

**АГРОӨНЕРКӘСПТІК КЕШЕН ЭКОНОМИКАСЫ
ЭКОНОМИКА АГРОПРОМЫШЛЕННОГО КОМПЛЕКСА
ECONOMICS OF THE AGRO-INDUSTRIAL COMPLEX**

IRSTI 65.01.11

DOI <https://doi.org/10.37884/4-2023/29>

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**CURRENT TRENDS IN THE DEVELOPMENT OF FUNCTIONAL FOOD
INDUSTRY IN THE REPUBLIC OF KAZAKHSTAN AND ABROAD**

Abstract

Modern society development is quite a contradicting process, on the one hand we could see outstanding achievements of science and technology, on the other hand it is difficult to ignore dangerous environmental situation, an increase in information, changes in the nature and rhythm of life and nutrition. Currently, it is obvious that the way of eating is the most important factor affecting a person's health, his ability to work, the ability to resist all kinds of external influences and, ultimately, determining the duration and quality of life.

Analyzing the collected data, we came to the conclusion that functional food plays a significant role in the concept of healthy nutrition. It is expected the growth of the market will increase the already high demand for nutritional and fortifying dietary supplements.

The work shows the analysis of registered specialized food products by countries producers. The leading countries in terms of supplies are Japan, the USA, Russia and Germany. The share of domestic products was determined, making possible to see which forms prevail in the structure of the range of specialized food products in our republic.

Keywords: *nutrition, food base, functional food, food additives, nutrients.*

Introduction

Nutrition is one of the most important factors which determine human health. Indeed, at all ages, the creation of a food base has been the key to the survival of people, the fundament for the prosperity of any state. The creation of a healthy diet of a modern person is hindered by one of the crises of globalization, namely, environmental, due to the fact that poisons, pesticides, antibiotics and hormones are used in agriculture and animal husbandry, preservatives, nitrates and other substances are used in the food industry. Thus, the ecological crisis has led to the fact that nutrition has largely ceased to meet human needs to ensure its normal functioning. It is increasingly difficult for a modern person to acquire useful substances from food. The soils are deteriorating, and even though they are sown with the latest agricultural crops, which give good yields, are well stored, well transported, but poor in useful substances. In many cases in order to get everything he needs must eat bigger portions, not smaller. And as a result, the idea of forming the healthy diet without encountering the problem of obesity is becoming more and more important.

The ideology of health and a healthy lifestyle as a national idea is needed to improve the quality of life of the population, its preservation and reproduction. Functional nutrition might be introduced to strengthen the reproductive health of young people, improve the quality of life of the disabled, the poor and the elderly, and ensure the health of the younger generation [1-3].

Functional nutrition is a kind of nutrition that contributes to the improvement of the functioning of all organs and systems of the human body. As a new scientific and applied direction that emerged at the junction of medical and food biotechnology, it received official recognition in Japan in 1989[4-5]. This type of nutrition is using functional food. Functional products are called special-purpose products of natural or artificial origin with specified properties, which should be taken daily and

systematically, and are aimed at replenishing the lack of regulatory food substances in the body. By exerting a regulating effect on physiological functions, biochemical reactions and psychosocial behavior of a person, such products support physical health and reduce the risk of diseases [6-7]. The functional nutrition system is aimed at solving the main issues of modern people, first of all, improper nutrition. It is caused by the active rhythm of human life, a busy life pace, frequent fast food snacks, easy access to fatty and fried foods. The intake of low-quality food is also harmful. Modern food consists of a large number of dyes, preservatives, flavors, which do not saturate the body, but only temporarily smooth out the feeling of hunger, and after a few hours it returns. Functional nutrition promotes the use of organic products devoid (as far as possible) of chemical components.

In recent years, a new direction has been formed in the science of nutrition — the concept of functional nutrition, which includes the development of theoretical foundations, production, sale and consumption of functional food (FF) [8-11]. The production of FF is an urgent task for the modern food industry. Today, many countries are working in order to create new FF products which have both a wide range of applications and a targeted focus on a specific organ, biotype, system, disease [4,12].

The developed countries of the world, such as Japan, England, the USA, Germany, France, etc., are implementing national programs to improve the health of the population by developing and organizing the production of food components that correct the biochemical composition of mass-consumption food. For example, in Japan, the production of functional nutrition has acquired a strategic focus. In general, the foreign FF market increases annually by an average of 15-30% [13].

The global functional food market was estimated at 180,843.73 million US dollars in 2021, and it is expected that during the forecast period (2022-2027) the average annual growth rate will be 2.71% [14].

