



# Analysis of pharmaceutical market of dietary supplements with green tea leaves extract

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A – research concept and design; B – collection and/or assembly of data; C – data analysis and interpretation; D – writing the article;  
E – critical revision of the article; F – final approval of the article

**The aim of work** is to study the assortment of dietary supplements with green tea leaves extract on the modern pharmaceutical market to further search for ways to improve and optimize pharmaceutical supply.

**Materials and methods.** The assortment of dietary supplements with green tea leaves extract was studied basing on the search of dietary supplements in pharmacies of Ukraine in the internet resources. For study of assortment of dietary supplements, the following methods were used: marketing, statistical, logic and graphic.

**Results.** The assortment of dietary supplements with green tea leaves extract has been analyzed. The results showed that the leaders in the number of manufacturers in the analyzed group of dietary supplements are the United States, Ukraine, and Poland, their part is 61 %, 16 % and 8 %, respectively. In terms of assortment, the United States ranks first – 66 %. Dietary supplements are presented in 6 dosage forms, most of them are capsules (60 %). It was determined that monopreparations predominate in the pharmaceutical market and account for 77 %. The price segmentation of the market of dietary supplements with green tea leaves extract has been provided, the results showed that most of these are dietary supplements in the price range of 200–500 UAH. The study of the company structure made it possible to identify leaders among foreign companies; the top three companies included Now Foods (27 %), Swanson (20 %), Puritan's Pride (14 %).

**Conclusions.** There are 42 dietary supplements with green tea leaves extract at the beginning of 2022 in Ukraine. On the temporary pharmaceutical market of Ukraine 84 % of dietary supplements with green tea extract are presented by foreign manufacturers, mainly by monopreparations, in the form of capsules and in the price range from 200 to 500 UAH.

**Key words:** green tea, dietary supplements, analysis, pharmaceutical market, market research.

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## Аналіз фармацевтичного ринку дієтичних добавок з екстрактом листя зеленого чаю

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**Мета роботи** – аналіз асортименту дієтичних добавок з екстрактом листя зеленого чаю на сучасному фармацевтичному ринку України для дальшого пошуку шляхів удосконалення та оптимізації фармацевтичного забезпечення.

**Матеріали та методи.** Асортимент дієтичних добавок вивчали за інтернет-ресурсами з пошуком дієтичних добавок в аптеках України. Використані методи: маркетинговий, статистичний, логічний, графічний.

**Результати.** Проаналізували асортимент дієтичних добавок з екстрактом листя зеленого чаю. Результати: лідерами за кількістю фірм-виробників аналізованої групи товарів є США, Україна та Польща, їхня частка становить 61 %, 16 % і 8 % відповідно. За асортиментом перше місце посідає США – 66 %. Дієтичні добавки представлені 6 лікарськими формами, більшість із них – капсули (60 %). Визначили, що монопрепарати переважають на фармацевтичному ринку і становлять 77 %. Здійснили цінову сегментацію ринку дієтичних добавок з екстрактом листя зеленого чаю, результати показали, що здебільшого це дієтичні добавки в ціновому діапазоні 200–500 грн. Вивчення фірмової структури дало змогу виділити лідерів серед іноземних компаній: Now Foods (27 %), Swanson (20 %), Puritan's Pride (14 %).

**Висновки.** Станом на початок 2022 р. в Україні наявні 42 дієтичні добавки з екстрактом листя зеленого чаю. Нині на фармацевтичному ринку України 84 % дієтичних добавок з екстрактом листя зеленого чаю представлені іноземними виробниками (переважно монопрепаратами) у вигляді капсул та в ціновому інтервалі від 200 до 500 грн.

**Ключові слова:** зелений чай, дієтичні добавки, аналіз, фармацевтичний ринок, маркетингові дослідження.

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**Key words:** green tea, dietary supplements, analysis, pharmaceutical market, marketing study.

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## Анализ фармацевтического рынка диетических добавок с экстрактом листьев зеленого чая

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**Цель работы** – анализ ассортимента диетических добавок с экстрактом листьев зеленого чая на современном фармацевтическом рынке для дальнейшего поиска путей усовершенствования и оптимизации фармацевтического обеспечения.

