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ANALYSIS OF THE MODERN STATE OF SPORT NUTRITION DEVELOPMENT IN THE WORLD AND UKRAINE

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ABSTRACT

Today, such a segment of the market as sports nutrition (SN) is dynamically developing due to the active growth of interest in sports among the population (the average annual growth of the global SN market in the next five years will be from 8.1% to 11.0%), which is why the analysis the current state of SN development in the world and Ukraine is a pressing issue. There are 62.2 million citizens in Europe today, including 1.2 million Ukrainians. Currently, the global SN market is actively developing and valued at more than \$ 10 billion, and domestic at \$ 90 million. US dollars. Currently, a pharmacy network of online stores "Med-magazin.ua" Your Health and Beauty "is being developed in Ukraine, which together with preventive products offers SN. In the assortment of the network the dependency is established: foreign brands predominate - Weider (USA / Germany, 14,8%), Kevin Levrone (Poland, 13,8%), Optimum Nutrition (USA, 7,6%). Unfortunately, only 10.0% of the analysed products are manufactured in Ukraine (Levobol, Fitness Factor). The majority of SN is dry powder mixtures (65%); the predominant weight of SN is 0.500 kg (18%); dominated by taste: vanilla (17%), chocolate and strawberries (12% each); by designation proteins (62%) and fat burners (19%) are preferred. Currently, many scientists are paying close attention to the problems of analysing the feasibility and physiological importance of using SN products in the diets of both athletes and consumers seeking to lead an active, energetic and healthy lifestyle, so that monitoring of SN status in the world and in different countries is a pressing issue today.

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Introduction. Sport nutrition (SN) – represents dietary supplements and food supplements consisting of complexes of carbohydrates and proteins, vitamins, minerals, micro- and macronutrients, as well as plant extracts, produced mainly for people who lead an active lifestyle and exercise [1]. The intake of SN is aimed at improving sports performance, increasing strength and endurance, enhancing health, increasing muscle volume, normalizing metabolism, achieving optimal body weight, and

overall increasing life quality and expectancy [2,3]. Unlike regular foods that can be digested for hours, sports supplements require minimal time and effort to digest. SN products belong to the category of dietary supplements, their proper use is only a supplement to the basic diet, which consists of ordinary foods, but not its complete replacement. Many dietary supplements from the range of SN are used for the prevention of diseases - products for joints and ligaments [3,4]. They can also be a supplement to the diet, of general non-sports people [5].

Materials and methods. The subject of the study is the analysis of the range of SN that were on the market in the world, as well as in Ukraine in the pharmacy network "Your Health and Beauty" online store "Med-magazin.ua" in 2018-2019; data from specialized sources, Internet sites. Object of research: sports nutrition market in the world and Ukraine, in particular the online store "Med-magazin.ua" and the pharmacy network "Your Health and Beauty". The study used the following methods: system analysis, comparison, statistical, graphical.

Results. Along with the growth of the market for fitness and sports services, its actual satellite - the SN market - is also actively developing [5, 6]. According to research companies, the average annual growth of the global SN market in the next five years will be from 8.1% to 11.0%, which in absolute numbers can reach \$ 90 billion worldwide [7].

Stages of formation and development of the world market of SN are presented in table 1. [2].

Table 1. Stages of formation and development of the world market of SN are presented in table.

Stages	Years of development	Achievements relative to SN
I	1930s	The first studies of SN
II	1965	At the University of Florida, a team of scientists had developed a sports drink for the school football team
III	1970s	Research centres have opened to study athletes training and their nutritional needs
IV	1980s	They are considered the date of origin of the SN industry
V	1990 - present	Formation and development of SNs that are developed and manufactured based on scientific research in various fields

According to an international report from the European Health & Fitness Market, it is estimated that 62.2 million citizens are currently engaged in fitness in Europe, including 1.2 million Ukrainians [7]. Total revenues from fitness clubs amounted to EUR 26.6 billion (+3.8% in constant currency). The number of members increased by 3.2% to 59,055. Currently, the top 30 fitness club operators have 14.1 million members, amounting to 23.5% [7]. With a 5.3% increase in membership to 10.6 million, Germany has strengthened its position as the country with the highest membership levels followed by the UK (9.7 million), France (5.7 million), Italy (5.3 million) and Spain (5.2 million) [7].

