Modern problems of nutrition of the Russian population

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Abstract. More and more evidence has proven that nutritional issues are serious enough and malnutrition can lead to health deterioration of the working-age population and the country can face a decrease in life expectancy. The study of lifestyle of the working population and nutritional analysis of their diet found that the country needs to find proper diet for them. The problem can be solved by developing the technology for new products that contain necessary nutrients and low calories which reduce the overall load on the diet. The principles of functional nutrition developed in foreign countries can serve as a basis for a new direction of development.

1. Introduction

Modern lifestyle restricts physical activity and requires reducing the caloric content of consumed food and saturating it with vitamins and minerals. Modern sedentary lifestyle and office work prevent people from spending their energy and lead to diseases related with low physical activity. Thus, it is necessary to modernize the traditional technologies of industrial production of many food products that build up the nation’s food basket of the Russian people. Technologies should aim to reduce calorie content and partially replace animal ingredients with plant ingredients in order to saturate products with nutrients that provide normal life. In fact, products should not only saturate the body, but also have a favorable effect on its functional state.

A sharp rise in meat prices, a reduction in the supply of meat and other essential raw foodstuffs from foreign countries due to the introduction of food embargo, the unprepared domestic food base and its insufficient growth, poor quality of resources cause difficulties in the work of food-processing industries. Since 2014, there has been a decrease in imports of many food stuffs including meat and meat products. The pandemic COVID-2019 exacerbated these trends and eventually destroyed logistic food supplies between countries.

The second problem concerns the consumption of meat and meat products by the Russian population due to the declining purchasing power of working citizens. This problem must be solved by reducing the cost of meat products, finding ways to replace imported ingredients with domestic food grown by Russian farmers. In these conditions it is very important to restrain price policy and minimize the cost
of production in good faith. Therefore, there is a tendency to produce functional food products with partial replacement of meat components with protein plant fillers from regional food stuffs. Such combinations reduce the cost of production and maximize the enrichment of finished products with missing nutrients of plant origin and increase their biological value.

Modern studies of this problem have indicated that this production technology of meat products is highly relevant. Moreover, food-processing industry is developing the approach of integrated application of protein-carbohydrate fillers of plant origin in meat production. The producers often use imported ingredients in such fillers. Therefore, it is necessary to find and develop new approaches to the use of domestic crops and plants. Chickpeas, mustard, flax, pumpkins are widely cultivated in the Lower Volga region and can be effective in the production of high-quality meat products.

The state leaders encourage producers to intensify food production and use domestic meat and plants to create new products of functional orientation. This provision is enshrined in the Doctrine of Food Security of Russia which defines the main strategic trends in the development of the food and food-processing industry. Thus, the chosen research direction has grown in importance in light of recent trends in food-processing industry and intensification of food production in Russia.

2. New tendencies in the diet of the population

Modern dietetics aims to improve the traditional diet of the population through the development of innovative food formula. Nowadays each single person tries to consume a healthy diet rich with nutrients and low calorie content. It makes food-processing industry search for new technologies for the preparation of traditional foods with functional biologically useful components.

At present the food industry is engaged in the development of functional meat food products and the reduction of their cost. The traditions of functional nutrition first originated in Japan, when in 1955 the first lacto-containing sour milk oligopoly saccharide (YakultHonsa) was produced. Then in 1991, Japan issued a special government directive “Foods for Specified Health Use” (FOSHU). Following Japan, countries of the EU and the USA began to study the biological value of functional products in the 1990s. Today there are more than 100 thousand names of functional products which according to the international classification are divided into 7 main groups by the presence of functional ingredients. The main groups are presented in figure 1. Nevertheless, biotechnology continues to evolve and this list has recently expanded through various combinations of functional ingredients in accordance with the growing needs of the food market. The modern food industry is moving towards expanding the supply of necessary food products in accordance with the needs of society.

![Figure 1](image)

**Figure 1.** Groups of functional products according to the presence of functional ingredients.

Meat products are products which are consumed by people; since meat contains essential amino acids and they enter the body with its consumption. Expanding the range of offered meat products in the
modern world requires the search for new innovative formulas that reduce the cost of the product, its calorie content and enrich it with beneficial vitamins and minerals [1, 2].

Nowadays the processing industry is distinguished by the growth of domestic meat production. Thus, according to the operational statistics for January-March 2020 livestock and poultry production for slaughter increased in all categories by 4.6% compared to the same period in 2019, and the volume of industrial meat production exceeded the level of 2019 by 9.1% and amounted to 706.1 thousand tons, which fully compensates for the needs of the domestic processing sector of the agricultural sector. Industrial processing of domestic meat leads to independent regulation of the cost of production and provides constant supply of raw meat. In addition, new tendency of introduction innovative technologies for the production of meat and vegetable products make it possible to reduce the cost of manufactured products [3, 4].

The producer additionally adds vital nutrients in food products of mass consumption in order to provide the population with vital nutrients.

The main nutritional problem of many Russians is an unbalanced diet containing a large amount of carbohydrate, sugar and animal fats (figure 2).

Figure 2. Comparison of annual diet and recommended amount of food products by the Ministry of Healthcare of the Russian Federation (data for 2018).