**Материалы и методы.** Ассортимент диетических добавок изучали по интернет-ресурсам с поиском диетических добавок в аптеках Украины. Использовали следующие методы: маркетинговый, статистический, логический и графический.

**Результаты.** Проанализировали ассортимент диетических добавок с экстрактом листьев зеленого чая. Результаты показали, что лидерами по количеству фирм-производителей анализируемой группы товаров являются США, Украина и Польша, их доля составляет 61 %, 16 % и 8 % соответственно. По ассортименту первое место занимает США – 66 %. Диетические добавки представлены 6 лекарственными формами, большинство из них – капсулы (60 %). Определили, что монопрепараты преобладают на фармацевтическом рынке и составляют 77 %. Провели ценовую сегментацию рынка диетических добавок с экстрактом листьев зеленого чая, результаты показали, что большинство диетических добавок в ценовом диапазоне 200–500 грн. Изучение фирменной структуры позволило выделить лидеров среди иностранных компаний: Now Foods (27 %), Swanson (20 %), Puritan's Pride (14 %).

**Выводы.** По состоянию на начало 2022 г. в Украине – 42 диетические добавки с экстрактом листьев зеленого чая. На современном фармацевтическом рынке Украины 84 % диетических добавок с экстрактом листьев зеленого чая представлены иностранными производителями (преимущественно монопрепаратами) в виде капсул и в ценовом диапазоне от 200 до 500 грн.

**Ключевые слова:** зеленый чай, диетические добавки, анализ, фармацевтический рынок, маркетинговые исследования.

**Актуальные вопросы фармацевтической и медицинской науки и практики. 2022. Т. 15, № 1(38). С. 40–45**

Under the influence of negative environmental factors, daily physical and mental stress, accompanied by poor nutrition, poor supply with vital macro- and micronutrients, the body's redox balance shifts towards oxidative processes, causing the occurrence of an oxidative stress, which can disturb functions of different body systems as a result in the future, lead to the occurrence of pathologies [1]. An important role in supporting homeostasis is played by antioxidants of exogenous origin, the intake of which contributes to the normalization of balance [2].

Approximately 70 % of US adults use dietary supplements [3]. In Europe, the leaders in the consumption of dietary supplements are Italy, Russia, Germany, Great Britain and France. The Ukrainian market of dietary supplements in monetary terms in 2015 was estimated at 75.7 million euros with a tendency to reach 87.1 million euros in 2020 [4]. Today, there is a stable growth dynamics in demand and supply of dietary supplements with antioxidant activity [5]. The global antioxidants market size was valued at \$3,437.3 million in 2020, and is projected to reach \$7,376.4 million by 2031 [6]. Vitamins A, E, C are expected to have the highest sales among antioxidants, but this is more likely due to their vitamin properties than antioxidant ones. Among the drugs better known for their antioxidant properties, resveratrol, precursors of glutathione, selenium, carotenoids, coenzyme Q concentrates, and green tea extracts have the highest sales volumes [7].

Today, there are no green tea-based medicines in Ukrainian pharmacies, which, in our opinion, is due to the perception of green tea more as a food type than a medicine. However, the pharmaceutical market has a wide choice of dietary supplements with green tea that is used as antioxidants.

### Aim

The aim was to study the assortment of dietary supplements with green tea leaves extract on the modern pharmaceutical

market to further search for ways to improve and optimize pharmaceutical supply.

### Materials and methods

The object of the study was information about dietary supplements with green tea leaves extract on pharmaceutical market of Ukraine. The assortment of dietary supplements with green tea leaves extract was studied basing on the search of dietary supplements in pharmacies of Ukraine in the internet resources. For study of assortment of dietary supplements, the following methods were used: marketing, statistical, logic and graphic.

### Results

According to obtained results as shown in *Table 1*, there are 42 dietary supplements with green tea leaves extract at the beginning of 2022 in Ukraine.

