

The market analysis of antidandruff agents in Ukraine

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ABSTRACT

The analysis of domestic market of antiseborrheic medicated products has been conducted. A range of products of medicinal cosmetics, parapharmaceutical products, antidandruff agents of domestic and foreign production registered in Ukraine has been analyzed in terms of active substances and drug forms, as well as their affordability. In the analysis, the data of the State Register of Medicines, price lists and official sources of the specialized information were used. According to the ATC classification, most drugs (55%) referred to derivatives of imidazole and triazole and contain ketoconazole in their composition (D01A C08). The number of antidandruff medicines registered in Ukraine was 7% of the total number of the products analyzed. Among the products of medicinal cosmetics with the antiseborrheic action, 50% of the range were consisted of domestic cosmetic agents based on plant extracts. Antiseborrheic medicated products and products of medicinal cosmetics in the form of shampoos have been represented at the pharmaceutical market most widely. According to the results of the study, it has been determined that drugs for treating dandruff mainly included antifungal drugs (ketoconazole, selenium disulfide, terbinafine), keratolytics (salicylic acid, sulfur), keratinization regulators (zinc pyrithione) in their composition.

Keywords: dandruff, drugs, marketing analysis, parapharmaceutical products, products of medicinal cosmetics, seborrhea.

Introduction

Dandruff (Lat. *pityriasis* – bran) has often been considered as a cosmetic defect, and at the same time, it is the manifestation of a number of dermatological diseases, such as seborrheic dermatitis, psoriasis, pityriasis versicolor^[1, 2]. In recent years, there have been high growth rates in the market of antidandruff agents (both cosmetic and therapeutic); and it has been explained not only by an objective necessity due to the prevalence of the disease, but also by extensive advertising. The unsystematic and uncontrolled self-treatment is often ineffective and can lead to serious consequences^[3, 4]. Thus, this problem is both cosmetic and medical; moreover, it requires a

complex scientifically based approach to be solved^[5, 6].

At the same time, one of the key elements is the settlement of the issue of the official status for parapharmaceutical products (PP) and products of medicinal cosmetics (PMC) in Ukraine. According to the current legislation (the Order of the Ministry of Health of Ukraine dated 06.07.2012 №. 498 as amended by the order of the Ministry of Health of Ukraine dated 23.11.2015 № 764), the list of goods that can be purchased and sold by pharmacies and their structural subdivisions has been expanded. In recent years, on the shelves of pharmacies there has been a large variety of therapeutic shampoos created taking into account the characteristics of dandruff, and the type and the condition of hair (dry, normal, oily, painted, etc.). In most cases, the treatment should be prescribed by a specialist-trichologist or dermatologist.

Some shampoos and cosmetics that contain medicinal substances (for example, ketoconazole, zinc pyrithione), but are not officially registered in the State Register of Medicines, can be sold not only in pharmacies, but also in supermarkets, shops, markets; however, in this case, they have to meet other requirements^[7].

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The aim of the work was to analyze the market of therapeutic and preventive antidandruff products sold in pharmacies of Ukraine in order to provide the effective and controlled dandruff correction and prevention [7].

Materials and Methods

The market analysis of antiseborrheic products was conducted. In the study, the data of the State Register of Medicines, papers in scientific journals, price lists and information from the official websites of manufacturers and distributors of products of medicinal cosmetics, and the range of pharmacies in Kharkiv were used. The methods of comparison, as well as logical, mathematical and statistical methods were applied.

Results and Discussion

Seborrhea is a common dermatological disease that affects the scalp; its characteristic manifestation is inflammation and flaking of the skin (dandruff). Numerous clinical and laboratory studies have confirmed that the main cause of seborrheic dermatitis of the scalp and dandruff are yeast-like fungi – *Malassezia furfur* (*Pityrosporum ovale*), which are permanent inhabitants of the skin of a healthy person. Under unfavorable conditions for the organism (stress, hormonal imbalance, chronic diseases, thermal effects), the protective function of the skin is disturbed; as a result, the opportunistic pathogenic microflora is activated and intensely proliferated causing dandruff [8, 9].

There are the following types of seborrheic dermatitis:

- dry seborrhea develops as the skin and hair dryness, a lot of dandruff and severe itching caused by hypofunction of the sebaceous glands of the scalp;

- oily seborrhea is characterized by the increased oiliness of hair and scalp due to hyperfunction of the sebaceous glands, as well as yellow scales of dandruff;
- mixed seborrhea – simultaneous manifestation of dry and oily seborrhea on different parts of the head [2, 10].