Currently, the global SN market is actively developing and valued at more than \$ 10 billion. USA [7]. Research by experts of the Ukrainian Information and Analysis Platform FitnessConnectUA shows that in 2019, fitness consumers are more than 1 million people or 2.9% of Ukraine's population [8]. The annual turnover of the fitness services market of Ukraine is approximately USD 201.8 million. USA. In the near future, according to experts, these figures will increase. We support the opinion of the experts of the FitnessConnectUA platform who believe that the reference point for the development of the fitness and sports industry of Ukraine is the Republic of Poland. It should be noted that in 2016, the coverage of such services in this country was 7.2% of the population, and in 2019 - 7.9%. In comparison, a similar average European indicator is 10.3% [9].

Discussion. At present, there are tens of thousands of SN items under analysis in the sphere of circulation, and their nomenclature is constantly increasing every day, making it impossible to establish an exact figure [10]. SN classification is a tool of generalizing and ordering them, as well as a major action for further scientific research in the creation of new products [10]. Therefore, the issue of unified SN classification is relevant [11]. In the European countries, according to the recommendation of the Scientific Committee on Food of the European Commission of 2001, all foods for athletes are divided into 4 categories:

- category A - carbohydrate-rich energy nutrition products;
- category B - hydrocarbon electrolyte solutions;
- category C - proteins and protein components;
- category D - dietary supplements (essential nutrients and other food components) [12].

It should be noted that in Ukraine there is no unified classification of SN, which makes it impossible to assess the rationality of the range of products, compliance with consumer demand and forecasting development. Most scientists use the classification, initiated by prof. E.S. Tokaev - the basis is the division of products into 4 groups according to their purpose: drinks, products of a given chemical composition, etc. Most often SN is grouped by purpose (for weight adjustment, muscle mass development, acceleration of the body's recovery processes, protection of joints and ligaments, regulation of water-salt metabolism, etc.) or by composition (protein, protein-carbohydrate, hydrocarbon-mineral, vitamin-mineral, biologically active additives) [11].

In Ukraine, along with the increase in the number of pharmacies, the range is being constantly expanded, and supplemented by new groups and types of goods [13]. A considerable number of them belong to the category under the conditional name "goods that pharmacy establishments and their structural subdivisions have the right to buy and sell " (Order of the Ministry of Health of Ukraine dated 23.11.2015 No. 764 «On Amendments to the List of Goods Authorized to Purchase and Sell by Pharmacy Establishments and Their Structural Units »). According to which pharmacies and their structural units have the right to sell "Functional Foods, Foods for Special Dietary Use (Including Baby Foods, Nutrition for Athletes and Seniors)" [14]. Previously, this group occupied only 1-2% from the total turnover of a pharmacy, but now its percentage is constantly growing and is about 10–12%. Despite the active growth of the domestic market, the main consumer of SN is professional athletes, and it is distributed through special trading networks [3, 15].

We have analysed the current state of SN circulation on the example of a network of pharmacy shops "Med-magazin.ua" Your Health and Beauty", which has a wide range of goods (including SN) that may be needed to support a healthy lifestyle. [16]. In our opinion, the implementation of SN in the pharmacy chain stores is advisable, since pharmaceutical specialists are able to provide the correct recommendations for the use of SN for the prevention of many diseases and as a supplement to the diet. At present, such networks operate in Kyiv (13), Kharkiv (4), Odessa (1), and Brovary (1). These goods can be ordered through the Med-magazin.ua online store. On the platform of the pharmacy network «« Med-magazin.ua »Your health and beauty» (as of 11/15/2019) in the interactive "Thematic sections" section "For sports and active recreation" offers a category - SN, where it is possible to place an order for a SN in 6 parameters: price (from 12-00 to 3913-00 UAH); weight (45 offers); manufacturer (20 manufacturers); taste (54 offers); release form [15]. We emphasize that it is possible to order SN through the online store "Med-magazin.ua", and it is possible to make a purchase only in pharmacies "Med-magazin.ua" Your health and beauty ".

In recent years, the domestic market of Ukraine is very saturated with goods for athletes and SN. Both imported and domestic analysed products of different manufacturers are available on the market [16]. A retrospective analysis of the countries producing the range of SN products distributed in the pharmacy network "Your Health and Beauty" in the online store "Med-magazin.ua" allowed us establishing that the vast majority of goods are imported [19]. In Ukraine, only 10.0% (2 companies: Levobol and Fitness Factor) are produced. The analysis shows that the bulk of this product group is produced by foreign producers 90.0% (18 companies) in countries such as: USA (75.0%), Poland (10.0%) and USA / Germany (5.0%) (Fig. 1).

