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The Market for Dietary Supplements in Georgia: Trends of Development

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ABSTRACT

Background: The desire of individuals to live longer, be healthier, and have a higher quality of life has resulted in a rise in both the production and consumption of dietary supplements throughout the past 20 years. This trend has led to scientific interest since the basis for producing and effectively using supplements is based only on scientific research. The scientific studies increase public confidence in the potential effects of dietary supplements, which in turn affects consumer demand.

Objectives: This study set out to determine the proportion of items offered on the local market based on their composition and intended use, as well as their country of origin.

Methods: The register of the National Food Agency of Georgia was used as the primary information source. The secondary database has been elaborated by extracting data from the register: items, manufacturers, and business-operators information. Information was searched for all individual items (2381 items) to get the target data. The accomplished secondary database was processed statistically using Excel tools.

Results: From May 25, 2023, to January 13, 2024, the National Food Agency registered 2381 items of dietary supplements from 44 countries. The vast majority (up to 99%) of the product range is imported. The five leading countries in the product range are the United Kingdom, the USA, Poland, Germany, and Italy. By the content of the composition, there were the following groups distinguished: vitamins, minerals, vitamins, and minerals in combination, herbal, amino acids, proteins, fatty acids, pre-and probiotics, enzymes, various biogenic compounds, and various combinations of the listed groups. Supplements of combined composition are presented in the most significant amount, followed by herbal supplements or supplements containing botanicals, and in third place are combined forms of vitamins and minerals. The segmentation of the supplements by their functional purpose showed the preeminence of the group for the human body's metabolic processes and energy. In terms of action on the function of individual systems, supplements affecting the function of the digestive system were in the leading position.

Conclusions: The study confirmed the meager rate of local production, which is noteworthy because dietary supplement manufacturing provides essential products for consumers, creates employment opportunities, and stimulates the country's economic progress. In terms of composition, the most significant part of the products presented on the market is combined. Regarding the possible risks of dietary supplements containing multiple ingredients, it is appropriate to develop measures to avoid them. By functional segmentation, most presented supplements justify their primary purpose - maintenance of physiological processes, which is confirmed by the high share of the groups as metabolism regulation, adaptogenic, energetic, and general wellness. It is essential to conduct consumer profile research to assess the representation of the local market trends of dietary supplements. In this regard, it is considerable to reveal the opinions of health professionals, consumers, and other interested experts who will contribute to the sustainable development of dietary supplements in Georgia.

Keywords: Dietary supplement; food supplement; nutrients.

BACKGROUND

The increase in the use of dietary supplements (DS) is a characteristic trend of the last decades, which is confirmed, on the one hand, by the market size and, on the other hand, by the progressively increasing indicators of the range of products available on the market.

Interest in DSs dates back to the 1970s, and in 2021, the global market size was estimated at USD 149.50 billion.[1-4] By 2028, the size is expected to reach USD 308 billion, and the annual growth rate will be 8.90% (Fig.1).[5-7]

The purpose of DS consumption by the population is to prevent diseases and maintain health and the body's physiological balance, a prerequisite for human well-being, healthy life, and beauty.

One of the common ways that consumers try to take care of their health is by consuming functional supplements such as Vitamins, Minerals, and Nutritional Supplements (VMS). The global market size for vitamins and minerals is estimated at USD 19.5 billion, and the world market for functional products reaches USD 530 billion.[8]

The European DS market size was estimated at USD 40.7 billion in 2023. According to experts' forecasts, the annual growth rate is expected to be 7% in 2024-2030. Key factors contributing to the growth of the European nutritional supplements market include increasing public health awareness, access to public healthcare, growth of the aging population, focus on preventive healthcare, and

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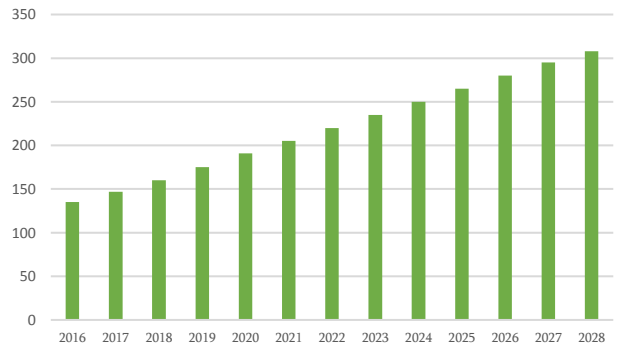
personalized nutrition. In addition, EU consumers are well-informed about healthy eating and physical well-being. It should also be noted that there is a high degree of innovation in the European food supplement industry, driven by technological progress and changes in consumer behavior. Furthermore, nanoencapsulation and microencapsulation technologies have become quite popular recently. Wider use of encapsulation technologies in food production is expected to facilitate entry into new markets.[9]