Dandruff should be treated differentially. To obtain a reliable effect, it is important to have a correct diagnosis from a doctor, know the causes of the disease, and choose the appropriate set of measures. As a rule, the duration of treatment is 3-6 weeks. Modern methods of seborrhea treatment have been based on the data confirming its fungal origin. When the scalp shampoos containing ketoconazole, zinc, and tar are prescribed at least twice a week to eliminate the manifestations of seborrhea, their use should be not less than a month. Furthermore, these products can be used as preventive ones. In severe diseases characterized by the presence of lesions with a marked inflammation and dense layering of scales before using antifungal drugs, it is necessary to apply exfoliating products (salicylic acid, tar preparations) or to soften the scales with oils, and then use a shampoo with ketoconazole. In the most severe cases, hormonal ointments are locally prescribed, and antifungal drugs are orally administered (ketoconazole, terbinafine, fluconazole). The complex therapy includes vitamins, anti-allergic medicines, and drugs for normalization of the gastrointestinal tract. Measures against dandruff also include normalization of the diet and the water-salt balance restoration. The physiotherapeutic procedures, such as cryomassage with liquid nitrogen and darsonvalization of the scalp skin, are also recommended [5, 9, 10].

Currently, all antidandruff agents sold in pharmacies have been conventionally divided into four groups (Figure 1) [7, 11].

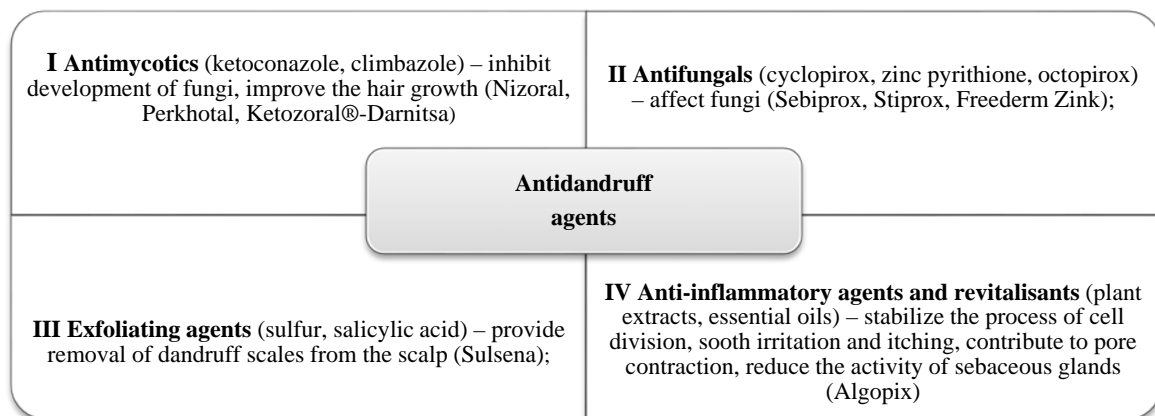


Figure 1. Classification of antidandruff agents

As a result of the analysis of the nomenclature of antidandruff agents by the composition of active substances, it has been found that the main active ingredients were:

- antifungal and antimycotic drugs (ketoconazole, terbinafine, clotrimazole, climbazole, miconazole, cyclopiroxolamine);
- keratolytics (salicylic acid, papain, glycolic acid, keluamide);
- keratinization regulators (zinc pyrithione, selenium disulfide, octopirox, cyclopirox, ichthyol, tar, sulfur);
- cytostatic drugs (selenium disulfide, zink);
- antipruritic drugs (extracts of medicinal plants);

- anti-inflammatory agents (essential oils, cyclopiroxolamine) [11, 12].

At the same time, the products of medicinal cosmetics presented at the market can have a mono-component composition and the targeted action (Table 1) or contain a complex of active ingredients and, consequently, a wide range of action (Table 2).