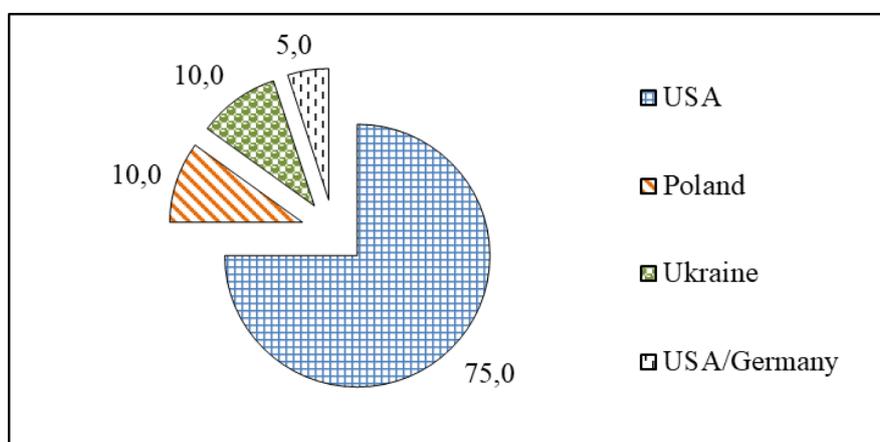


Fig. 1. Analysis of the range of sports nutrition by countries

At the time of the analysis, there are 20 SN manufacturers present in sales, with predominant (57.1%): Weider (USA / Germany, 14.8%), Kevin Levrone (Poland, 13.85%), Optimum Nutrition (USA, 7.6%), Universal Nutrition (US, 7.1%), BioTech (US, 7.1%), Dymatize (US, 6.7%). Fewer (42.9%) companies are such as: Levobol (Ukraine), Scitec Nutrition (USA), Fitness Factor (USA) by 0.5% accordingly (Fig. 2).