Today, there are 16 % of Ukrainian and 84 % of foreign dietary supplements on Ukrainian pharmaceutical market of dietary supplements with green tea leaves extract (*Fig. 1*).

In addition, a part of mono- and combined preparations, equal 24 and 77 %, respectively, was established (*Fig. 2*). According to the results of the study, it is obvious that the number of mono-preparations is greater than that of the combined ones, which in turn is associated with the difficulties of technological production and the complexity of standardizing combined drugs.

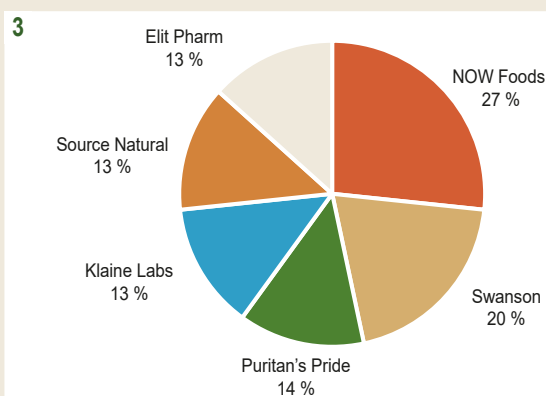
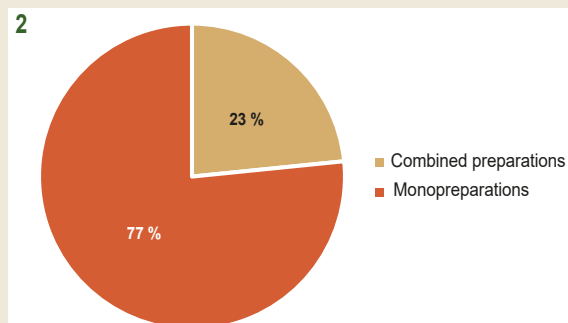
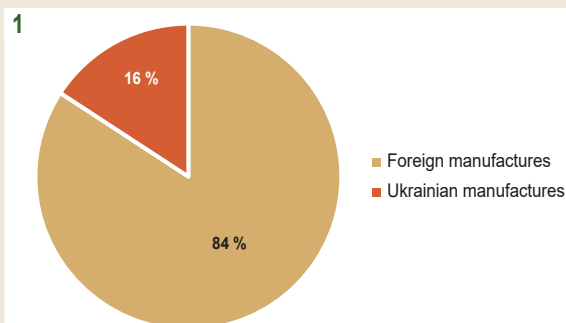
According to the results, it has been determined that the first position in the ranking of country-manufacturer by the number of companies is the USA with 61 %. The second position belongs to Ukraine – 16 %, and the third – to Poland (8 %). Analysis of the rating of country-manufacturer on the range of dietary supplements with green tea leaves extract by the number of assortment has showed that the first position is occupied by the USA (66 %), the second one belongs to Ukraine (15 %), and the third one – to Poland (6 %) (*Table 2*).