The region with the highest growth rates in the global functional food market is the Asia-Pacific region, which demonstrates the highest average annual growth rate in 2021-2026. The key players in the Global Functional Food market are Danone SA, Abbott Laboratories, PepsiCo Inc., The Kellogg's Company, Nestlé S.A. — the largest companies operating in the global functional food market [15].

Functional food offers certain health benefits that go beyond the usual daily intake of nutrients, such as improved bone health, cholesterol control, improved heart health, and other benefits related to eye health and vision. It is expected that the growing demand for nutritional and fortifying dietary supplements will stimulate the growth of the market. Food manufacturers are introducing fortification of food additives, such as omega-3 fatty acids, fiber, vitamins and minerals, into their products. The purpose of including the above-mentioned additives in the food industry is to increase the nutrient content of food.

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Functional food can be considered as whole, fortified, fortified or enhanced foods that bring health benefits in addition to providing essential nutrients (e.g. vitamins and minerals) when they are consumed in effective amounts as part of a varied diet on a regular basis[16-17]. The global functional food market is segmented by product type, distribution channel and geography. Depending on the type of product, the market is divided into bakery products, breakfast cereals, functional bars, dairy products, baby food and other types of products. Functional bars were further subdivided into sports bars, energy bars, and protein bars. Similarly, dairy products were further subdivided into yogurt and other functional dairy products. According to the distribution channels, the market is divided into supermarkets and hypermarkets, special retail stores, shops within walking distance, online stores and other distribution channels. Population growth and changing food fashion among people are the main driving forces of the market. People care more about their health and are willing to pay extra for products that are useful for health. Protein is becoming a priority for consumers all over the world, as

it is considered "anti-fat" and "anti-sugar", as well as a powerful source of instant energy. Thus, consumers are increasingly looking for protein ingredients in food products, which are expected to have a positive impact on the growth of the functional food market because of the need for regular nutrition, and adults prefer them because of an active restless way of living.

The Asia-Pacific region dominates the market and makes the biggest market for functional nutrition products. A growth in consumer interest and a better understanding of the features of proper nutrition and food habits that increase immunity are the key factors stimulating the growth of sales of food and beverages enriched with vitamins and minerals in the regions. Moreover, in countries such as Japan and China, manufacturers are increasingly creative about packaging dairy products, ingredients and flavors, so they easily introduce enriched options, which, in turn, stimulate the market for functional food. Figure 1 shows the number of functional and enriched nutrition products launched in Japan on the functional food market in the period 2016-2021 (Mordor Intelligence data) [14].