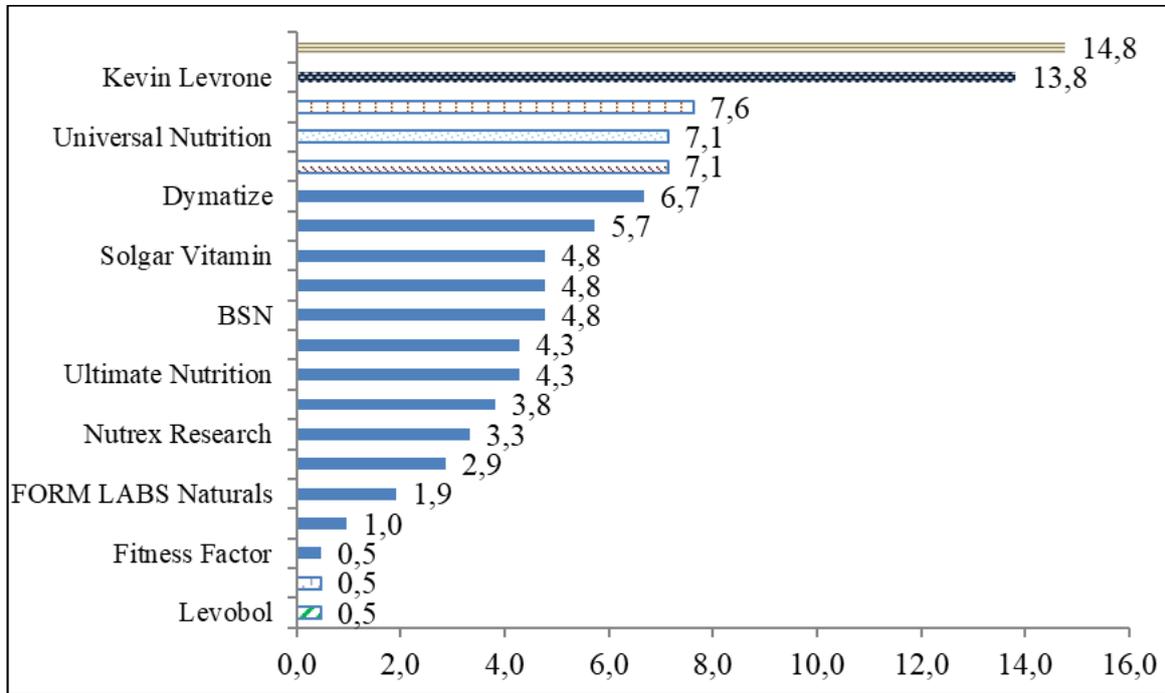


Fig. 2. Ranking of the range of sports nutrition by manufacturers

The next stage of our study was to analyse the structure of the assortment of the study group, which showed that SN are available in 5 forms (Fig. 3). Preference is given to solid forms (96%), which are the absolute leaders, respectively, liquid forms make only 4% [17]. Among the solid dosage forms, the leaders are powders (dry mixtures, 65.0%), capsules occupy the middle position (21.0%), the least present are tablets (6.0%) and bars (4%). Powders and capsules have been found to be the most attractive forms for the use of SN [17].

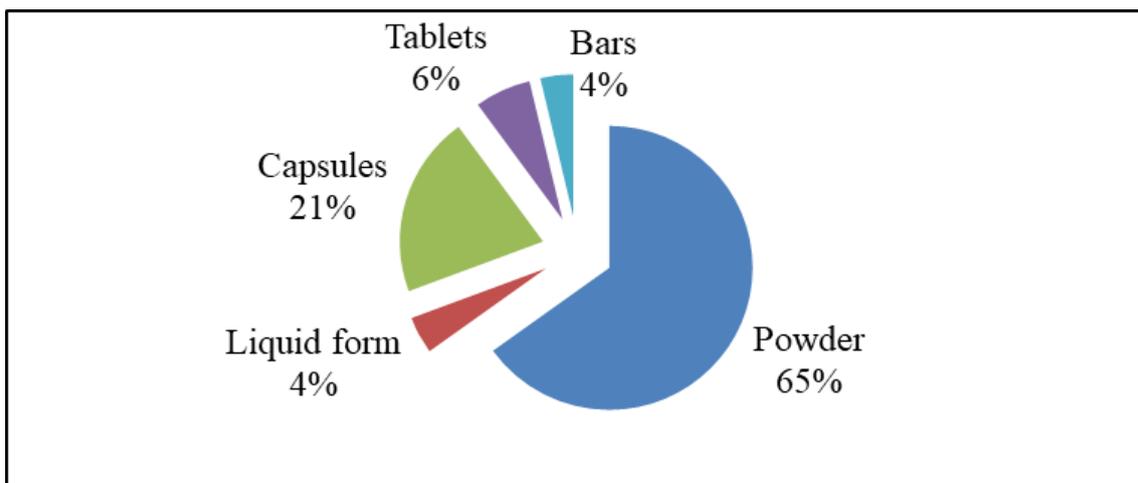


Fig. 3. Analysis of sports nutrition by release forms

As a result of the analysis of solid forms of SN by weight, 45 proposals were found. The predominant weight of SN is 0.500 kg, which is 18.8% of the total (Table. 2).

Table 2. Analysis of proposals of solid forms of SN by weight

Weight (kg, g)	Quantity (packs)	% of total	Weight (kg, g)	Quantity, (pcs.)	% of total	Weight (kg, g)	Quantity (packs)	% of total
1,800	6	4.5	1,000	7	5.3	1,080	1	0.8
0,400	2	1.5	0,908	1	0.8	0,360	4	3.0
0,907	4	3.0	5,400	1	0.8	5,500	1	0.8
1,814	3	2.3	0,435	3	2.3	0,080	3	2.3
2,270	11	8.3	4,695	1	0.8	7,250	1	0.8
4,500	1	0.8	0,3	5	3.8	0,045	1	0.8
0,500	25	18,8	4,540	3	2.3	0,303	1	0.8
2,390	1	0.8	0,892	1	0.8	0,100	2	1.5
0,900	10	7.5	2,347	1	0.8	0,525	1	0.8
1,818	1	0.8	0,215	1	0.8	0,03	1	0.8
2,300	1	0.8	0,250	2	1.5	0,200	1	0.8
1,320	1	0.8	5,040	2	1.5	0,025	1	0.8
2,273	1	0.8	0,750	4	3.0	0,060	1	0.8
2,722	2	1.5	2,336	2	1.5	2,268	1	0.8
2,200	3	2.3	6,8	6	4.5	0,540	1	0.8
								Z = 100%

According to the results of the analysis of the *volume* of liquid SN the advantage of 500 ml (66.7%) SN has been established, namely: L-Carnitine + Chrome Pear - apple Fat Burner BioTech 500 ml (USA); Thermo drine liquid Grapefruit fat burner BioTech 500 ml (USA) et al.

