employee Provisioning Departments were established and successfully operate in the timber industry associations of the country, each forest point has a canteen.

Researchers (Lebedeva 2010, Stepanov and Lebedeva 2016) reasonably believe that quality nutrition is one of the most important factors that can to some extent compensate for the negative impact of Northern (sometimes extreme) climatic conditions on the inhabitants of the Northern Russia. Stepanov and Lebedeva (2016) in their work showed that the population of the Republic of Sakha (Yakutia) have an unbalanced diet and that this diet has a tendency to increase the consumption of products containing saturated fats, while reducing the consumption of complex carbohydrates. The described situation in the Northern Russia causes the risks of metabolic disorders, increasing the incidence of cardiovascular diseases, as well as tumors, endocrine disorders, including diabetes. It is no coincidence that the researchers highlight the fact that excessive consumption of fat and simple carbohydrates in Yakutia leads to an increased risk of developing diabetes, noting that the population of Yakutia has a level of insulin-dependent diabetes

mellitus that exceeds the average Russian level by 1.4 times. The researchers reasonably emphasize the importance of the development of food products (including the production of specialized ingredients) for the Northern population, which are based on the uniqueness of traditional diet of the indigenous population and supports its nutritional status with the use of unique animal and vegetable raw materials for the production of specialized ingredients. The attention is focused on the fact that the products of wild-growing plants should become available to the population and can be used to prevent impaired fat metabolism and cardiovascular diseases through the consumption of food of high biological value without increasing its caloric content.

The researchers focus on the problems of transformation of the diet system in the North during the Soviet period (particularly from 1945 to 1985), which had a negative impact on the traditional diet type of the Northern peoples, there was an attempt to form stereotypes of “Soviet cuisine” (Volkov and Vlasova 2014).

Ivanov in his work (2011) rightly noted that the problem of food security in a particular region is an expression of the set of region's agro-industrial problems, problems associated with internal and external (in Russia and in the world) food market, related external economic aspects and aspects of regional social policy. There is a controversial idea that it is possible to ensure the food security of the country basing on the concept of self-sufficiency (satisfaction of the population) with basic food types in accordance with rational consumption standards.

Analysis made by Siutkin and Siutkina (2012) showed that the abrupt transition from a centralized economy to a market type, that shifted the solution of nutrition problems from the State to “personal responsibility,” has worsened the possibility of quantitative and qualitative solutions to these problems. Unfortunately, it was during this period that there was a transformation in attitude to domestic food products as “low-quality” and the perception of imported food as innovative, high-quality one, including such products as fast food (Zarubina 2014), as well as rapidly achieved popularity shashlik, khinkali, shawarma, pizza, sushi, etc. As noted by Zarubina (2015), after the introduction of the food import embargo, part of the population did not pay any attention to the disappearance of imported products, and other part were overwhelmed by grief.

Another well-founded view is that the possibility of solving the socio-economic problems of Russia depends on the development of the economy of the regions of the North of Russia (Ivanov 2011).

The basic principles of rationally organized nutrition are violated in the nutrition of northerners, namely: the energy supply of the population, the recommended standards of balance on proteins, fats, carbohydrates,

vitamins, minerals, the recommended dietary pattern, all of which negatively affects the health of northerners (Vasilkova and Mataev 2014). The higher need of the Northern indigenous inhabitants for fat-soluble vitamins in comparison with the inhabitants of the regions with temperate climate has been established. That is why the change of the traditional diet type to the European one caused a huge lack of necessary nutrients in the examined individuals and during the studies a pronounced deficiency of ascorbic acid, retinol, thiamine, riboflavin, niacin was revealed in the northern inhabitants (Abdulhameed et al. 2018, Vasilkova and Mataev 2015).

When solving the problems of food security in the Northern territories of Russia, it is necessary to pay attention to studies that have shown that in the last 15-20 years the share of traditional food in the diet of the indigenous population of these regions has decreased. These shifts have resulted in changes in the energy value and chemical composition of indigenous diets. The consumption of proteins by the indigenous population of these regions decreased significantly – by 31-53 %, and animal proteins - by 46-68 %. There was a decline in the consumption of animal fats by this population – by 58-64 %, while the content of carbohydrates in the diet increased by 35-44 % with a decrease in the average daily caloric content by 16-32 % (Panin and Kiseliyova 1996). It is noted that centuries-long traditional “Northern” diet type of the Northern indigenous population, where the protein-lipid component prevailed, is gradually replacing by “European” diet type with a predominant content of carbohydrates, which leads to adverse consequences associated with metabolic disorders and a decrease in immunodefence (Dogadin et al. 1999). Dysimmunity is evidenced by the increased incidence of chronic and protracted forms of acute respiratory viral infections, nonspecific lungs and ENT diseases and other pathologies in ethnic groups of the Far North (Sukhovey et al. 2009).

Due to the decline in agricultural production for peoples of Far North resulted from a sharp reduction in deer number and meat production, there are insufficient presence of deer meat in the diet and the transformation of the diet type of indigenous peoples: protein-lipid type of nutrition was replaced by lipid-carbohydrate one (Safonova 2010). The decrease in the consumption of meat and fish among the indigenous population caused a deficiency of protein, amino acid, vitamin and mineral intake (Savvin et al. 2004, Semyonov et al. 2006).