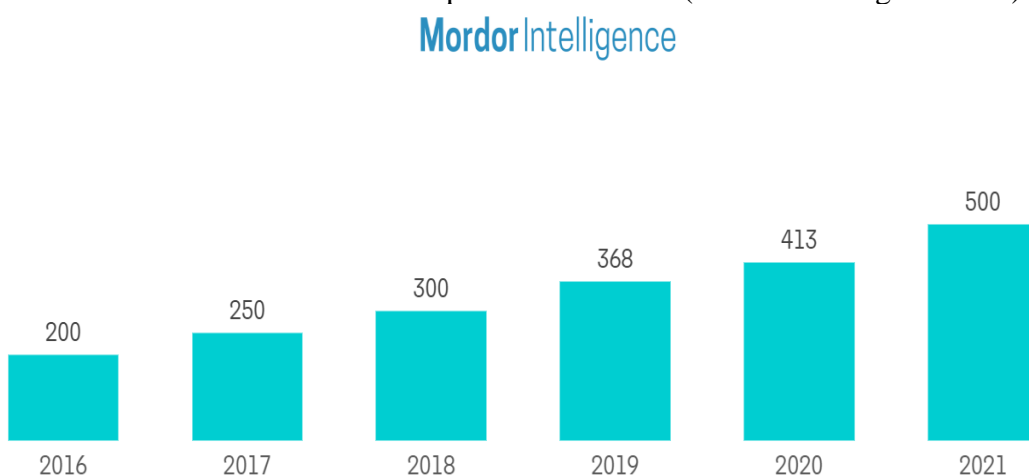


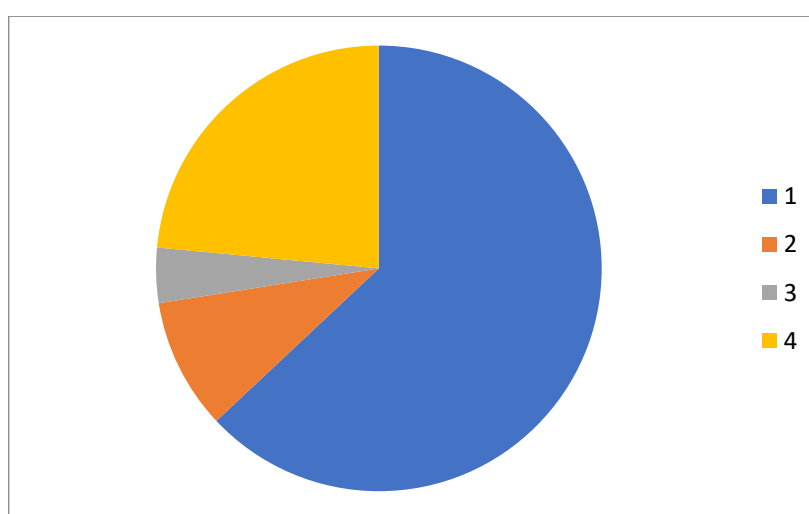
Figure 1 - Functional food market: The number of functional and enriched food products launched on the market in Japan for 2016-2021.

Yogurt, due to its multifunctional properties, is very popular among consumers. Most of the Chinese population is lactose intolerant, and therefore consumers consider vegetable yogurt to be a relatively better option due to its fermented nature, which makes it easily digestible. For example, in May 2021, the Chinese plant-based snack company Marvelous Foods launched Yeyo coconut yogurt on the Tmall e-commerce platform. Yeyo is a plant—based coconut yogurt that does not contain sugar, artificial flavors and sweeteners. The initial launch included three SKUs, and the range includes a "pure" sugar-free flavor, as well as two cups of yogurt and muesli with seasonal fruits and nuts for flavor and nutrition.

The global functional food market is highly competitive, with a large number of domestic and international companies competing for market share. Companies are focused on introducing new products with healthier ingredients, as well as acquiring, merging, partnering and expanding as their key marketing strategy. The main companies in the studied market are Danone SA, Nestle SA, PepsiCo Inc., The Kellogg's Company and Abbott Laboratories [17]. In order to extend their market in the studied market, manufacturers are updating their product portfolios, focusing on consumers who care about their health.

According to forecasts of the world's leading experts in the field of nutrition and medicine, in the next 15-20 years, the share of these products in the food market will reach more than 30%, while displacing many traditional medicines by 35-50% from the sphere of sale. This is not surprising: even today 40-60% of North Americans and Japanese, as well as about 32% of Western Europeans, use biologically active food additives and functional food products instead of traditional medicines to strengthen and restore health [16,18-22].

The rapid development of the functional food market is occurring due to two interrelated reasons: the efforts of manufacturers trying to make products characterized by the recommended advantages, and consumer demand for products with undoubted advantages and health benefits. Over the past 10-20 years, many countries of the world increase steadily the production and consumption of functional food products. The analysis of the market for the consumption of functional products shows an annual increase of 5-40%, for certain types of their production. This trend is most pronounced in the USA, Canada, Western Europe, Japan, Australia and other countries. By now, more than 100 thousand names of functional food products are known (in Japan it is almost 50%, in the USA, Europe and Australia — 20-30% of all manufactured food products). Market research on functional products shows that, on average, in the next 15-20 years, functional products will make up 30% of the entire food market. The global consumer market of functional food products is formed by 50-65% with dairy products, by 9-10% — bakery products, by 3-5% — functional beverages, by 20-25% — other food products (Fig.2). 15 to 40% of the population in different countries take functional products and dietary supplements instead of traditional medicines [21-23].



1-dairy products (50-65%) 2- bakery products (9-10%)
 3-functional drinks (3-5%) 4- other food products (20-25%)
Figure 2 - Global consumer market of functional food products.

The fast-growing functional food market is innovative in nature, so there is a constant increase of interest in new ingredients in this market. Polyunsaturated fatty acids, specific carotenoids and flavonoids, biologically active components of various physiological orientations are becoming increasingly popular components of formulations. The marked growth of the segment of active products is not just a tribute to fashion — numerous studies conducted in the world in recent years confirm that such components of nutrition as vitamins, minerals, fats and dietary fiber directly affect human health. Most scientists agree that a properly balanced diet can not only protect humanity from some of the most common today's "diseases of civilization", including cardiovascular diseases, cataracts, macular degeneration, arthritis, osteoporosis, some forms of cancer, but also slow down the aging of the body. All this has led to the fact that the production of functional food products in the advanced countries of the world is widespread and growing rapidly. In countries with developed economies (for example, EU countries), up to 25% of certain types of food products produced on an industrial scale are functional products [24-25]. The volume of consumption of these products has reached a very high level (Fig.3).

