

The analysis of the pharmaceutical market of vitamin remedies for hair, nails and skin in the Ukraine

Liliia O. Hala, Ivanna V. Sakhandia, Yaroslava D. Rafalska, Nataliia M. Sakhnatska, Tetiana P. Khomenkova, Svitlana I. Lekhnitska

BOGOMOLETS NATIONAL MEDICAL UNIVERSITY, KYIV, UKRAINE

ABSTRACT

Aim: The research of the range of vitamins for hair, nails and skin on the Ukrainian pharmaceutical market.

Materials and Methods: The market research of vitamins for hair, nails and skin in Ukraine covers an analysis of demand, main manufacturers, competitive environment and consumer preferences. The also observes the pricing trends, distribution channels, and the impact of economic factors on consumer demand. When performing the tasks of the work, the following methods were used: bibliographic, graphic, marketing research, analytical-comparative, mathematical, systematization and generalization.

Results: According to the results of a marketing analysis of the nomenclature of vitamin remedies for hair, nails and skin in domestic pharmacies, it was found that the specific gravity of medicines (drugs) is only 8.3%, and dietary supplements (DD) – 91.7%. Among the dosage forms are dominated capsules (50.8%) and tablets (46.7%). According to the results of the distribution of vitamin remedies producing take the lead such countries as the USA (37.5%), Ukraine (23.3%) and Germany (9.2%). An assessment of the level of physical and economic availability of vitamin remedies for hair, nails and skin for the population proves that these remedies are quite affordable – they are widely represented in the assortment of pharmacies throughout Ukraine, but differ significantly in price.

Conclusions: Based on the analysis of scientific publications was studied the influence of vitamins on the condition of the hair, nails and skin, was conducted a marketing study of the vitamin remedies on the Ukrainian pharmaceutical market, was analyzed the availability for consumers of vitamin remedies for hair, nails and skin.

KEY WORDS: marketing analysis, pharmaceutical market, vitamins, vitamin remedies, medicines, dietary supplements, dosage forms, availability, pharmacists, consumers, pharmaceutical establishments

Wiad Lek. 2025;78(5):1160-1166. doi: 10.36740/WLek/205394 DOI

INTRODUCTION

Modern scientific research indicates that human beauty comes from within, and the skin appears as a general reflection of the overall health. The knowledge accumulated over the centuries about various biologically active substances and their role in the functioning of the body, in particular vitamins, highlights the necessity and expediency of their use not only as a nutritious dietary supplement to the diet, but also as components of care cosmetics [1, 2].

Vitamins are one of the most common biologically active substances, in addition to ensuring the normal functioning of the body, they support the health of hair, nails and skin. Today, scientists have substantial evidence regarding the prospects of oral use of vitamins both fat-soluble (A, D, E) and water-soluble (B2, B6, B12 and C), particularly in dermatology, including the treatment of psoriasis to reduce potential side effects from systematic use of medications [3, 4].

Vitamins are low-molecular organic compounds with high biological activity, consisting of carbon, oxygen, hydrogen, sulfur, nitrogen, phosphorus and other chemical elements. Compared to macronutrients (proteins, fats, carbohydrates), which are a source of energy or structural material, vitamins act as specific regulators of physiological and metabolic processes in the body, as a result of the balanced work of all organs and systems. The high biological activity of vitamins lies in their participation in the formation of enzyme systems – the so-called coenzymes. Coenzymes are low molecular weight non-protein substances that form a complex with the protein part of enzymes and directly provide chemical reactions that are catalyzed by the corresponding enzyme [5, 6].

Depending on the severity of vitamin deficiency, scientists distinguish three forms of vitamin deficiency: avitaminosis, hypovitaminosis and subnormal vitamin supply. "Avitaminosis" is understood as a pathological condition

of the body, characterized by almost complete depletion of vitamin resources and accompanied by a complex of symptoms characteristic and / or specific to the deficiency of a particular vitamin. Hypovitaminosis is a state of a significant (but not complete) decrease in vitamin reserves in the body, which leads mainly to the appearance of few specific or mildly expressed symptoms, which are considered common for different types of hypovitaminosis (reduced work capacity, loss of appetite, fatigue, etc.). Subnormal vitamin supply represents a preclinical stage of vitamin deficiency and usually manifests as metabolic and physiological disfunction involving a specific vitamin and individual specific microsymptoms. The combination deficiencies of several vitamin is referred as polyhypovitaminosis [7].