Table 1: The analysis of monocomponent products for the treatment of dandruff by the composition of active substances

Composition	The name and the drug form	Manufacturer, country
Antifungal and antimycotic drugs		
Ketoconazole	Dermazol® shampoo, 20 mg/ml, 50 ml or 100 ml, in vials, sachet, 8 ml	Kusum Healthcare Pvt. Ltd., India
	Ketozoral®-Darnitsa shampoo, 20 mg/g, 60 g, 100 g, in vials	Darnitsa, Ukraine
	Kenazol® shampoo, 2%, 100 ml, in vials	Pharma International Jordan
	Nizoral® shampoo, 20 mg/g, 25 ml, 60 ml, in bottles	McNeil Products Limited
	Ebersept shampoo, 60 ml, 120 ml, in vials	Bros Ltd, Greece
	Sebozol antidandruff shampoo, 100 ml	Dionis, RF
	Antidandruff shampoo with ketoconazole, 100 ml	RPA "Elfa", Ukraine
	Antidandruff shampoo with ketoconazole 100 ml	LLC "Aromat", Ukraine
	Biocon "Strength of Hair" antidandruff shampoo 150 ml	Biocon
	"Horse Power" antidandruff shampoo with ketoconazole, 250 ml vial	LLC "LekoPro"
Cyclopiroxolamine	Denon antidandruff, antifungal and hair loss shampoo, 100 ml	ZEE Lab., India
	Sebiprox shampoo, 1%, 60 ml	Stiefel Lab., Ireland
Terbinafine	Stiprox antidandruff therapeutic shampoo, 1.5%, 100 ml	Stiefel Lab., Ireland
	Terbinakod shampoo and shower gel for prevention of dandruff and seborrheic dermatitis, 200 ml	PhytoBioTechnologies Ltd., Ukraine
Keratolytics		
Salicylic acid	CM Ultrasensitive gel shampoo, 400 ml	RPA "Elfa", Ukraine
Keratinization regulators		
Zinc pyrithione	Skin-cap aerosol, 0.2%, 100 ml, in monoblock can	Cheminova Internacional S.A., Spain
	Nature. MED. antidandruff shampoo for men, 200 ml	Georg BioSystems, Ukraine
	Clear antidandruff shampoo for women, oily scalp balance	Unilever, Ukraine

Tar	Clear antidandruff shampoo and conditioner for men, deep cleansing	Unilever, Ukraine
	Estel BHL 61 antidandruff shampoo 250 ml	LLC "Unicosmetic"
	Fitoval Regular Care Antidandruff Shampoo Formula, 200 ml	KPKA, Slovenia
	Fitoval Intensive Care Antidandruff Shampoo Formula, 100 ml	KPKA, Slovenia
	Freederm Zink antidandruff shampoo for dry hair 150 ml	Mipharm S.p.A., Italy
	Ducray Squanorm dry dandruff hair shampoo, 200 ml	Ducray Lab., Freance
	Freederm tar antidandruff shampoo for oily hair, 150 ml	Mipharm S.p.A., Italy
	TL "Home Doctor" "Tar + tea tree" antidandruff cream paste, 150 ml	RPA "Elfa", Ukraine
	Recipes of Grandmother Agafia. Black antidandruff shampoo, 350 ml	Natura Siberica, Russia
	ENJEE tar hair shampoo, 250 ml	Beauty and health. Ltd., Ukraine
Selenium disulfide	"Elfa Horse line" tar antidandruff shampoo, 200 ml	RPA "Elfa", Ukraine
	Sulsena antidandruff shampoo, 150 ml	
	Sulsena antidandruff preventive paste, 1% and 2%, 40 ml, 75 ml	"Amalgameluxe" Ltd., Ukraine
	Sulsena antidandruff peeling shampoo, 150 ml	
	VICHY Dercos antidandruff shampoo for dry hair, 200 ml	Cosmetic Active Intern., France

Multicomponent antidandruff agents are aimed at solving a set of problems, namely the improvement of the epidermal barrier state, cleansing the scalp and hair from skin pells, oily skin and hair reduction, and reduction of itching and skin sensitivity. The use of the complex of plant extracts and essential oils of cypress, juniper, rosemary, eucalyptus, tea tree has been rather effective since they have the antifungal, anti-inflammatory and antipruritic effect, and inhibit the division of keratinocytes [5, 13] (Table 2).