FIGURE 1. The dynamics of changes in the size of the global dietary supplements market from 2016 to 2028 (US$ billion)



Source: Statista 2024. Total dietary supplements market size worldwide from 2016 to 2028 https://www.statista.com/statistics/828514/total-dietary-supplements-market-size-globally/ (accessed on 31.01.2024)

Several factors are associated with the increasing trend in DS consumption, among which are:

- There is an increase in life expectancy and, therefore, the share of the elderly population, a global phenomenon in developed and developing countries.[10] The aging population and the increase in healthcare costs create development opportunities for producing functional foods and DSs. It is clear that society's concern for well-being, physical capabilities, and quality of life has increased over the past few decades and is expected to continue to grow;[11]
- The preference to use natural substances and rejection of so-called chemicals;
- The high cost of drugs and the suspicion among the population that pharmaceutical companies ignore natural products because they cannot be protected by patents;[12]
- Patients with chronic diseases, with the desire to "try something" for treatment, often intake more supplements than others.[13-18]

The range of DSs is distinguished by diversity in composition and functional purpose. However, the individual composition is changing over time. For example, in recent years, multivitamins have relatively decreased, supplements containing fish oil have increased, and supplements containing vitamin D have increased approximately four times (up to 20%).[19] DSs are used in nearly one-third of the pediatric population, and pediatric supplements sometimes contain more than the Recommended Dietary Intake (RDI) of the ingredient.[20,21]

Due to significant differences in socioeconomic factors between countries, the statistical indicators of DS usage are heterogeneous and are mainly influenced by demographic indicators;[22] i.e., in 2019, multivitamins were the top-selling products in the USA, with sales of almost 120 million units.[2] The top-selling are vitamins and minerals, proteins, enzymes, fatty acids, etc.[23,24]

DSs can be purchased through various distribution channels, including pharmacies, supermarkets, hypermarkets, independent retail outlets, etc. In 2021, due to more incredible popularity in the offline sector, the highest - about 33.9% of DS sales came from supermarkets and hypermarkets. The offline sector became incredibly dominant, accounting for 81.0% of total sales, which can be explained by easy accessibility.[4] The Internet, mobile communications, and social media have created a new technology-based communication, the so-called Digital (electronic) channels consumers use to get information about DSs.[3]

Despite the many benefits, sometimes DS usage is associated with certain risks and challenges. The most common issues are as follows: the complex composition of a large part of the products, the periodic change of ingredients, and the difficulty of dosing.[5,25] Moreover, it sometimes takes a long time for the adverse event reporting system and reporting to detect public health problems caused by product misuse. Issues of monitoring and evaluation of DSs are also a challenge.

The safety and efficacy of DSs are relatively less risky in countries where DSs are regulated like drugs than where they are predominantly covered by food framework regulations.[26] Therefore, security management strategies must be developed to reduce risks related to DS consumption. There is also an opinion that it is only advisable to use DSs with a prescription.[27]

Among the most severe problems raised regarding DS's safety are the counterfeiting of products, the possible content of illegal and dangerous ingredients, and the unproven effectiveness of the product. The absence of toxic pollutants and/or pesticides and heavy metals in the ingredients and finished products and compliance with the label of the qualitative and quantitative content of the constituent ingredients are crucial for the DS's safety. In this regard, the three most problematic categories of DSs in the USA stand out, namely sexual enhancement, weight loss, and athletic performance/bodybuilding supplements.[27-29]

Identification and quality assurance/control of the constituent ingredients are critical to the effectiveness and safety of DSs, requiring the use of appropriate analytical