The importance of vitamins is essential for maintaining the normal condition of the skin, the key functions of which in the body are to form a barrier between the external environment and the human body, maintain water-electrolyte balance and thermoregulation, protect against pathogens and physical factors, ensure the elimination of substances, etc. Among the common dermatological problems is the skin aging which occurs according to the natural processes over time and external environmental factors (UV radiation, environmental pollution). The skin aging process is characterized by the appearance of wrinkles, pigmentation, dryness, loss of elasticity, color changes, slower regeneration and healing due to insufficient blood supply and nutrition of the skin. However, the additional intake of essential nutrients, including various vitamins, can potentially support the biological processes occurring in young, mature and aging skin [8, 9].

A common problem among both women and men is slight hair loss associated with an insufficient content of vitamins and minerals in the diet of a modern people essential for the normal development of hair follicles. A pharmacy specialist needs knowledge to identify specific micronutrients necessary to prevent hair loss in seeking advice customers. According to the results of the analysis of scientific researches was confirmed the positive effect of vitamins on the growth, regenerative processes of hair, nails and skin and their strength such group as B vitamins (in particular biotin B7 or H), C, A, D, E. At the same time, a balanced diet allows you to provide the daily requirement for these vitamins, but their activity can be affected by the simultaneous intake of medications, a factor that health care professionals should also consider [10, 11].

AIM

The aim of the study is to analyze the range of vitamins for hair, nails and skin on the Ukrainian pharmaceutical market.

MATERIALS AND METHODS

In the course of the study, the following materials were used: data from scientific sources on the research topic; nomenclature of vitamins for hair, nails and skin in the Ukrainian pharmacies; information from the State Register of Medicines of Ukraine regarding the registration status of medicines; data of the aggregator website <https://tabletki.ua> [12, 13].

The following methods were used to accomplish the research tasks: bibliographic and analytical (for studying scientific sources on the research topic peculiarly the effects of vitamins on the body and the consequences of their insufficiency for human health); graphic (for visual representation and schematic illustration of the research findings); marketing research (for evaluating the range of vitamins for hair, skin and nails on the pharmaceutical market, their availability to the consumers); analytical and comparative (for analyzing the nomenclature of vitamins for hair, skin and nails according to various criteria, identifying common and distinctive characteristics); mathematical (for data grouping and analysis to process the obtained results) and systematization and generalization (for summing up the results of the study, forming conclusions and preparing recommendations).

To calculate the level of availability of vitamin remedies for hair, nails and skin for the population, were used the approaches of the World Health Organization (WHO) and the Health Action International (HAI). Physical accessibility is considered to be a share of pharmacies that have a specific medicine (M) or dietary supplement (DS) available on the date of the study. Thus, according to the criteria for assessing availability, scientists have formed the following ranges, mainly a high availability (M or DS are available in more than 80% of pharmacies), quite high (50-80%), low (30-49%) and very low (less than 30% of pharmacies). It is generally accepted regarding the assessment of economic accessibility, that a M or DS is affordable for the consumer or, in other words, has a "moderate cost", if the daily minimum wage is higher than the total cost of treatment (for example, the cost of a monthly course of prevention) and the daily subsistence minimum (according to the WHO – the national poverty line). If the indicator of the additional daily wage rate (ADWR) does not exceed "1", it is considered that a person does not need additional funds for the purchase the medicine (additional daily wage rates) [14, 15]. The calculation was carried out using the following formula:

The calculations were carried out using the information of the Law of Ukraine "On the State Budget of Ukraine for 2024". Starting from April 1, 2024, the minimum wage in Ukraine is UAH 8000, and the subsistence minimum for the working-age category of population is UAH 3028.