Figure 2 shows the comparison of annual diet and recommended amount of healthy food. The data indicate the excess consumption of carbohydrate and sugar which were consumed by the Russian people during a given year period. Unfortunately, people consumed 16% less dairy products, 25% less vegetables, 17% less fruits and berries, 11% less eggs. These data indicate that people consume less vitamins and minerals which these food products contain [5].

The XVII-th All- Russian Congress of dietitians and nutritionists came to the conclusion that over 30% of the nation’s population suffers from vitamin C deficiency, 35-85% has vitamin D deficiency and group B, 50-90% have carotenoids deficiency, 10-50% have iron deficiency, 50-90% have calcium deficiency, and over 80% have iodine deficiency. It is impossible to replenish this vitamin and mineral deficiency by diet; people should take mineral and vitamin complexes and fully reconfigure the structure of diet.

Another reason for the lack of nutrients in products is the violation of food production technologies in many agricultural enterprises. They try to maximize profits and reduce the ripening time of vegetables and fruits, excessively fertilize the soil and oversaturate the food stuffs with phosphorus and potassium which leads to a reduction in certain minerals. So, WHO statistics show that over the past 30 years, the
Fe content in apples has decreased by 40%, by 56% in bananas, by 75% in oranges, by 80% in cabbage. Reducing the ripening time of the crop and ripening it on the way to consumers reduces the level of water-soluble vitamins. Livestock farms stimulate the growth and maturation of animals, which affects the quality of meat and dairy products obtained and leads to a reduction in a number of important micronutrients in them [6].

The quality of food products is very important for providing long life and working activity of the population. In order to stabilize and cope with adverse situation concerned diseases of the alimentary system it is necessary to work in several directions at the same time [6, 7]. Safety of food products can be guaranteed not by prohibition measures but by sound economy as a whole. Advance in this sphere can be achieved through economic measures and sufficient level of consumers’ knowledge. It is necessary to increase requirements to producers of basic food products. Enterprises producing natural products without GMOs and food additives should be provided with state support up to the provision of subsidies from the budget. Support should be provided to small farmers up to the provision of tax holidays for up to 10 years and interest-free loans. Producers must provide truthful information about the composition of the product. At the same time, the level of competence of citizens should be sufficient to perceive the received information and correct interpretation of it [8]. As a result, an economic system should be established to stimulate the production of environmentally friendly and healthy products.

3. Conclusion
Modern nutrition should fill the energy of the body and also supply the body with all the necessary nutrients. Any distortions in filling the body's need for a balanced diet cause an increase in chronic non-infectious diseases which become the “problem of civilization.” In this regard, many advanced countries began to adjust national health programs and develop industries for the production of enriched and functional food products (FOSHU – Foods for Specified Health Use).

Data on food production and nutrition prove the need to review the diets of modern people. High urbanization and sedentary lifestyle, lack of active movement dictate the need to reduce the calorie content of food consumed. Overeating results in an increase in the percentage of people who suffer from obesity and diseases of the alimentary system. Unfortunately, the percentage of obese people and people suffering from the diseases of the alimentary system increase when they are young and able to work, there is also an increase in strokes occurred in young people, people who suffer from infarction and it leads to total decrease of life expectancy. These tendencies are actual in some national republics of the Russian Federation where traditional nutrition is overloaded with carbohydrates and animal proteins. For example, people who live in the republics of the Far North and some territories of the South of Russia do not consume enough vegetables; it results in the decrease of the life expectancy of the local population. Therefore, it is necessary to review food technologies and maximize the involvement of plant components from local raw materials in the production of traditional meat products.

Modern people should maintain normal functional activity by means of meal which must be low-calorie and rich in vitamins and minerals [9]. Modern diet should contain necessary amount of nutrients which are necessary for the body every day.

It is a bad practice when people in adverse situations like economic crisis or period of declining income begin to replace natural and fresh products with cheaper substitutes (low-grade meat, vegetable fats, products with milk fat substitutes, etc.), but this practice negatively affects healthy and normal life. Despite all these facts people should try to give preference to natural meat products including plant ingredients which are offered by the food industry along with natural products today. People will always buy and consume meat products since it is difficult to refuse to consume animal proteins but plant proteins should also be consumed that is why food industry produces combined meat and vegetable products. Such products can provide the body with animals and plant proteins and supplement the product with necessary minerals and vitamins. They can fully enrich the diet of a working person.

Modern people should know that a large part of their productive life involves proper nutrition and dieting. They should eat regularly and at certain times of the day to adhere to the necessary level of calorie content. Regular time of eating prepares the body for eating and it begins to produce reflexes.
The calorie content of food should be maximum at daytime and minimum in the evening so the body will rest at night. The ratio (%) 25:50:25 can help distribute calories between morning, afternoon and evening meals. When choosing products in the market it is necessary to give preference to natural and fresh products, chilled meat, since they contain the maximum amount of nutrients that the finished and processed products have partially lost during their processing. It is necessary to look at the composition of products, their shelf life and choose products without excessive additives and your body will not be overloaded with unnecessary salts and sugars.

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