СОЦІАЛЬНИЙ МАРКЕТИНГ ТА ФАРМАКОЕКОНОМІЧНІ ДОСЛІДЖЕННЯ

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Al Sayasneh Mohammad, O. A. Ruban, I. V. Kovalevska, O. M. Ievtushenko

National University of Pharmacy of the Ministry of Health of Ukraine, Kharkiv

Analysis of the market of medicinal products for the conservative treatment of hemorrhoids in order to determine the marketing opportunities for a domestic manufacturer

The spread of diseases of the rectum, namely hemorrhoids, leads to the deterioration of the physical and psychological health of the working-age population, increases the budget costs of the healthcare system, insurance companies, and the population's own funds. In this regard, the development of new complex medicinal products is always relevant for domestic pharmacy.

Aim. To form a modern idea of the market structure and trends in the consumption of drugs for the conservative treatment of hemorrhoids, determine the possible potential for domestic developers and manufacturers.

Materials and methods. The research was conducted using the structural analysis logical and graphic methods, methods of marketing analysis.

Results. It was found that recently the market of antihemoroidal agents for topical application and capillary-stabilizing agents developed quite vigorously – the market growth rates in the period of 2020-2021 were from 15 to 23 % in physical units and from 28 to 40 % in monetary units. However, according to the structure of the producing countries, the market remains import-dependent. Drugs from France, Switzerland, Bulgaria, Germany, Spain, Slovenia, Italy, and the United States are available on the market. The leaders of sales are products manufactured by Servier (France), Innotek International (France), and Teva (Israel). The leaders in the supply of domestic drugs of this group are Borshchagovsky Chemical Pharmaceutical Plant, JSC "Galichpharm", Kyiv Vitamin Plant, PJSC "Darnitsa" Pharmaceutical company", PJSC "Monpharm". The most popular dosage forms are tablets, capsules, gels, ointments, suppositories.

Conclusions. Based on the changes identified, certain proposals have been developed for the domestic pharmaceutical industry – the market has a relatively small range of domestic complex medicines combining components of chemical and natural origin, including the plant raw material. The market has a positive development trend; therefore, further search for an effective complex drug is expedient.

Key words: hemorrhoids; conservative treatment; suppositories; gels; ointments; pharmaceutical market; marketing research.

Аль Саяснех Мохаммад, О. А. Рубан, І. В. Ковалевська, О. М. Євтушенко

Національний фармацевтичний університет
Міністерства охорони здоров'я України, м. Харків

Аналіз ринку препаратів для консервативного лікування геморою з метою визначення маркетингових можливостей для вітчизняного виробника

Поширення захворювань прямої кишки, а саме геморою, призводить до погіршення фізичного й психологічного здоров'я працездатного населення, підвищує витрати з бюджету системи охорони здоров'я, страхових компаній та власних коштів населення. У зв'язку із зазначеним розроблення нових комплексних лікарських засобів залишається завжди на часі для вітчизняної фармації.

Мета – формування сучасного уявлення про структуру ринку та тенденції споживання препаратів для консервативного лікування геморою, визначення можливого потенціалу для вітчизняних розробників і виробників.

Матеріали та методи. Дослідження проведено за допомогою структурного аналізу, з використанням логічного й графічного методів, методів маркетингового аналізу.

Результати дослідження. Виявлено, що останнім часом ринок антигемороїдальних засобів для місцевого застосування і капілярностабілізувальних засобів розвивався достатньо енергійно – темпи зростання ринку в період 2020-2021 рр. склали від 15 до 23 % у натуральних одиницях та від 28 до 40 % у грошових. Однак за структурою країн-виробників ринок залишається імпортозалежним. На ринку присутні препарати Франції, Швейцарії, Болгарії, Німеччини, Іспанії, Словенії, Італії, США. Лідерами продажів є засоби виробництва фірми Серв'є (Франція), Іннотек Інтернасіональ (Франція), Тева (Ізраїль) тощо. Лідерами постачання вітчизняних препаратів цієї групи є Борщагівський ХФЗ, АТ «Галичфарм», Київський вітамінний завод, ПАТ «Фармацевтична фірма "Дарниця"», ПАТ «Монфарм». Найбільш популярними формами випуску є таблетки, капсули, гелі, мазі, супозиторії.

Висновки. На базі виявлених змін розроблено певні пропозиції для вітчизняної фармацевтичної індустрії – ринок має відносно незначний асортимент вітчизняних комплексних лікарських засобів, що поєднують компоненти хімічного та природного походження, зокрема й рослинну сировину. Ринок має позитивну тенденцію розвитку, тому подальший пошук ефективного комплексного препарату є доцільним.

***Ключові слова**:* геморой; консервативне лікування; супозиторії; гелі; мазі; фармацевтичний ринок; маркетингові дослідження.

Statement of the problem. Due to the widespread prevalence of inactive and sedentary lifestyle, hemorrhoids have become a frequent companion for both men and women. Hemorrhoids are found in 10-15 % of the adult population, and their share among diseases of the rectum is 42 %. According to statistics, the prevalence of the disease is up to 130-145 people per 1000 adults [1-3]. Hemorrhoids force more than 2.2 million patients to seek medical care every year. This disease is widespread in industrially developed countries as an epidemic, leading to the involvement of a large number of people of working age, long-term disability, etc.