Table 2: The analysis of complex products for the treatment of dandruff

Composition	The name and the drug form	Action		
Selenium disulfide and salicylic acid	VICHY Dercos antidandruff shampoo for normal and oily hair, 200 ml (Cosmetic Active Internationale, France)	Cytostatic, antifungal, keratolytic		
Zinc pyrithione, piroctone olamine salicylic acid	Alphakeptol D.S. antidandruff shampoo (Laboratoire Dermophil Indien, France)			
Ketoconazole, zinc pyrithione	Dermazol plus shampoo, 50 ml, 100 ml vials (Kusum Healthcare Pvt. Ltd.)	Antifungal, keratolytic, cytostatic		
	Keto plus shampoo, 60 ml, 150 ml (Glenmark; India)			
Piroctone olamine climbazole	Eucerin DermoCapillare antidandruff gel shampoo for oily scalp, 250 ml (Beiersdorf AG, Germany)			
	Ducray Kertyol P.S.O. Keratoreducing Cream, 100 ml (France)			
Salicylic acid, cyclopiroxolamine, zinc pyrithione	Ducray Selegel dry dandruff shampoo, 125 ml (Pierre Fabre Dermo-Cosmetique, France)			
	Kallos KJMN antidandruff shampoo 1 L (Kallos Cosmetics, Hungary)			
Climbazole and zinc pyrithione	Zinovit antidandruff and anti-inflammatory shampoo, 150 ml (ZAO Zelenaya Dubrava, Russia)			
	Bio Pharma Burdock antidandruff shampoo, 200 ml (Alliance of beauty, Ukraine)			
Burdock, calamus, nettle, lovage, hops	Klorane dry dandruff shampoo with the extract of Nasturtium, 200 ml (Pierre Fabre Lab. Klorane, France)			
	Klorane sebo-regulating shampoo "Nettle" for oily hair, 400 ml (Pierre Fabre Lab. Klorane, France)			
	Klorane oily dandruff shampoo with Myrtle extract, 200 ml (Pierre Fabre Lab. Klorane, France)			
	Klorane dry dandruff hair shampoo with the extract of common nasturtium, 200 ml (Pierre Fabre Lab. Klorane, France)			
Sage, violet, oats	Phyto Phytosquam intensive antidandruff shampoo, 100 ml (Phytosolba Lab., France)	Anti-inflammatory, regenerative, antipruritic		
	Phyto Phytosquam antidandruff cleansing shampoo, 100 ml (Phytosolba Lab., France)			
Inula, nettle, chamomile, calamus, rosemary	Weleda Weizen Schuppen-Shampoo, 190 ml (WELEDA AG, Germany)			
	ESTEL BHL 63 antidandruff hair tonic, 100 ml (Natura Siberica, Russia)			
Cedar, propolis	Propoline antidandruff shampoo for oily hair with cedar and propolis, 250 ml (Apivita, Greece)			
	Thyme, sage, rosemary		Insight antidandruff cleansing lotion, 100 ml (ELEY, Italy)	
	Insight antidandruff cleansing shampoo, 1000 ml (ELEY, Italy)			
	Hemp oil, clove, grapefruit		Cannaderm Capillus antiseborrheic hair shampoo, 150 ml (Simply You Pharmaceuticals A.S)	
	Piroctone olamine salicylic acid, horsetail, lemon balm, nettle		Kallos Med Detox antidandruff shampoo for oily hair and scalp, 1000 ml (Kallos Cosmetics, Hungary)	Antifungal, anti-inflammatory, enollent, antipruritic
	Piroctone olamine fir, nettle, chamomile, wormwood, junipe		Natura Siberica NS antidandruff hair shampoo, 400 ml (Natura Siberica, Russia)	
	Piroctone olamine, glycolic acid	DUCRAY Squanorm oily dandruff hair shampoo, 200 ml		
	Piroctone olamine birch buds, castor o	TL "Green Pharmacy". "Birch buds and castor oil" antidandruff shampoo, 350 ml (RPA "Elfa", Ukraine)	Antipruritic, regenerative	
	Tar and salicylic acid	Algopix antidandruff shampoo, 200 g (Medica AT, Bulgaria)	Keratolytic	
	Sulfur and tar	Pharma Bio tar antidandruff shampoo, 200 ml (Alliance of beauty, Ukraine)		
	Sulphide1% + Saw Palmetto1%	"Elfa" Sulsen_forte antidandruff shampoo, 2%, for oily hair, 150 ml (RPA "Elfa", Ukraine)	Antifungal	
	Sulphide1% + Aminotein1%	"Elfa" Sulsen_forte antidandruff shampoo, 2%, for normal and dry hair, 150 ml (RPA "Elfa", Ukraine)	Antifungal	

When analyzing the range of antiseborrheic products by the drug form, it has been found that shampoos were 78.5%, soap – 6.95%, oils – 4.2%, pastes – 3.5%, lotions – 2.1%, balsam conditioners – 1.4%. Products in the form of tablets and ampoules were 0.7% of the total number.