Analysis of the taste of SN has revealed that there are currently 54 options. Leading positions occupy such flavours of SN as: vanilla (17,1% share or 20 pieces on sale); chocolate and strawberries (equal in value - 14 pcs, 12,0%%).

The results of the analysis on the distribution of SN by action on the platform "Med-magazin.ua" Your health and beauty " has found that predominate (62.7%) - proteins (42.9% - Casein Protein Vanilla Weider 500 g, USA/Germany)) and fat burners (19.8% - L - carnitine Xtreme Dymatize 60 caps, USA) (Fig. 4).

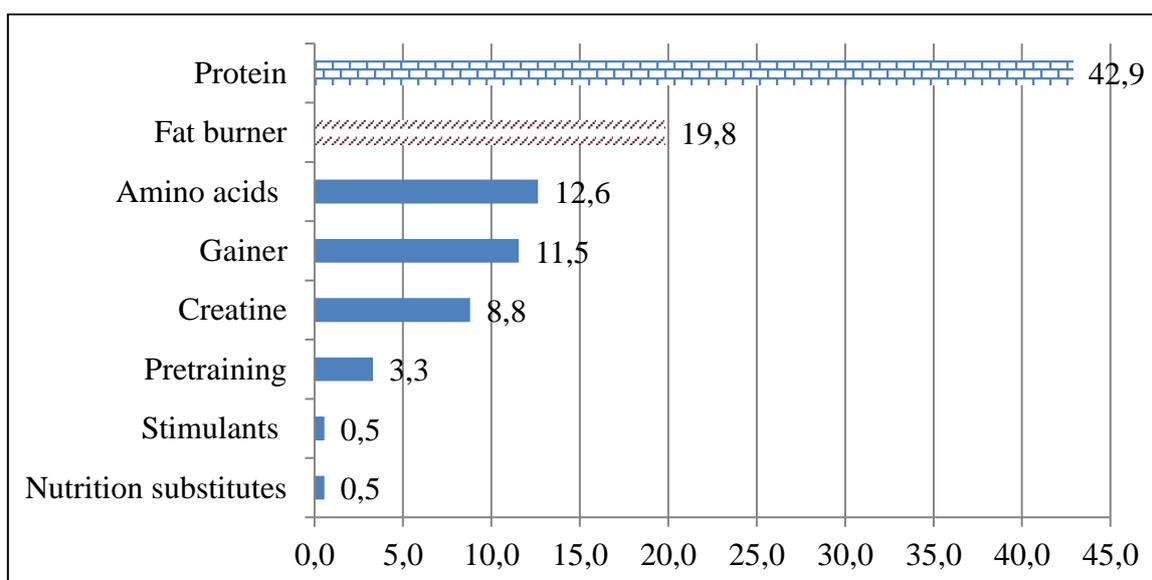


Fig. 4. Analysis of the distribution of sports nutrition by action

The conducted researches allow confirming the still high potentials of further expansion in the field of SN production both in Ukraine and abroad [9, 18].

Conclusions. The main areas of SN application include the influence on improving the life of a person engaged in sports and increasing the life quality and expectancy. In the 30th years of the twentieth century, the first studies of SN were conducted. The average annual growth of the global SN market in the next five years will be from 8.1% to 11.0%. The range of SN that is in circulation in the online store "Med-magazin.ua" of the pharmacy network "Your Health and Beauty" (as of 20.11.2019) has been researched. For sale there are 20 manufacturers, most of them imported. The necessity of import substitution has been proved. In Ukraine, only 10.0% of the analyzed products (2 companies: Levobol, Fitness Factor) are manufactured, and 90.0% are imported (18 companies). The bulk of this product group is produced by foreign countries - the USA (75.0%), Poland (10.0%) and the USA / Germany (5.0%). It has been researched that the majority of imported SN- - are products of the USA and Europe: Weider (USA / Germany, 14,8%), Kevin Levrone (Poland, 13,8%). Least items on sale are: Levobol (Ukraine), Scitec Nutrition (USA), Fitness Factor (USA) at 0.5% respectively. The analysis of the assortment has made it possible to determine that SN are available in 5 forms. Vast majority is in solid forms (96%) and liquid is only 4%. The leader is a solid aggregate form - powders 65.0%. SN in capsules make 21.0%, tablets 6.0% and bars 4%. Analysis by weight (45 offers) showed that solid SN forms mostly have a weight of 0.500 kg (18% of the range). The leading positions (41.1% share) occupy the flavours of SN: vanilla (17.1%); chocolate and strawberries (equal to 12.0% respectively). The distribution of SN by designation had established a clear superiority of protein (62.7%).