Table 1. Dietary supplements with green tea leaves extract

No.	Dietary supplements	Manufacturer	Country	Dosage form	Average price, UAH
1	Green Tea	Jarrow Formulas	USA	Capsules	274
2	EGCG	Now foods	USA	Capsules	287
3	Decaffeinated Mega Green Tea Extract	Life Extension,	USA	Capsules	850
4	Green Tea Phytosome	Thorne	USA	Capsules	702
5	Green Tea Extract	Zhou Nutrition	USA	Capsules	624
6	Advanced Inflammation	Klaire Labs,	USA	Capsules	1886
7	Green Tea Extract	Klaire Labs,	USA	Capsules	1409
8	Green Tea Extract	Source Naturals,	USA	Tablets	459
9	Extract of green tea	Elit-pharm,	Ukraine	Tablets	120
10	Green Tea	Pharmacom,	Ukraine	Tablets	50
11	Super Green Tea	Natures Answer,	USA	Drops	548
12	Green Tea Extract with EGCG+VIT C	Zenwise Health,	USA	Capsules	720
13	Green Tea Extract	Swanson	USA	Capsules	210
14	Green Tea Phytosome	Swanson	USA	Capsules	160
15	Green Tea Extract	Nosorog	USA	Capsules	95
16	Rodale Plus	Amway	USA	Tablets	690
17	Green Tea Fat Metabolizer	Irwin Naturals,	USA	Capsules	902
18	Green Tea	Gym Beam,	USA	Tablets	219
19	Green Tea	Olimp Nutrition,	Poland	Capsules	159
20	Extract of green tea	Osocor	Ukraine	Capsules	186
21	Amber with green tea extract	Primaflora,	Ukraine	Tablets	186
22	Green Tea	Aysri	India	Capsules	328
23	Green Tea	Ostrovit	Poland	Tablets	328
24	EGCG	LuckyVitamin,	USA	Tablets	258
25	Green Tea	IronFlex	USA	Tablets	258
26	Green Tea Leaf Extract	Evaluation Nutrition	USA	Tablets	355
27	Acai & Green Tea	Natrol	USA	Capsules	300
28	Green Tea Light Cleaning Complex	Euro Plus	Austria	Tea	600
29	Green Tea	ALL NUTRITION	USA	Capsules	380
30	Extract of green tea	Beurre	Ukraine	Drops	370
31	T-Lean Extreme	Now Food Sports	USA	Capsules	576
32	Extract of Green Tea	Stark Pharm	Ukraine	Tablets	685
33	Complex protection "Solar filter in capsules" with green tea extract	Fernblock	Spain	Capsules	759
34	Green tea	Swanson	USA	Capsules	180
35	Green tea	Fito Pharma	Vietnam	Capsules	155
36	Garcinia with green tea	Elit-pharm	Ukraine	Tablets	121
37	Green Tea Complex	GNC Herbal PLUS	USA	Capsules	470
38	Green Tea Extract Plus	Myvitamins,	UK	Capsules	384
39	Green Tea	Novofit	Ukraine	Gel	75
40	Green Tea	Bluebonnet Nutrition,	USA	Capsules	720
41	Cyto greens	Allmax Nutrition	Canada	Powder r	828
42	Green Tea Extract	Puritan`s Pride	USA	Capsules	400

**Table 2.** Ranking of country-manufacturer by number of companies producing dietary supplements with green tea leaves extract

No.	Country-manufacturer	By number of companies		By assortment	
		Absolute number of proposals	Relative number of proposals, %	Absolute number of proposals	Relative number of proposals, %
1	USA	23	61	31	66
2	Ukraine	6	16	7	15
3	Poland	3	8	3	6
4	India	1	3	1	2
5	UK	1	3	1	2
6	Canada	1	3	1	2
7	Austria	1	3	1	2
8	Spain	1	3	1	2
9	Vietnam	1	3	1	2
Sum		38	100	47	100

**Fig. 1.** Distribution diagram of foreign and Ukrainian manufacturers of dietary supplements with green tea leaves extract.**Fig. 2.** Distribution diagram of mono- and combined dietary supplements with green tea leaves extract.**Fig. 3.** Distribution chart of dietary supplements with green tea leaves extract of 6 leading companies.

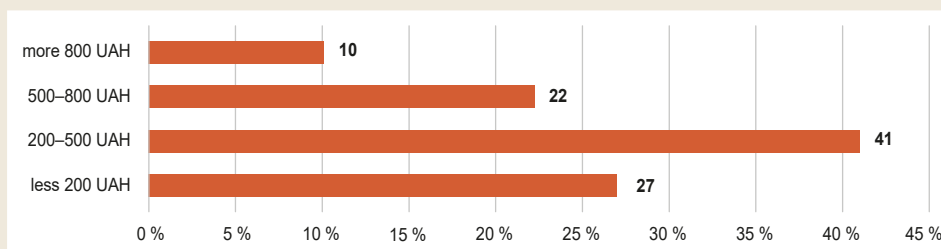
The analysis of pharmaceutical manufacturers has provided an assessment of 6 leading positions in the range of dietary supplements in this group. The following leaders have been identified: NOW Foods – 31 %, Swanson – 23 %, Puritan's Pride (13 %), Klaine Labs (13 %), Source Natural (13 %), Elit-pharm (13 %) (Fig. 3).