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methods and the development of reference standards. In addition, it is relevant to conduct clinical trials.[29] Among the risks associated with using DSs are the interaction of product ingredients with other substances and harmful effects on the body due to product contamination. The USA Food and Drug Administration estimates that some of the 50,000 adverse events each year are related to the use of DSs. However, this figure is believed to be less than the real one since probably only 1% of cases are reported.[30,31] Despite the triviality of some of the reports, life-threatening complications are not excluded, such as, for example, Ginkgo biloba-related subarachnoid hemorrhage or liver failure requiring transplantation.[32,33] Most DSs containing vitamins and minerals have a U-shaped dose-benefit curve, indicating that the risk of adverse events is dose-dependent.[20]

DS toxicity and complications are also common in hospital use, where their usage by hospitalized patients is often unknown by physicians. It happens that herbal supplements may cause kidney disease.[34,35]

With the increasing use of DSs, reports of hepatotoxicity (regardless of recommended doses) are increasing.[36-38] Acute hepatitis-like toxicity has been reported with green tea extract and other simple ingredients in herbal products. The highest incidence of liver damage is relevant to the intaking of multicomponent DSs, which sometimes contain as many as 30-40 ingredients, making it difficult or impossible to detect a specific cause of toxicity.[39]

Based on the above review, this study aimed to determine the shares of DSs represented on the local market by the composition and functional purpose and the share by their origin countries.

METHODS

The database of the National Food Agency of Georgia was used as the primary source of information for the research, which is formed according to Resolution No. 360 of the Government of Georgia of July 12, 2022, through the Technical Regulation - Regarding Approval of Food (Food) Supplements.[40,41] Since enrollment of the first item in this register - from May 2023 to January 13, 2024- 2,381 items of food supplements were registered.[42]

This study used data on item names, manufacturers, and business operators from the primary database to elaborate the secondary database. Specific information was searched for each supplement (2381 items) to get the target data, and the electronic resources of relevant manufacturers, importers, and business operators were attentively studied. In order to enhance the accuracy and reliability of the secondary database, alternative sources of information were mainly used. The obtained data were processed and grouped by DSs composition and functional purpose of their usage. The constructed data were processed statistically via MS Excel tools.

RESULTS

According to the secondary database formed under this study, from May 2023 to January 13, 2024, 2381 items of DSs from 44 countries were submitted for consumption in the local market. In order to illustrate the percentage share of countries producing DSs, the figure is presented in two parts. FIGURE 2 shows the percentage share of the first 22 countries in the percentage share ranking of 44 countries, and FIGURE 3 shows the percentage share of the 23rd to 44th countries.

FIGURE 2. The percentage share of the first 22 countries by the DS items

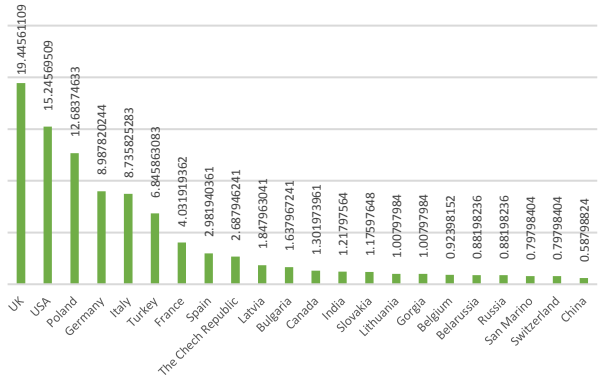
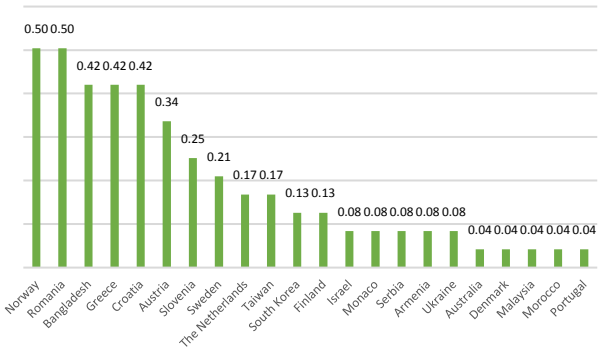


FIGURE 3. The percentage share of the first 22 countries by the DS items



As expected, the vast majority (up to 99%) of the DSs range is imported. The five leading countries in the product range are the United Kingdom, the USA, Poland, Germany, and Italy. Notably, the range of domestically produced DS products is only 1.01% (Fig.2).