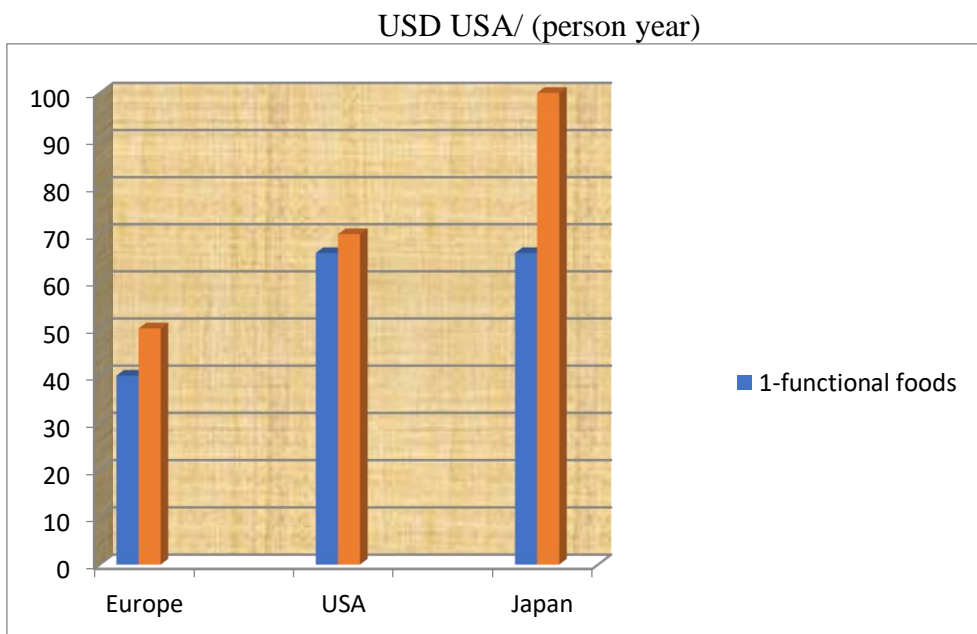


Figure 3 - Consumption of food additives (1) and functional foods (2) abroad.

Extensive international and domestic experience proves that the most effective and cost-effective way to improve the supply of the population with missing nutrients on a national scale is the additional enrichment of food products with them. The study of the dynamics of functional food products sales shows that interest in such products is also constantly growing. The idea of improving the health of the nation by creating conditions for rational nutrition has now received official recognition in the Russian Federation and the production of domestic food products enriched with functional ingredients has begun.

Dairy and fermented milk products containing functional ingredients and cereals are in the greatest demand among consumers (Fig. 4).

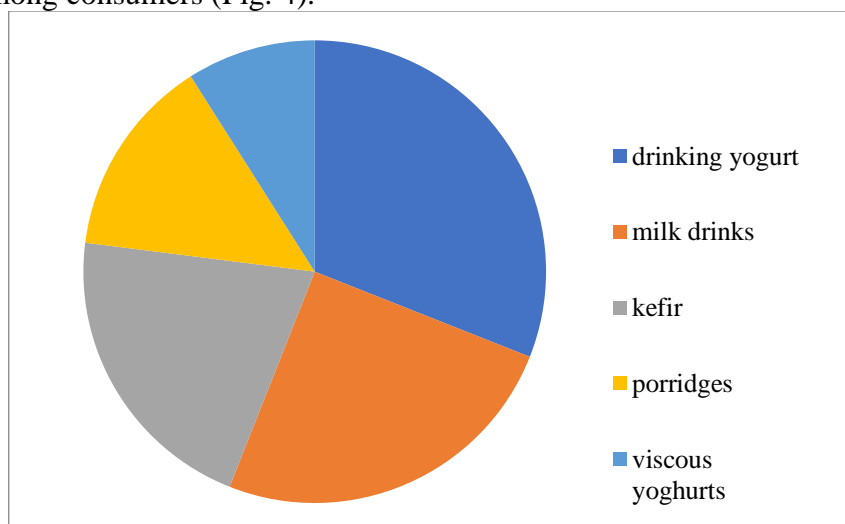


Figure 4 - Structure of functional food consumption in Russia per capita.

The production of functional food products in our country is gradually increasing. More and more products, enriched with vitamins, trace elements and other substances necessary for human health are being produced. These are dairy products, confectionery, bakery, meat products, etc. The fact that the domestic industry has started to produce not only products, but food and it has a beneficial effect on human health. It is a significant move that unites the positions of manufacturers and doctors.