REFERENCES

1. Aranson, M. V, Portuguese C. H. (2013). "Sports nutrition: state of the art and current problems", *Biomedical problems of sports*, 4, 33-37.
2. Gorchakova, N. A, Gudivok, Ya. S, Gunina, L. M. (2010). *Pharmacology of sports*. Kiev: Olympic literature.
3. Sabanchuk, V. B, Nerutsa, L. V. (2016). Contemporary Problems of Forming the Sports Nutrition Market in Ukraine: *Proceedings of the IV All-Ukrainian Conference of Students, Graduate Students and Young Scientists "Modern Problems of Food Industry Development: Theory and Practice"*.
4. Levchenko, O. K. (2010). How to eat before the start? *Trading business*, 8, 46-49.
5. Nikityuk, D. B. Novoshkanov, A. L, Abrosimova, S. V. (2012). The mineral composition of carbohydrate-electrolyte drinks, vitamin-mineral complexes and biologically active 77 supplements for athletes. *Nutrition issues*, 81 (4), 71-76.
6. What does the internal cuisine of the sports nutrition market in the world and Ukraine look like? *Sports & Nutrition* (2019). Retrieved from http://project.liga.net/projects/sports_nutrition
7. Europe Active and Deloitte publish European Health & Fitness Market Report 2018. (2019). Retrieved from <https://www.europeactive.eu/blog/europeactive-and-deloitte-publish-european-health-fitness-market-report-2018>
8. Sports nutrition in Ukraine. GMID: Global Market Information Database (Euromonitor International) from 09/01/2016 (2019). Retrieved from <http://www.euromonitor.com/sports-nutrition-in-ukraine/report>
9. Market research of fitness services of Ukraine. Fitnessconnect. (2019). Retrieved from https://old.fitnessconnect.com.ua/plugins/content/pdf_embed/assets/viewer/pdfjs/web/viewer.html?file=%2Ffiles%2F2019.pdf
10. Prytul'ska, N. V, Antyushko, D. P, Motuzka, U. M. (2012). Current Trends in Sports Nutrition *Market Food Science and Technology*, 1 (18), 49-52.
11. Prytul'skaya, N., Khrobotenko, O., Bondarenko, E. (2011). On the problem of food classification for athletes. *Goods and markets*, 2, 112-121.
12. Scientific committee on food. *Report of the Scientific Committee on Food on the composition and specification of food intended to meet the expenditure of intense muscular effort, especially for sportsmen* (2001). Retrieved from https://ec.europa.eu/food/sites/food/files/safety/docs/sci-com_scf_out64_en.pdf.
13. Panfilova, H., et al. (2019). Scientific measurement of the current role of pharmacist in the paradigm of pharmaceutical care development. *Research Journal of Pharmacy and Technology*, 12 (2), 817-826.
14. On Amendments to the List of Goods Authorized to Purchase and Sell Pharmacy Establishments and Their Structural Units: Order of the Ministry of Health of Ukraine dated 23.11.2015 №. 764. <https://zakon.rada.gov.ua/laws/main/z1532-15>
15. Miklashevskaya, Yu., Khrobotenko, O. (2012). Legislative regulation of food production and circulation for athletes. *Goods and markets*, 2, 39-47.
16. Med-magazin.ua. Your health and beauty. (2020). Retrieved from <https://med-magazin.ua/ua/contacts/kharkov/#o32>
17. Pashchenko, V. G, Senogonov, L. I, Stanovikhin, A. U. (2010). Analysis of food assortment for athletes. *Food production technologies and equipment*, 6, 39-42.
18. Smith, A., Giffin, N. (2012). Sport Nutrition: report highlights. *Medicine & Science in Sports & Exercise*, 44 (1), 69-74.