Table 1. Characteristics of biotin monosubstances available in pharmacies

Dosage	Number of items	Country of origin	Supplier Company
<i>Medicines (dispensing without prescription) (10 items)</i>			
2.5 mg	1	Germany (1)	mibe GmbH Pharmaceuticals
		Ukraine (1)	Kyiv Vitamin Plant, JSC
5 mg	7	Ukraine (1)	Kusum Pharm
		Poland (2)	Polpharma S.A., FZ
		Germany (1)	mibe GmbH Pharmaceuticals
		Germany (2)	Dr.Gustav Klein GmbH & Co.KG.
10 mg	2	Ukraine (1)	Kyiv Vitamin Plant, JSC
		Germany (1)	Alpen Pharma AG
<i>Dietary supplements (43 items)</i>			
0.15 mg	3	Ukraine (2)	Farmakom, PTF, TOV
		India (1)	Biodeal Pharmaceuticals Private Limited
0.3 mg	4	Ukraine (2)	Marina, PP
		Ukraine (1)	Interchem, ALC
		United States (1)	Solgar, Inc.
0.8 mg	1	United States (1)	21st Century Health Care Inc.
1 mg	4	United States (1)	Solgar, Inc.
		United States (1)	Natrol LLC
		United States (1)	Now Foods
		United States (1)	Country Life LLC
2.5 mg	2	Ukraine (2)	Beauty ta Zdorov'ya, TOV
5 mg	19	Ukraine (1)	Golden-Pharma, TOV
		Ukraine (4)	Marina, PP
		United States (1)	Carlson Labs
		Ukraine (4)	Beauty ta Zdorov'ya, TOV
		United States (2)	Natrol LLC
		United States (3)	Now Foods
		United States (1)	Solaray
		United States (1)	Swanson Health Products
		United States (1)	Country Life LLC
		Slovak Republic (1)	Innopharma s.r.o.
7.5 mg	2	United States (2)	Puritan's Pride
8 mg	1	United States (1)	Thorne Research, Inc.
10 mg	7	United States (1)	Solgar, Inc.
		Ukraine (1)	Marina, PP
		United States (1)	Healthy Origins
		United States (1)	Natrol LLC
		United States (1)	Now Foods
		United States (2)	Puritan's Pride

RESULTS

According to the aggregator site <https://tabletki.ua>, 120 products from the group "Vitamins for hair, nails and skin" were selected for marketing analysis according to the selected criteria, among which, according to the anatomical-therapeutic-chemical (ATC) classification,

only 10 drugs (8.3%) were found (ATC code A11H A05 Vitamins. Other vitamin preparations. Biotin), and the rest (91.7%) of the total amount of vitamins of the selected group are DS.

In Table. 1 presents the characteristics of group 1 – biotin monosubstances, based on content of the

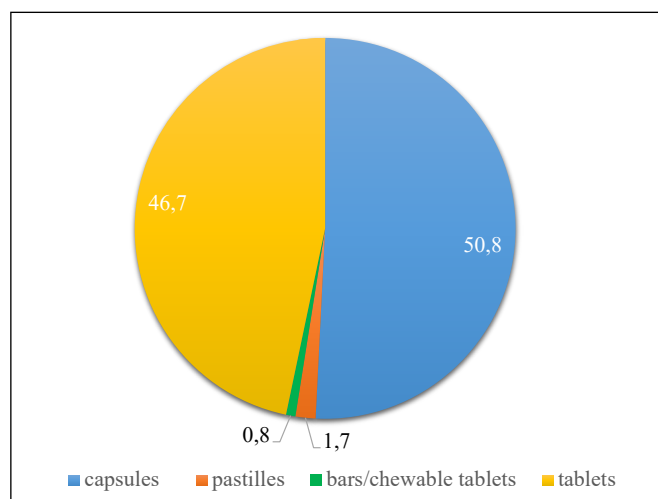


Fig. 1. The share of different dosage forms to the total number of vitamin remedies of the selected group (%)

active ingredient and the manufacturing countries. The dosage of vitamin H in the medicine per dose is in the ranges from 2.5 mg to 10 mg, whereas of DS, the dosage is more varied and ranges from 0.3 mg to 10 mg. Biotin DS are recommended to be taken once daily, sometimes twice daily, with the total daily dose not exceeding 10 mg.

Group 2 – vitamins (including biotin of 2.5 mg and above) in combination with minerals, that in addition to other vitamins (C, B1, B2, B3, B6, B9, B12, choline, pantothenic acid, lipoic acid, A, E), includes biotin in a dosage ranging from 2.5 mg to 15 mg and minerals (calcium, phosphorus, iron, zinc, selenium, silicon, copper, iodine).