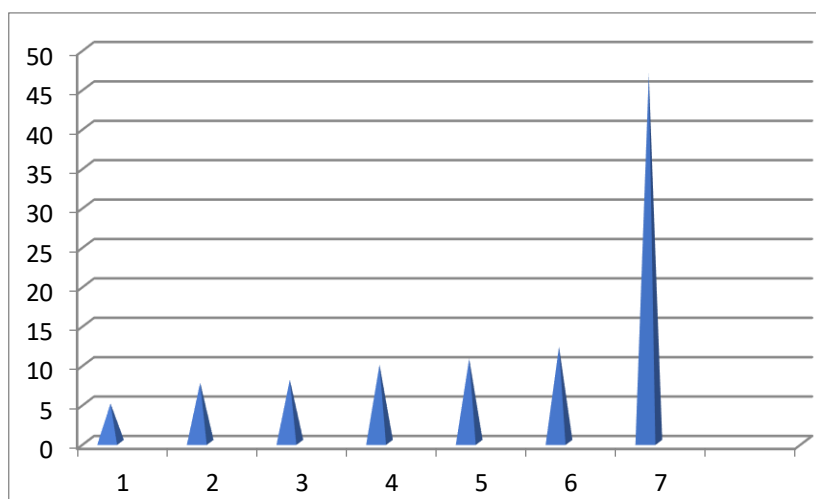
As evidenced by extensive world and domestic experience, the most effective and economically affordable way to improve the provision of the population with missing nutrients on a national scale is additional enrichment of food products with them.

In a number of States, issues of quality nutrition are considered at the government level. For example, the concept of state policy in the field of healthy nutrition of the population has already been formed in Russia. In 2001, the Union of Producers of Food Ingredients - UPFI was established, the main task of which is to promote the development of the production of environmentally friendly products. In 2005, a new national standard of the Russian Federation was adopted and approved, establishing their basic concepts. All these measures contribute to the formation of a functional food market [26-28].

An important priority of Kazakhstan, stated in the Message "Kazakhstan's Way - 2050" - "Common goal, common interests, common future", is to achieve a leading position in the world food market and increase agricultural production. The development of the food industry in Kazakhstan is currently especially relevant in the changed conditions of the external environment - with the entry of country into the Customs Union and the planned entry into the WTO, as well as in connection with changes in the internal environment - in the conditions of population growth, intensive growth in food consumption and changes in the consumption structure towards better and more diverse products [29-31].

The pre-emptive right for the production of functional food products should have products of the food industry that have the largest share of consumption: products of the bakery and flour milling, as well as dairy and non-alcoholic industries.

%



Forms of specialized functional products in the Republic of Kazakhstan, %

1- Dairy product

2- Jelly

3- Bars

4- Dry mixture

4- Dry mixture

5- Balm

6- Vegetable butter

7- Powders for making cocktails

Figure 5 - The main forms of specialized food products in the Republic of Kazakhstan.

The production of functional food products in our country is gradually increasing. More and more of them are enriched with vitamins, trace elements and other substances necessary for human health. These are dairy products, confectionery, bakery, meat products, etc. The fact that the domestic industry began to produce not just products, but food that has a beneficial effect on human health is a very important step that unites the positions of manufacturers and doctors.

At the end of 2018, 1109 names of specialized food products were registered in the Republic of Kazakhstan. 396 names of products of specialized food products for athletes' nutrition, 10 names of products for specialized enteral nutrition, 109 names of specialized products for baby food and 437 names of products of other applications.

These data allowed us to establish forms prevailing in the structure of the assortment of specialized food products in our republic [30]. The results are shown in Figure 5.

The results of the analysis of registered specialized food products by countries producers are shown in Figure 6. As can be seen from Figure 6, the share of domestic products is only 2.39%. The leading countries in terms of supplies are Japan, the USA, Russia and Germany [14,30-31].

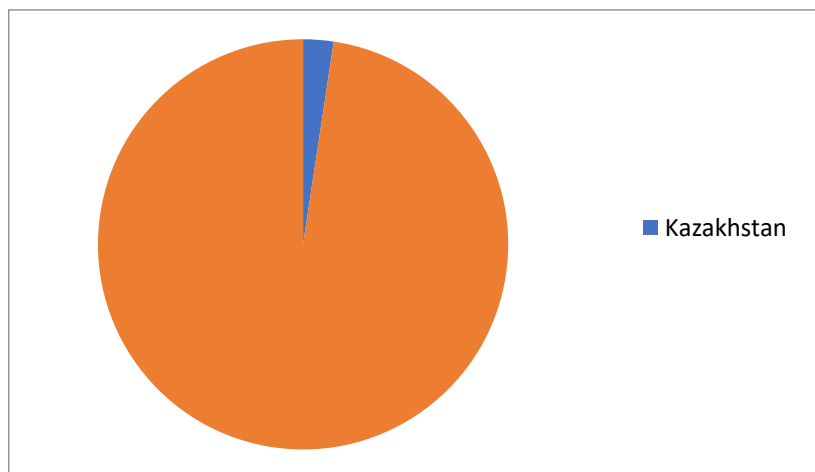


Figure 6 - Segmentation of specialized functional products by manufacturing countries.