The analysis showed that the problem of food security is acute for the territories of the North of Russia, where there is a high percentage of imported products, having a high content of preservatives and xenobiotics added by manufacturers for effective supply and storage (Kostritsyn et al. 2016).

Extensive studies on the transformation of the specific ethnic diet of the indigenous people of the

Republic of Komi and Yakutia, performed by Alekseeva, Boyko, Chudova and others (Alekseeva 2003, Boyko 2012, Chudova 2009, 2016, 2017) showed that these transformations led to the transformation of the lifestyle of Northern indigenous peoples, and, respectively, affected the characteristic specificity of the food security level for the indigenous peoples' regions.

According to studies (Beresneva 2005, Vorobiov 2005), it is concluded that the intensive urbanization of the Siberian and Northern regions (the author, unfortunately, did not mention the positive aspects of the advances of industry for the development of natural resources of these regions) significantly transforms the long-established traditions of the indigenous population lifestyle, including the traditions (culture) of nutrition. Khaknazarov in his work (2017) focuses on environmental aspects, believing that environmental pollution causes the destruction of the Northern traditional food chains, highlighting the most characteristic two (“lichen – deer – people” or “river and lake fish – human”). The author of this work concludes that the destruction of above food chains in the livelihood organization of the Northern indigenous peoples has led to a decrease in the Northern people consumption of natural, produced in the region, local food. He appropriately focuses attention on the fact that as a result of changes in the diet structure experienced by the indigenous population of the Northern Russia, there is an increased consumption of food saturated with carbohydrates, which led to the emergence of maladaptive changes in metabolic processes. At the same time, the transformation of the use and organization of food consumption by indigenous people no longer meets the pace of their digestive processes. We believe that the above additionally proves the importance to pay due attention to the issues related to providing the Northern population both with the required amount of food products, and with possibility to form a rational balance of food products, containing the necessary amount of vitamins and minerals.

Chudova in her work (2014) showed on the example of Izhma Komi, that the formation of traditional diet (national cuisine) is not only closely related to the natural and industrial conditions of the indigenous population. As a result of its formation in terms of nutrition strategy, the specific morphological and physiological characteristics developed in the organism of this population's representatives. In the course of historical transformation, there is a formation of a specific strategy in diet culture, as well as the population groups with specific morphological and physiological patterns specific to the indigenous population.

It is necessary to focus on studies related to the fact that food products produced in country's Northern territories, due to the natural manufacturing conditions of its production, have become uncompetitive with similar products supplied from abroad or from the South of

Russia. There's a reason for Northern agricultural sector's high expenses and increased risk (established district wage allowances, higher costs for heating of premises, greenhouses, hothouse) related to handling the plants and animals wintering (Ivanov 2011). At the same time, the opinion was expressed about the wrong orientation related to ceasing the agricultural sector in the Northern territories by the only reason of its costly nature. In support of this view, we can refer to Finland's experience: "In view of the Finland being the Northern European country, its agriculture has its own "Arctic" features. Cold snowy winters and short summer with long light day hours imply certain restrictions for agriculture and food production. ... But under such harsh nature conditions it is possible to talk about the high quality of food produced in a country where the soil, air and water are the most ecologically clean in Europe, where there are healthy pets and where there is no place for salmonellosis. Up to 90 % of Finland farmers are to some extent take part in environmental programs, and 7 % of farms are fully engaged in the production of eco-products" (Kazarezov and Beliakov 2004).

This experience can be used for the production of ecologically safe food products in the Russian North. However, we believe that only the agricultural sector of these territories alone is not able to solve completely the problem of nutrition of the Northern Russian population and along with this it is necessary to provide the population with functional food products developed on the basis of cross-cutting technologies of transportation in the vast territories of Russia and processing of food raw materials.

## CONCLUSION

As study showed, the Northern Russia has its unique features: vast territories, unequal and complicated nature and manufacturing conditions. It has dynamically advancing industry of nature territories development, scattered processing enterprises, complex transport availability for natural resources and underdeveloped transport infrastructure to supply resources to internal and external market, as well as social infrastructure problems and the need to rise the income for different population groups.

The composition of diet of indigenous population, the methods of preparation and preservation during centuries were influenced by the natural and productive conditions for life, work and leisure. The diet of the Northern indigenous peoples is currently transforming into "European" type, that is characterized by far more carbohydrate and fat intake, unlike the traditional diet of the Northern indigenous peoples. This causes the need to improve the adaptation of the population living in the North of Russia to the difficult climatic and industrial living conditions by solving the problems of diet. The change in diet of the studied population group led to the emergence of maladaptive changes in metabolic processes. Among the reasons for the traditional diet transformation were the industrialization of the regions, migration processes, access to a variety of store-bought food products, which significantly replaced the traditional food. The disruption of the traditional lifestyle and hence the change in diet from traditional protein-lipid type to the "European" carbohydrate type cause negative effects, metabolic and immune disorders.

The priority of preserving the good health of younger generation makes many experts to consider the specific features of metabolism of Far Northern peoples when composing the menu for educational institutions. For instance, the vast territory of Nenets Autonomous Okrug along with poor transport infrastructure impedes the regular supply of educational institutions with delivered products. As experts state, it is necessary to modify the diet of children living in the North by means of introduction the dishes and products traditional to the indigenous peoples from Northern Russia (Dedkova and Dedkov 2016).

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