Group 3 – vitamins in combination with minerals and LRS – this is DD, which, in addition to vitamins (C, B1, B2, B3, B5, B6, B9, B12, H, pantothenic acid, A, D, E) and minerals (calcium, iron, zinc, selenium, copper, iodine), there are medicinal plant raw materials (MPR), for example, such as milk thistle (fruit extract), Lady's bedstraw (dry extract of roots and stems), Turmeric (standardized dry rhizome extract), Ginger root extract, Nettle leaf extract, Marigold flower extract, Bamboo extract, Grape seed extract, horsetail, Burdock root extract, Chamomile flower extract, Millet seed extract, Aloe vera leaf powder, Green tea leaf extract.

Group 4 – vitamins in combination with minerals are DS that contain vitamins (B1, B2, B3, B5, B6, B8, B9, B12, C, H, choline, A, D, E) and minerals (calcium, iron, magnesium, manganese, silicon, potassium, phosphorus, molybdenum, zinc, selenium, copper, chromium, iodine).

According to the results of the distribution of vitamins for hair, skin and nails by dosage forms presented in pharmacies, it was found that capsules (50.8%) and tablets (46.7%) dominate. The share of pastilles and

chewable tablets is significantly lower, almost negligible. All 10 biotin remedies are presented in the form of tablets. The results of the analysis by dosage forms are shown in Fig. 1.

Based on the results of the distribution of vitamin remedies for hair, nails and skin by producing countries, the following was found: the leaders the USA (37.5%), Ukraine (23.3%) and Germany (9.2%). The share of other producing countries does not exceed 5.0% of the total number of trade names represented. Among the US manufacturers, it should be noted: Puritan's Pride, Now Foods, 21st Century Health Care Inc Solgar, Inc., Country Life LLC, Natrol LLC, for Ukraine – JSC "Kyiv Vitamin Plant", LLC "Beauty and Health", PE "Marina", PE "Euro Plus", for Germany – Queisser Pharma GmbH & Co. KG., Dr. Gustav Klein GmbH & Co. KG., mibe GmbH Arzneimittel, Orthomol pharmazeutische Vertriebs GmbH (Fig. 2).

Table 2 presents the results of the evaluation of the physical availability of medicines (DS) selected for the study group of vitamin remedies in pharmacies in Kyiv. It can be stated that one-third of the vitamin remedies for hair, nails and skin available on the pharmaceutical market have a high and quite high availability, which, in our opinion, is a result of the high demand for these trade names.

The results of the evaluation of the availability of vitamin remedies for hair, nails and skin indicate a sufficient level of the physical availability for the population, however, the economic availability of remedies of the selected group ($ADWR < 1$) varies significantly by price criterion. Most vitamin remedies with $ADWR < 1$ belong to the group of biotin monocomponent remedies which are somewhat more expensive compared to DS. The cost of combined vitamin remedies per one-month treatment course is generally much higher.

All DSs, differ from medicines, are allowed to be dispensed to consumers from pharmacies without a doctor's prescription, in compliance with the general requirements in case of their advertising in accordance with the Law of Ukraine No. 270/96-VR of 03.07.1996 "On Advertising". Thus, it is forbidden to refer to the medicinal properties of DSs. At the same time, due to the oversaturation of the DS market, the unresolved issue of ensuring their quality and safety in the legal field today, regulation of this segment of the "pharmacy basket", increases the responsibility of pharmacists in the sale of vitamin products of the selected group. According to official dietary recommendations (Food and Nutrition Board (USA)) – experts advise obtaining vitamins from food rather than from DS. Most of the population consumes vitamin remedies (medicines or DS) to eliminate or prevent their deficiency. It is

Table 2. Distribution of vitamins for hair, skin and nails by the level of physical availability in pharmacies in Kyiv

Category of remedies (DS) by level of availability	Share of, %
- high (over 80%)	5,0
- quite high (50-80%)	32,5
- low (30-49%)	8,3
- very low (in less than 30%)	54,2
Total	100,0