Conclusions

Over the past decades, there has been a major shift in the structure and quality of nutrition. It resulted in the significant decline in vitamins, mineral elements, ballast and other substances necessary for the body in food.

This change occurs against the background of a decrease in human motor activity, combined with the consumption of excessive amounts of refined and containing various additives of food. Scientific studies have revealed that if a modern person consumes the usual diet, their body does not receive 40-60% of the required amount of vitamins and biologically significant macro- and microelements.

The distribution of functional foods also has an ecological aspect. The health of the population of unfavorable regions can be improved by introducing diet products containing substances that enhance the adaptive and protective properties of the body (antioxidants, vitamins, etc.) in their diet.

A person, regardless of age and time of the year, suffers from a lack of many nutrients which is caused by soil poverty. Such soils have insufficient amounts of selenium, fluorine, iodine, iron, zinc, etc. The inclusion of fortified foods in the diet will help to preserve the health of a modern person who suffers from stress and the impact of negative anthropogenic factors.

The main focus of a functional food market is to eliminate the deficiency of protein, vitamins, macro- and microelements, as well as dietary fiber. The global functional food market is expected to grow by an average of 2.71% over the next 5 years (2023-2028), while the growing demand for nutritional and fortifying dietary supplements will in its turn, drive market growth.

Reference

1. Berestova, A.V. The basis of functional nutrition: textbook / A.V. Berestova. - Orenburg: OGU, 2021. - 167 p.
2. Karpova, G.V. General principles of functional food and methods of research on properties of raw materials of food [Text]: textbook for students studying in programs of higher professional education in the direction of preparation 260800 Technology of production and organization of public food / G.V. Karpova, M.A. Studiannikova; Master of Education and Science, Ros. Federation, Feder. Mr. budget. education. institution of higher education prof. education "Orenburg State University". Ch. 2: - Orenburg : University, 2020, 135 p.

3. Technology of functional food products: textbook for middle professional education / L. V. Donchenko [and others]; under the general editorship of L. V. Donchenko. — 2nd ed., ex. and the ball. — Moscow: Izdatelstvo Yurayt, 2022.-166p.
4. Dolmatova, I. A. Product of functional purpose in population nutrition / I. A. Dolmatova, S. Sh. Latypova. - A young student. - 2016. - No. 7 (111). - PP. 63-65.
5. Baturin A. K., Mendelsohn G. I. Food and health: problems XXI [Text] // Food industry. - 2020. - No. 5. - PP. 105–107.
6. A.M. Kopelev Harmlessness of food products. - M.: Agropromizdat, 2016. - 287 p.
7. Functional food products// Material from the free Russian encyclopedia "Tradition". URL: <http://traditio.ru/>
8. Pozdnyakovskiy V.M. Hygienic principles of nutrition, safety and expertise of food products: textbook for universities. - Novosibirsk: Izd-vo novosib. University, 2019 - 432 p.
9. Prudnikov, V.M. Hygienic requirements for safety and nutritional value of food products. - M.: INFRA-M, 2022. - 207 p.
10. Shvanskaya, I.A. Prospective directions for the creation of functional products based on vegetable raw materials: Nauch. analyte. overview/ I.A. Shvanskaya.-M.: FGBNU "Rosinformagrotech", 2022, 184p.
11. Veretnova O. Yu. Possibilities of using non-traditional vegetable raw materials in the production of functional food products // Vestnik KrasGAU. - 2015. - No. 6. - S. 154-158.
12. Bobreneva, Irina Approaches to creating functional food products / Irina Bobreneva. - M.: LAP Lambert Academic Publishing, 2019. – 484p.
13. Ambrozevic, E. G. Features of European and Eastern approaches to ingredients for healthy food products / E. G. Ambrozevic // Food ingredients, raw materials and additives. — 2020. — No. 1. — PP 31-35.
14. Functional food market - growth, trends and forecast (2023-2028) <https://www.mordorintelligence.com/ru/industry-reports/global-functional-food-market,2022,158p>.
15. S. Salminen C., Bouley, M.-C. Boutron Functional food science and gastrointestinal physiology and function British Journal of Nutrition, Volume 80, Issue S1, 2017, pp. S147 to S171.
16. Karpova, G. V. The general principle of functional nutrition and methods of researching the properties of raw food products. Part 1 / G.V. Karpova. - M.: Bibcom, 2016. - 695 c.
17. Karpova, G. V. The general principle of functional nutrition and methods of researching the properties of raw food products. Part 2 / G.V. Karpova. - M.: Bibcom, 2020. – PP 264 - 890 .
18. Nepovinnykh, N.V. Food fibers: functional and technological properties and application in technologies of food products based on whey. Monograph / N.V. Nepovinnykh. - M.: INFRA-M, 2019. - 641 p.
19. Nikolaev, O. A. Genesis and development of the market of functional food products / O.A. Nikolaev. - M.: Synergy, 2019. – 741p.
20. Functional nutrition $\frac{3}{4}$ the general problem of the "healthy lifestyle" of the population of the Eurasian state: scientific articles X of the Eurasian scientific forum: collection / General. science ed.; foreword: M.Yu. Spirina, G.V. Alekseev. - St. Petersburg: University under MPA EurAsEC, 2019. - 189 p.
21. Vitashevskaya V. Yu. Brief overview of the Russian market of functional (enriched) products / V. Yu. Vitashevskaya // RUSSIAN FOODS&DRINKS MARKET MAGAZINE. — 2018. — No. 2. — PP. 61-65.
22. Technology of functional food products: учеб. allowance for universities / under the municipality. ed. L. V. Donchenko. — 2nd ed., ex. and the ball. — M. : Izdatelstvo Yurayt, 2018. — 176 p. — (Series: University of Russia).
23. Rozhina N. V. Development of production of functional food products / N. V. Rozhina. URL: <http://www.milkbrunch.ru/publ/view/270.html>.
24. Shenderov B. A. Status and perspectives of the development of functional nutrition in Russia / B. A. Shenderov // Gastroportal Segodnya. -2019. - No. 9.- PP. 24-28.