Ketoconazole and zinc pyrithione (Head and shoulders, Freeder-m-zink, Syoss, etc.) have been the most widely used drugs in the treatment of seborrhea. As a rule, the use of shampoos containing tar and exfoliating agents has not been very effective in a long-lasting process since they have had no effect on the pathogenic flora, and when changing the shampoo, dandruff appeared again. Keto plus shampoo (Glenmark Pharmaceuticals Ltd., India) is a combined drug that contains zinc and ketoconazole, in this way it can be referred as both drugs and parapharmaceuticals used for prophylactic purposes. PP and PMC have been objectively characterized by duality: they have been additional components of the treatment and prevention of dandruff, and can regulate the biochemical and physiological processes in the body – thereby provide the therapeutic effect [1, 8]. Sometimes, it has been possible to draw a clear line between PP, PMC and drugs (Figure 2).

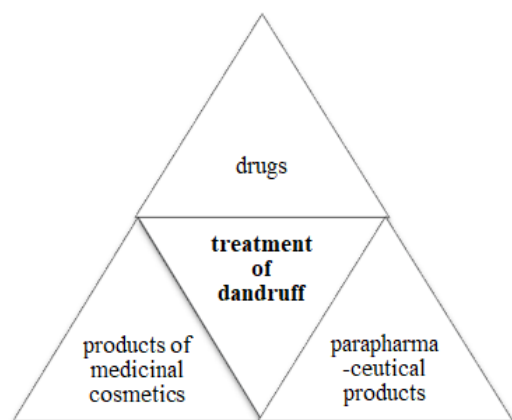


Figure 2. The duality of nature of drugs, PP and PMC

In this study, it has been found that even in the national pharmaceutical journals, there has been ambivalence and inconsistency in the classification of different products to the category of drugs, PMC or PP. For example, the weekly newspaper “Apteka” (“Pharmacy”) included antiseborrheic shampoos containing ketoconazole such as “Vitoral” (LLC “Aromat”, Ukraine), “Head & Shoulders (Procter and Gamble, Germany) into the section of cosmetics, while Ketozorol®-Darnitsa (Darnitsa, Ukraine) shampoo was in the section of drugs. If the word “shampoo” is indicated in the product description, it does not mean that this product should be included in the section of cosmetics. These PMC containing ketoconazole have not been officially registered in the State Register of Medicines, and they have not been only sold in pharmacies, but also in supermarkets and at the market. As a rule, when buying PMC at the supermarket, the consumer does not receive professional advice on the proper use of these products. In this case, the expected therapeutic effect does not occur, and it negatively affects the image of PMC.

Currently, the Ukrainian pharmaceutical market has been developing rapidly [14]. In its structure, the range of antidandruff agents of domestic production freely sold in pharmacies of Ukraine has been rather wide, and has accounted for 49.3% of the total share. The leaders have been the following producers and brands:

- The group of “Elfa” companies (12 names of PMC for the treatment and prevention of dandruff on the basis of natural components, including shampoos, conditioners, masks, an infusion, a cream pasta);
- “Amalgameluxe” Ltd. (shampoo, paste, liquid soap and Sulsena antidandruff peeling shampoo);
- Pharmaceutical Scientific Research Center “Alliance of beauty” (5 names of antidandruff shampoos based on plant extracts of nettle, bur marigold, sage, calendula and birch tar);
- Pharmaceutical Company “Darnitsa” (Ketozorol®-Darnitsa shampoo, 2%, 60 ml);

- LLC “Aromat” (“Vitoral” shampoo with ketoconazole, “Aromavit” shampoo and conditioner with plant extracts);
- Research and Production Association “Biocon” (“Strength of Hair” antidandruff shampoo and mask);
- Manufacturing and Trading company “Farmakom” (Birch tar shampoo, antidandruff shampoo with allantoin).

The leading positions in import of this product group belonged to France – 10%, Russian Federation – 8.3%, India – 5.6% and Italy – 5.6%. At the market, there was also PMC produced in Belgium – 3.7%, Germany – 3.5%, Greece – 2.1%, Slovenia, Ireland, Hungary – 1.4% each, Bulgaria – 1.0%, UK – 1.0%, Poland – 1.0%, Jordan – 0.7%, USA – 0.6%, Romania – 0.6%, Denmark – 0.6%, Switzerland – 0.6%, the Czech Republic – 0.6%.