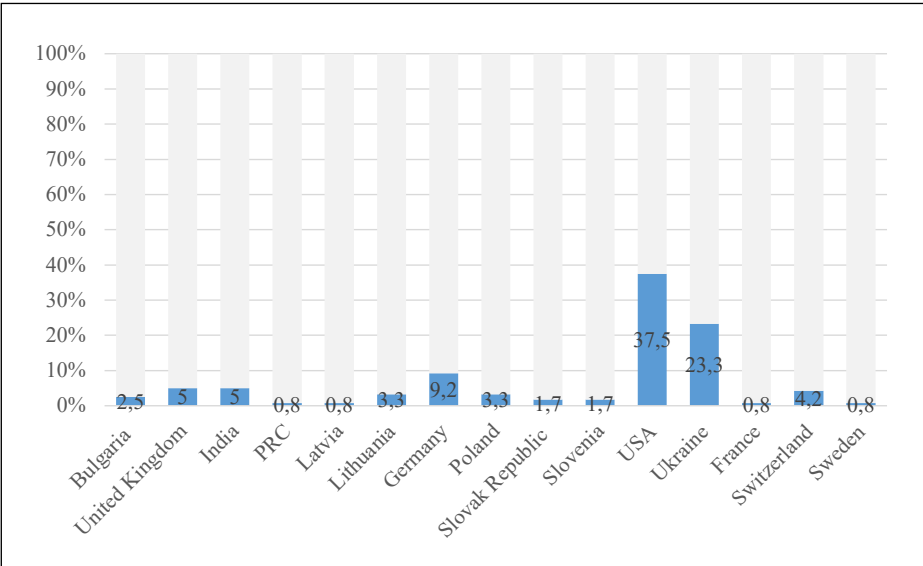


Fig. 2. The share of producing countries in the total number of vitamin remedies (%)

important to know that the use of specific vitamins at specified times of the day can reduce the risk of side effects. Depending on the type of vitamin, taking DS with food can increase its absorption by the body and, as a result, improve its overall health effects. However the results of scientific studies do not support any recommendations for taking vitamins at a specified time, although certain practical advice exists.

DISCUSSION

Under the influence of environmental factors, the Ukrainian pharmaceutical market develops unpredictably, but dynamically. It should be noted that the DS segment is characterized by much higher growth rate of pharmacy sales than for other categories of the “pharmacy basket”. This fact indicates the continuation of a long-term trend in Ukraine, as well as globally, toward the increasing share of DS in the overall structure of the pharmaceutical market. At the end of 2023, the share of DS was 10.4% in monetary terms and 8% in physical volume. While, the volume of pharmacy sales of DS in 2022 decreased by 9.6% compared to 2021, but at the end of 2023, compared to 2022, it increased significantly (by 63.6%), substantially surpassing the indicators of 2021 [16].

According to the research results of Polish scientists, on the market of remedies affecting the condition of

hair, nails and skin, a significant share belongs to the group of combined DSs (77%). The most common ingredients are biotin, vitamin C, vitamin PP (niacin) and trace elements (copper, zinc) [17].

According to the WHO Report “Assessment of the Affordable Medicines Program in Ukraine”, published in 2019, Ukraine’s healthcare expenditures have been low for many years. For example, in 2015, the share of health expenditure in gross domestic product (GDP) was 2.9%, and in 2020 increased to 3.4%, but comparing to the European Region is insignificant, because the average expenditure in Europe is 5.0% of GDP. Thus, the low level of state funding shifts the main share of health care expenses to patients [18, 19].

It should be remembered that according to the requirements of the legislation of Ukraine, DS is not a medicine, therefore can be used only for the purpose of prevention to normalize certain functions of the human body. This problem is also analyzed by scientists from the United States due to the growing popularity of DS for hair, nails and skin among the population and at the same time the lack of regulatory supervision in the country, the absence of a centralized database, due to the possible risks of interaction during their use, the lack of warning labels and the risk of “overdose” of nutrients. Therefore, it is extremely important for doctors and pharmacists draw patients’ attention to potential risks [20, 21].

CONCLUSIONS

According to the scientific literature was studied the effect of water- and fat-soluble vitamins on the health of hair, skin and nails, including the consequences of vitamin deficiency and data on the prospects for the use of vitamins in dermatology.