25. Vitashevskaya V. Yu. Brief overview of the Russian market of functional (enriched) products / V. Yu. Vitashevskaya // RUSSIAN FOODS&DRINKS MARKET MAGAZINE. - 2014.- No. 2. - PP. 61-65.

26. Basis of state policy in the area of healthy nutrition of the Russian Federation for the period until 2020: Government Decree of the Russian Federation No. 1873 dated October 25, 2010.

27. Norms of physiological needs in energy and food substances for different groups of the population of the Russian Federation: methodical recommendations. MR 2.3.1.2432-08 - Moscow: Ministry of Health of the Russian Federation. - 2018. - 41 p.

28. Gosudarstvennaya programma razvitiya za zvezdahannosti Respublika Kazakhstan na 2020 - 2025 gody. Utverzhdena postonaliem Pravitelstava Respublika Kazakhstan ot "26" December 2019 goda No. 982, Astana.2019-79p

29. A.Sh. Iklasova, Z.B. Sakipova, E.N. Bekbolatova, D.B. Zaurenbekova Analysis of the Kazakh market of specialized food products with pectin content Vestnik KazNMU, 2019, No. 1, PP. 469-472.

30. Shirotskaya A.S. State regulation of investment attractiveness of agricultural industry in the Republic of Kazakhstan // Economic review. 2020. No. 3 (4). PP. 36-43.

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ҚАЗАҚСТАН РЕСПУБЛИКАСЫНДА ЖӘНЕ ШЕТЕЛДЕ ФУНКЦИОНАЛДЫ ТАМАҚ ӨНІМДЕРІ ИНДУСТРИЯСЫН ДАМУДЫҢ ҚАЗІРГІ ЗАМАНҒЫ ҮРДІСТЕРІ

Аңдатпа

Адамзат қоғамының дамуының қазіргі кезеңі бір жағынан ғылымның, техниканың және технологияның керемет жетістіктерімен, екінші жағынан әлемдегі экологиялық жағдайдың күрт нашарлауымен, жүйке – эмоционалды жүктемелердің жоғарылауымен, уақыттың үнемі жетіспеушілігімен, ақпараттың өсуімен, өмір мен тамақтанудың сипаты мен санатының өзгеруімен сипатталады. Қазіргі уақытта тамақтану тәсілі адамның денсаулығына, оның жұмысына, сыртқы әсерлердің барлық түрлеріне қарсы тұру қабілетіне және сайып келгенде, өмір сүру ұзақтығы мен сапасын анықтайтын маңызды фактор екені анық.

Зерттелген деректерді талдау функционалды тағамдар дұрыс тамақтану тұжырымдамасында маңызды рөл атқарады деген қорытындыға келді. Азық-түлік пен құнарлатын қоспаларға сұраныстың артуы нарықтың өсуіне ықпал етеді деп күтілуде.