By composition, the following groups were distinguished: vitamins, minerals, vitamins, and minerals in combination, herbal, amino acids, proteins, fatty acids, pre- and probiotics, enzymes, various biogenic compounds, and combinations of the listed groups. Mainly, DSs of combined composition are presented in the most significant amount, followed by herbal or supplements containing botanical Biological Active Substance (BAS), and in third place are combined forms of vitamins and minerals (Fig.4).

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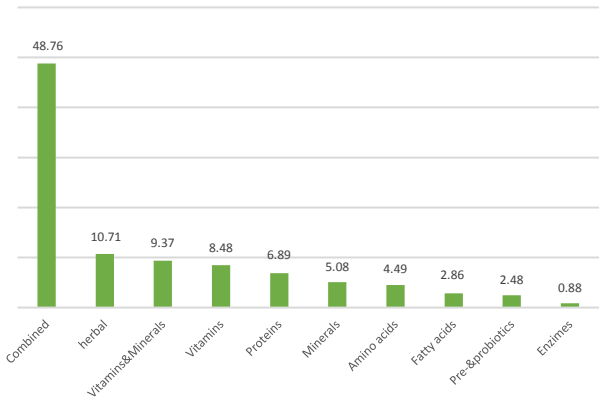
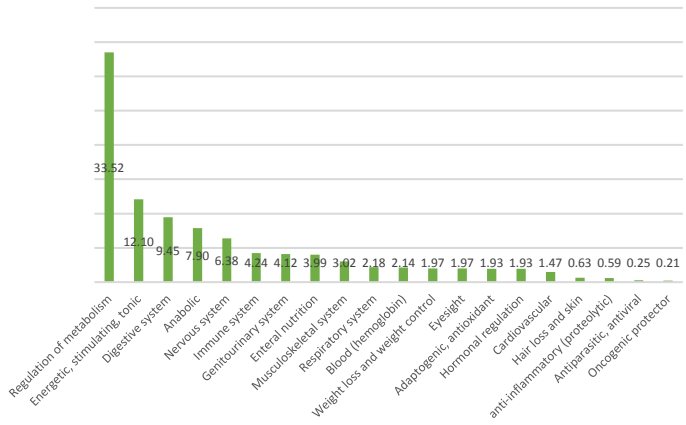
FIGURE 4. Segmentation of DSs by constituent groups



The segmentation of DSs according to functional purpose was also diverse (Fig.5). The principal shares of DSs by functional purpose are for the regulation of the body's metabolic processes and energy (respectively, 33.52% and 12.10%), the effect of which is targeted on poly-systemic functional normalization. In terms of action on improving particular system function, DSs affecting the function of the digestive system are in the leading position (9.45%).

FIGURE 5. DS segmentation by functional purposes



DISCUSSION

The research confirmed DS domestic production's low (1%) rate. This is noteworthy from the point of view that consumption of DSs, in addition to maintaining and improving human health, is also considerable from the economic point of view. As a multi-billion $ industry, this sector is a primary economic driver in the DS manufacturing countries, providing many high-paying jobs. For example, the DS industry in the USA employs 750,000 people and generates $5.75 billion in government taxes annually.[43,44] By developing the potential of DS manufacturing in Georgia, it is possible to reduce the import rate, create jobs, and promote economic development.

The segmentation by the content of DSs shows that the most significant parts presented on the market are combined, the ingredients of which can be vitamins, mineral substances, amino acids, proteins, fatty acids, enzymes, and various biogenic compounds. However, these forms are often specific to age, gender, physical condition, and activity level.

Regarding the possible risks related to DSs containing multiple ingredients, it is advisable to develop measures to avoid risks.

According to functional segmentation, most DSs presented on the market justify their primary purpose - maintenance of physiological processes. This is confirmed by the high share of such groups in the assortment purposed for metabolism regulation, adaptogens, energy, and general wellness.

CONCLUSIONS

It is reasonable to conduct user profile research to assess the whole picture of the local trends in DS consumption of DSs. In this regard, revealing the opinions of health professionals, consumers, and other interested specialists is substantial, thus contributing to the sustainable development of dietary supplements in Georgia.

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