Using marketing analysis, 120 vitamin remedies for hair, nails and skin were studied, including 10 medicines and 110 DS. The selected remedies were divided into four groups according to the active ingredients content: biotin monosubstances (53 items), vitamins (including biotin at a dose of 2.5 mg or more) in combination with minerals (16 items), vitamins in combination with miner-

als and MPR (10 items) and vitamins in combination with minerals (41 items). Among the studied vitamin remedies for hair, nails and skin 23.3% were of Ukrainian producing and 76.7% – of foreign producing. Among the dosage forms capsules (50.8%) and tablets (46.7%) dominated.

It was found that among the vitamin remedies for hair, nails and skin available in pharmacies, 5.0% have a high level of physical accessibility, 32.5% have a quit high level, 8.3% have a low level, and 54.2% have a very low level. According to the WHO methodology, the ADWR index does not exceed “1” for only 24.2% of selected vitamin remedies, while purchasing most of them requires to spend two or more daily minimum wages.

REFERENCES

1. Aizyatulov RF. Kliniko-diahnostychni kryterii ta kompleksna terapiia telohenovoi alopetsii u zhinok [Clinical and diagnostic criteria and complex therapy of telogen alopecia in women]. *Dermatohiyyi ta venerolohiyyi*. 2023;3(101):18–23. doi: 10.33743/2308-1066-2023-3-18-23. (Ukrainian) [DOI](#)
2. Schagen SK, Zampeli VA, Makrantonaki E, Zouboulis CC. Discovering the link between nutrition and skin aging. *Dermatoendocrinol*. 2012;3(4):298–307. doi: 10.4161/derm.22876. [DOI](#)
3. Elgharably N, Al Abadie M, Al Abadie M et al. Vitamin B group levels and supplementations in dermatology. *Dermatol Reports*. 2023;15:95–110. doi: 10.4081/dr.2022.9511. [DOI](#)
4. Agnihotri S, Kaur J, Masand P et al. Vitamins strategies for psoriasis: An update on current scientific evidence. *Journal of Holistic Integrative Pharmacy*. 2023;4:299–309. doi: 10.1016/j.jhip.2024.01.005. [DOI](#)
5. Horobets AO. Vitaminy i mikroelementy yak spetsyfichni rehulatory fiziologichnykh ta metabolichnykh protsesiv v orhanizmi ditei ta pidlitkiv [Vitamins and microelements as specific regulators of physiological and metabolic processes in the body of children and adolescents]. *Ukrayins'kyy zhurnal perynatolohiyyi ta pediatriyyi*. 2019;4(80):75–92. doi: 10.15574/PP.2019.80.75. (Ukrainian)
6. Mochulska OM, Chornomydz IB, Yarema NI et al. Zhyrorozchynni vitaminy, yikhnie znachennia v obminnykh protsesakh, rosti ta rozvytku ditei riznoho viku [Fat-soluble vitamins, their importance in metabolic processes, growth and development of children of different ages]. *Suchasna pediatriya*. *Ukrayina*. 2024;5(141):73–79. doi: 10.15574/SP.2024.5(141).7379. (Ukrainian) [DOI](#)
7. Rzepka Z, Słaby D, Wrześniok D. Kobalamina – właściwości biomedyczne i niedobór w ujęciu biochemicznym. [Cobalamin – biomedical properties and biochemical deficiency]. *Postępy Higieny i Medycyny Doświadczalnej*. 2021;75(1):563–572. doi: 10.2478/ahem-2021-0004. (Polish) [DOI](#)
8. Vitaminy u kosmetolohii [Vitamins in cosmetology]. *Pharmacy weekly*. <https://www.apteka.ua/article/696279> [Accessed 15 February 2025] (Ukrainian)
9. Michalak M, Pierzak M, Kręcis B, Suliga E. Bioactive Compounds for Skin Health: A Review. *Nutrients*. 2021;1(13):20–33. doi: 10.3390/nu13010203. [DOI](#)
10. Waqas B, Wu A, Yim E, Lipner SR. A survey-based study of physician practices regarding biotin supplementation. *J Dermatolog Treat*. 2022;33(1):573–574. doi: 10.1080/09546634.2020.1770178. [DOI](#)
11. Kucher PV, Yunkova OO. Modeliuvannia dynamiky rynku preparativ dlia volossia v umovakh pandemii COVID-19 [Modelling the dynamics of the market for hair products in the context of the COVID-19 pandemic]. *Problemy suchasnykh transformatsiy. Seriya: Ekonomika i menedzhment*. 2024;13:14–32. doi: 10.54929/2786-5738-2024-13-11-01. (Ukrainian) [DOI](#)
12. Derzhavnyi reistr likarskykh zasobiv Ukrainy [State Register of Medicines of Ukraine]. <http://www.drlz.com.ua/> [Accessed 17 February 2025] (Ukrainian)
13. Vitaminy dlia volossia, shkiry ta nihtiv: tsina v Kyievi [Vitamins for hair, skin and nails – prices in Ukrainian pharmacies]. <https://tabletki.ua/uk/category/144/> [Accessed 16 February 2025] (Ukrainian)
14. Assessment of the availability of essential medicines for outpatient treatment in Ukraine. Copenhagen: WHO Regional Office for Europe. 2021, p.110. <https://iris.who.int/handle/10665/342433> [Accessed 16 February 2025] (Ukrainian)
15. Dong Z, Tao Q, Sun G. Survey and analysis of the availability and affordability of essential drugs in Hefei based on WHO. HAI standard survey methods. *BMC Public Health*. 2020;14:5–12. doi: 0.1186/s12889-020-09477-9. [DOI](#)
16. Sakhanda I, Lekhnitska S, Hala L. Vyvchennia asortymentu i dostupnosti preparativ vitaminu D3 na farmatsevtichnomu rynku Ukrainy [The study of the range and availability of vitamin D3 preparations in the pharmaceutical market of Ukraine]. *Fitoterapiia*. *Chasopys*. 2024;4:182–189. doi: 10.32782/2522-9680-2024-4-182. (Ukrainian) [DOI](#)