Өндіруші елдер бойынша мамандандырылған тіркелген тамақ өнімдерін талдау нәтижелері көрсетілген. Жеткізу бойынша жетекші елдерге-Жапония, АҚШ, Ресей және Германия жатады. Отандық өнімдердің үлесі анықталды, бұл біздің республикамыздағы мамандандырылған тамақ өнімдерінің ассортиментінің құрылымында қандай формалар басым екенін анықтауға мүмкіндік берді.

Кілт сөздер: тамақтану, азық-түлік базасы, функционалды тағамдар, тағамдық қоспалар, қоректік заттар

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СОВРЕМЕННЫЕ ТЕНДЕНЦИИ РАЗВИТИЯ ИНДУСТРИИ ФУНКЦИОНАЛЬНЫХ ПРОДУКТОВ ПИТАНИЯ В РЕСПУБЛИКЕ КАЗАХСТАН И ЗА РУБЕЖОМ

Аннотация

Современный этап развития человеческого общества характеризуется с одной стороны выдающимися достижениями науки, техники и технологии, а с другой – резким ухудшением экологической ситуации в мире, возрастанием нервно-эмоциональных нагрузок, постоянным дефицитом времени, ростом информации, изменениями характера и ритма жизни и питания. В настоящее время очевидно, что образ питания является важнейшим фактором, влияющим на здоровье человека, его работоспособность, умение противостоять всем видам внешних воздействий и, в конечном итоге, определяющим продолжительность и качество жизни.

Анализ исследованных данных позволил сделать вывод о том, что функциональные продукты питания играют важную роль в концепции здорового питания. Ожидается, что растущий спрос на пищевые и обогащающие пищевые добавки будет стимулировать рост рынка.

Показаны результаты анализа зарегистрированных специализированных пищевых продуктов по странам производителям. Лидирующими странами по поставкам являются Япония, США, Россия и Германия. Определена доля отечественных продуктов, которая позволила установить, какие формы преобладают в структуре ассортимента специализированных пищевых продуктов в нашей республике.

Ключевые слова: питание, продовольственная база, функциональные продукты питания, пищевые добавки, питательные вещества.

МРНТИ 68.35.71

DOI <https://doi.org/10.37884/4-2023/30>

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ИЗУЧЕНИЕ БИОЛОГИЧЕСКОЙ И ПИЩЕВОЙ ЦЕННОСТИ СУХОФРУКТОВ ИЗ СОРТОВ ВИНОГРАДА, ПРОИЗРАСТАЮЩЕГО НА ЮГЕ КАЗАХСТАНА

Аннотация

Сухофрукты, полученные из винограда, благодаря сочетанию высокой питательной ценности и приятного вкуса считаются полезным продуктом питания. Изучение биологической и пищевой ценности сушеного винограда из сортов, произрастающих на юге Казахстана, проводилось на базе НИЛ «Проблемы АПК и ЭР» ЮКУ им.М. Ауэзова. Экспериментальная сушка винограда проводилась на инфракрасной сушильной установке ШС-80 по экологической современной технологии без применения химических реагентов на этапе предварительной обработки. В данной работе определены технологические параметры сушки (изменение массы сырья, время и продуктивность сушки) для четырех сортов винограда. В образцах сушеного винограда содержится достаточное количество сахарозы (3,38 и 5,17), что характерно для сортов винограда из южной области. По общему содержанию полифенолов образцы темных сортов винограда (Кишмиш, Мерседес, Тайфи розовый) показали хорошие значения - в пределах 220,5-309,1 мг ГК/100 г. Тогда как в белом сорте винограда было обнаружено наименьшее количество 110,0 мг ГК/100 г. Также в опытных образцах отмечено высокое содержание калия (от 34% до 39%), кальция (в среднем 2,66-3,53%) и фосфора (2,92-3,88). Потребители и заинтересованные стороны могут получить выгоду от производства и реализации предлагаемых сушеных продуктов, как региональные бренды Казахстана или продукция с географическим указанием (ГУ).

Ключевые слова: виноград, южные сорта, сушка плодов, инфракрасная, пищевая ценность, сахароза, полифенолы, минеральные вещества

Введение

Сушеные ягоды и фрукты, включая сушеный виноград в виде кишмиша и изюма, отличаются как содержанием ценных питательных веществ, так и приятным сладким вкусом. Кишмиш, сухой изюм, входящий в ежедневный рацион, содержит необходимые питательные вещества, растворимую и нерастворимую клетчатку и биологически активные соединения, укрепляющие здоровье. Такое сочетание питательной ценности и приятного вкуса является причиной того, что сушеный виноград на протяжении тысячелетий считался полезным