The analysis has shown that to achieve the desired effect when treating, dandruff drugs and PMC, as well as medicines of systemic and local action with the active substances of the synthetic and natural origin in their composition were used in a complex [10, 13]. In this sense, the most progressive area has been the creation of complex systems (product lines) aimed at solving a specific problem [15]. As an example, the composition of the treatment line (TL) “Home Doctor” (“Domashniy doktor”) and “Green Pharmacy” (“Zelonaya apteka”) produced by the Research and Production Association (RPA) “Elfa” (Ukraine) has been given below (Table 3):

Table 3: The composition of the treatment lines – “Home Doctor” and “Green Pharmacy” produced by the RPA “Elfa”, Ukraine

TL “Home Doctor”	TL “Green Pharmacy”
• “Tar + tea tree” antidandruff shampoo, 300 ml;	• “Birch buds and castor oil” antidandruff balsam conditioner, 300 ml;
• “Tar + tea tree” antidandruff cream paste, 150 ml;	• “Zinc+tar” antidandruff balsam-mask for hair, doy-pack, 200 ml;
• “Tea tree” antidandruff infusion, 300 ml;	• “Birch buds and castor oil” antidandruff mask for hair, 1000 ml;
• Antidandruff burdock oil with tea tree and rosemary, 100 ml;	• “Zinc+ birch tar” antidandruff shampoo, doy-pack, 200 ml;
• “Birch tar” antidandruff shampoo on soaproot, 300 ml;	• “Birch buds and castor oil” antidandruff shampoo, 1000 ml; 350 ml.

Annually, there has been PMC mainly of foreign production at the Ukrainian pharmaceutical market; which has been presented by a large range of dosage forms such as lotions, oils, ampoules, extracts, etc. compared to the drugs:

- Ducray Squanorm oily dandruff hair shampoo, 125 ml, Pierre Fabre Dermo-Cosmetique, France;

- Insight antidandruff cleansing lotion, 100 ml; “ELEY”, Italy;
- “Aromatica” antidandruff burdock oil, 100 ml (Mirra, “Lab. Biocodex”, France ^[16]).

Generally, the main components of PMC have been herbal extracts of such medicinal plants as stinging nettle (*Urtica dioica*), great burdock (*Arctium lappa*), Chinese tea (*Camellia sinensis*), common hop (*Humulus lupulus*) ^[15, 17].

The analysis revealed that as of 1.03.2019, there were 10 names of drugs for the treatment of dandruff (including drug forms – 20) registered in the State Register of Medicines ^[18]. The number of antidandruff drugs registered in Ukraine was only 6.9% of the total number of antidandruff products.

When analyzing various forms of drugs according to the international ATC classification, it has been determined that 55% of drugs referred to the derivatives of imidazole and triazole – they contained ketoconazole (D01A C08); 25% – other dermatological preparations containing zinc pyrithione (D11AX12); 20% – combined drugs (Comb drug –D01A C) ^[12] (Table 4).

Table 4: The analysis of drugs for treating dandruff registered in the State Register of Ukraine (as of 1.03.2019)

№.	The name of the drug	Manufacturer	ATC code
1.	Dermazol® shampoo, 50 ml or 100 ml, in vials	Kusum Healthcare Pvt. Ltd., India	D01A C08 – ketoconazole
2.	Dermazol® shampoo 2%, sachet, 8 ml, No 20	Kusum Healthcare Pvt. Ltd., India	
3.	Ebersept shampoo, 2%, 25 ml, 60 ml, 120 ml, in vials	Bros Ltd, Greece	
4.	Ketozoral®-Darnitsa shampoo, 20 mg/g, 60 g, 100 g, in vials	Darnitsa, Ukraine	
5.	Kenazol® shampoo, 20 mg/1 g, 100 ml, in vials	Pharma International, Jordan	
6.	Nizoral® shampoo, 20 mg/g, 25 ml, 60 ml, in bottles	Janssen Pharmaceutica NV, Belgium	
7.	Skin-cap aerosol, 0.2%, 50 ml, 100 ml, or 200 ml in monoblock cans	Cheminova Internacional S.A., Spain	D11AX12 – zinc pyrithione
8.	Skin-cap shampoo, 1%, 75 ml, 150 ml, in vials	Cheminova Internacional S.A., Spain	
9.	Keto plus shampoo, 60 ml, or 150 ml, in vials	Glenmark Pharmaceuticals Ltd., India	Comb drug D01A C
10.	Dermazol® plus shampoo, 50 ml, or 100 ml, in vials	Kusum Healthcare Pvt. Ltd., India	

As a result of the comparative analysis of the prices of drugs and PMC sold in pharmacies, it has been found that their cost varied

from 10 to 470 UAH. According to the price characteristics, all products were divided into three categories (Figure 3).