17. Jachimowicz-Rogowska K, Sowinska L, Winiarska-Mieczan A, Kolasa K. The Most Commonly Used Diet Supplements for Hair, Skin and Nails in the Opinion of Pharmacy Employees from Different Cities in Poland. *Nauki Inżynierskie I Technologie*. 2022;1(38):60–74. doi: 10.15611/nit.2022.38.04. 
18. Bondarchuk I. Dostupnist likarskykh zasobiv – yaku rol vidihraie derzhava? [Availability of medicines – what role does the state play?]. <https://www.apteka.ua/article/590994> [Accessed 15 February 2025] (Ukrainian)
19. Perez-Sanchez AC, Burns EK, Peres VM et al. Safety Concerns of Skin, Hair and Nail Supplements in Retail Stores. *Cureus*. 2020;12(7):e9477. doi: 10.7759/cureus.9477. 
20. Zasada M, Budzisz E. Retinoids: active molecules influencing skin structure formation in cosmetic and dermatological treatments. *Postepy Dermatol Alergol*. 2019;36(4):392–397. doi: 10.5114/ada.2019.87443. 
21. Wargala E, Sławska M, Zalewska A, Toporowska M. Health Effects of Dyes, Minerals, and Vitamins Used in Cosmetics. *Women*. 2021;1:223–237. doi: 10.3390/women1040020. 

The article was prepared as part of a scientific and research work of the Bogomolets National Medical University “Integrated scientific and practical approaches to improving the functioning of the pharmaceutical market subjects of the pharmaceutical care in Ukraine” (2022–2025, No state registration 0122U000488). There are no sources of funding

CONFLICT OF INTEREST

The Authors declare no conflict of interest

CORRESPONDING AUTHOR






Ivanna V. Sakhandia




Bogomolets National Medical University, Kyiv, Ukraine




13 Shevchenko Boulevard, 01601 Kyiv, Ukraine




e-mail: sahanda.ivanna@gmail.com




ORCID AND CONTRIBUTIONSHIP

Liliia O. Hala: 0000-0002-0086-2706     

Ivanna V. Sakhandia: 0000-0003-4171-5160   

Yaroslava D. Rafalska: 0000-0002-1047-3114   

Nataliia M. Sakhnatska: 0000-0003-4693-4717   

Svitlana I. Lekhnitska: 0000-0002-9178-7069   

 – Work concept and design,  – Data collection and analysis,  – Responsibility for statistical analysis,  – Writing the article,  – Critical review,  – Final approval of the article

RECEIVED: 02.02.2025

ACCEPTED: 22.04.2025