Price, along with the effectiveness, is an important criterion for choosing a dietary supplement. Thus, a price segmentation of the market of dietary supplements with green tea leaves extract has been provided, which allowed to identify 4 groups of dietary supplements in the study group by their value. According to the results, the share of dietary supplements

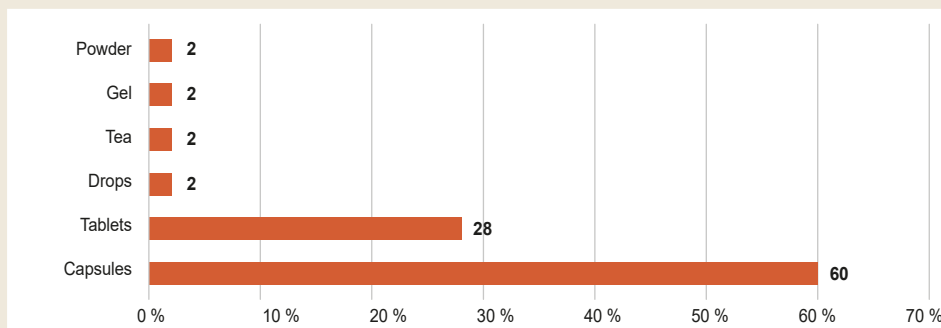
priced up to 200 UAH is 28 %; drugs priced between 200 and 500 UAH account for 42 %. The price range from 500 to 800 UAH includes 22 % of supplements, and supplements priced over 800 UAH make 10 % (Fig. 4).

The minimum retail price for dietary supplements with green tea leaves extract is set at Green Tea Extract (Nosorog, USA) – 95 UAH, the second position is taken by Green Tea (Novofit, Ukraine) – 75 UAH. The maximum price is for dietary supplements of foreign manufacture “Advanced Inflammation” (Klaire Labs, USA) – 1886 UAH. (Table 1)

Features of introduction into the body and dosage form help manufacturers most successfully solve the issues of con-



**Fig. 4.** Diagram of distribution of dietary supplements with green tea leaves extract by price (%).



**Fig. 5.** Diagram of the distribution of the range of dietary supplements with green tea leaves extract by dosage forms (%).

venient use and the best achievement of a therapeutic effect. A study of this market segment by dosage form indicated the heterogeneity of dietary supplements. Thus, the analyzed group of dietary supplements was represented by 6 dosage forms such as capsules, tablets, drops, gels, teas, powders. The most widespread dosage form is capsules (60 %), followed by tablets (28 %) and the smallest share belongs to drops, teas, gels and powders, with each equal to 2 % (Fig. 5).

## Discussions

The number of dietary supplements, as of 2022, compared to 2015 has increased [8]. The part of foreign dietary supplements in 2022 is 5 times greater than Ukrainian ones and is 80 %. Ukrainian dietary supplements (16 %) in 2022 are presented; their number is 4 times more in comparison with the number of dietary supplements of Ukrainian production in 2012 (4 %). Despite the fact that the number of dietary supplements manufactured in Ukraine has increased, it is advisable to continue to work towards the development and implementation of dietary supplements.

## Conclusions

1. There are 42 dietary supplements with green tea leaves extract at the beginning of 2022 in Ukraine.
2. According to the results of marketing research on the temporary pharmaceutical market of Ukraine, 84 % of dietary supplements with green tea extract are presented by foreign manufacturers, mainly by monopreparations, in the form of capsules and in the price range from 200 to 500 UAH.
3. As the pharmaceutical market of Ukraine is dominated by foreign dietary supplements with green tea leaves extract, the results of the analysis of the assortment confirm the relevance of developing a new Ukrainian dietary supplements that could be used as antioxidants.

**Prospects for further research.** The results of the analysis indicate to further search for ways to improve and optimize pharmaceutical supply.

**Conflict of interests:** authors have no conflict of interest to declare.  
**Конфлікт інтересів:** відсутній.

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