Moreover, mainly domestic products – 58.7% of the total number – were in the low cost price range (10-135 UAH), while imported products were 19.9%. This demonstrated the availability of domestic products for the treatment and prevention of dandruff ^[15, 19]. The average cost price range (8.7%) was presented by drugs and PMC of foreign production with the cost from 135 to 235 UAH. The high cost niche (12.7%) included only the products of foreign production with the cost of 235-470 UAH. The study showed that there were no Ukrainian products in the average cost and high cost niche.

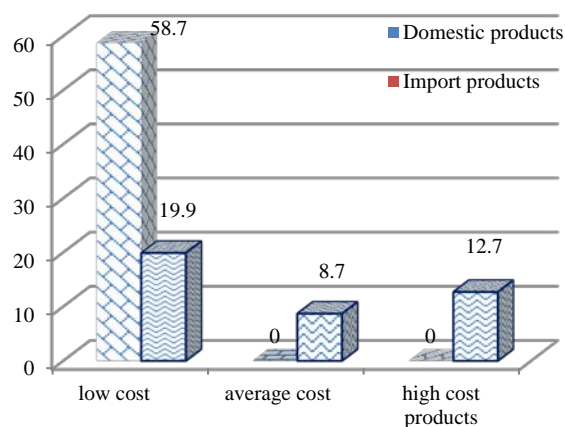


Figure 3. The comparative assessment of the cost of domestic and import antiseborrheic products

Conclusion

1. The analysis of drugs, PMC and PP has been conducted to supply the pharmaceutical market with available antiseborrheic products, and provide the effective and controlled therapy and prevent diseases. Antidandruff agents can be divided into four groups: antimycotic agents with the fungistatic action; antifungal agents with the fungicidal activity; exfoliating agents, and revitalisants.
2. In the comparative analysis of antidandruff agents by the drug forms, it was found that shampoos were the largest part – 78.5%, soap – 6.95%, oils – 4.2%, pastes – 3.5%, lotions – 2.1%, balsam conditioners – 1.4%. Products in the form of tablets and ampoules were 0.7% of the total number.
3. It was determined that the range of antidandruff drugs, PMC and PP of the Ukrainian manufacturers freely sold in pharmacies of Ukraine was rather wide, and accounted for 49.3% of the total share. The leaders were such producers and brands as: RPA “Elfa”, Kiev; Pharmaceutical Company “Darnitsa”, Kiev; Pharmaceutical Scientific Research Center “Alliance of beauty”, Kiev; LLC “Aromat”, Kharkov; Manufacturing and Trading company “Farmakom”, Kharkov. The share of foreign antidandruff agents was 50.7%. The leading positions in import of this commodity group belonged to

France, the Russian Federation, India and Italy. It has been found that the most effective and progressive area of domestic manufacturers was the production of complex systems (product lines) aimed at preventing specific problems on the example, of the treatment lines "Home Doctor" and "Green Pharmacy", RPA "Elfa", Ukraine.

4. It was determined that drugs for treating dandruff, as well as PMC and PP, mainly included antifungal drugs (ketoconazole, selenium disulfide, terbinafine), keratolytics (salicylic acid, sulfur), keratinization regulators (zinc pyrithione) in their composition. The number of antidandruff agents registered in Ukraine was only 7% of the total share. According to the ATC classification, most drugs (55%) referred to derivatives of imidazole and triazole, and contained ketoconazole (D01A C08) in their composition.
5. In the comparative analysis of the prices of antidandruff agents, it was found that their cost varied from 10 to 470 UAH. In the course of ranking prices by low cost (10-135 UAH), average cost (135-235 UAH), and high cost products (235-470 UAH), it was found that domestic products dominated over all groups (58.7%). It indicated their availability for the treatment and prevention of dandruff.

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