Hemorrhoids came out on top in the total number of coloproctological diseases due to:

- low physical activity and sedentary lifestyle of modern people, as a result of which blood circulation in the pelvic region is impaired, stagnant phenomena appear in the venous bed;
- improper dietary habits, excessive fats and sugar, chronic deficiency of vegetable fiber, which stimulates the processes of peristalsis, spicy food, alcohol;
- constipation;
- obesity, which causes a lot of pathologies, problems with the veins in general and for hemorrhoidal veins in particular;
- pregnancy, during which the uterus increases and squeezes the blood vessels and childbirth when intra-abdominal pressure increases sharply;
- genetic predisposition in the form of weakness of the venous walls;
- uncontrolled prolonged intake of laxatives and hormones;
- extreme physical activity in sports, work, household;
- behavioral habits, such as prolonged sitting on the toilet, which leads to increased pressure in the pelvic organs and venous blood stagnation.

Modern medicine offers several methods for solving problems associated with hemorrhoids:

- non-pharmacological ones aimed at changing the patient's lifestyle (physical activity, healthy food);
- medicinal products (medical therapy, folk remedies);
- measures aimed at reducing the pressure in the anal canal;
- minimally invasive;
- surgical methods [4-6].

Taking into account that hemorrhoids are a vascular pathology, and the process is localized in the cavernous tissue of the terminal rectum, the need and relevance of medicinal products (MPs) that have a vasoprotective effect, increase venous tone, and improve microcirculation is clear.

Complex treatment regimens involve the use of products of different pharmacotherapeutic groups: antibiotics; anti-inflammatory drugs; alpha-blockers; antispasmodics; drugs designed to improve blood circulation, etc. [7-9]. Medicines containing biologically active substances of natural origin play a significant role in the complex treatment. They provide broad pharmacodynamics, high efficiency and safety, are well tolerated by patients. The recommended groups of drugs [7-11] for the conservative treatment of hemorrhoids are given in Table 1.

Modern arsenal of local antihemorrhoids simplifies the doctor and the patient's treatment process as much as possible. In these

Table 1

THE MAIN PHARMACOTHERAPEUTIC GROUPS OF MEDICINAL PRODUCTS FOR THE CONSERVATIVE TREATMENT OF HEMORRHOIDS

Group	Substance	Way of application
u-benzopyrones (flavonoids)	micronized purified fraction of flavonoids (MPFF)	Systemic phlebotropic drugs
	Semi-synthetic diosmin	
	Rutin, rutosides	
	Hespredin	
Glucocorticoids	Prednisolone	Locally. In the form of ointments and suppositories
	Hydrocortisone and fluocortolone	
NSAIDs	Ketoprofen	Systemic pharmacotherapy aimed at eliminating pain is used orally and parenterally (intramuscularly and intravenously)
	Diclofenac	
	Indomethacin	
Anticoagulants	Heparin	Locally. In the form of ointments and suppositories
Anticongestants	Phenylephrine	Locally. In the form of ointments and suppositories
Hemostatic agents	Sodium etamsylate	Systemic pharmacotherapy aimed at stopping hemorrhoidal bleeding is used orally and parenterally (intramuscularly and intravenously)
	Tranexamic acid	
Local anesthetics	Lidocaine	Locally. In the form of ointments and suppositories
	Benzocaine	
Other plant extracts	anthocyanosides (blueberry extract)	
	proanthocyanidols (extract from leaves and seeds of grape)	
	Ginkgo biloba extract	
	horse chestnut extract	

cases, ointments, creams, gels, suppositories are preferred since the process of their administration is simplified as much as possible (the medicinal product is equipped with special nozzles, rectal tips). The administration of rectal suppositories can be associated with certain errors: the suppository itself can fall out, hemorrhoidal nodes can be additionally injured, etc. Moreover, with external hemorrhoids, there is a need to apply a medicinal base not only to the walls of the anal canal, but also to the perianal skin.

Analysis of recent research and publications. Over the past decade, scientists have repeatedly turned to the problem of studying and creating products for the conservative treatment of hemorrhoids. Among the scientific works closely related to the field of the research, a significant place is occupied by the works of Pertsev I. M., Dmitrievsky D. I., Ruban O. A., Orlovetska N. F., Khokhlenkova N. V., etc. [10-14].

Identification of aspects of the problem unsolved previously. To substantiate the feasibility of developing domestic drugs for the treatment of hemorrhoids, it is advisable to determine the volume and potential of the Ukrainian pharmaceutical market and trends in its development.

Currently, there are publications in the scientific literature that reflect the results of the analysis of the range and price; however, events occurred over the past 2-3 years have changed the picture at the pharmaceutical market of Ukraine. The economic crisis, the consequences of the hybrid war have changed the structure of consumption and the range of medicines offered. Moreover, the individual results of market research of these groups found in literature sources [16, 17] are fragmentary and do not reflect the current trends. In this regard, studies that will allow determining the current state of the market of these groups of drugs, trends in their consumption, the feasibility of developing domestic drugs for the treatment of hemorrhoids are relevant.

Objective statement of the article. The work aimed to form a modern idea of the market structure and trends in the consumption of drugs for the conservative treatment of hemorrhoids, determine the possible potential for domestic developers and manufacturers.

The paper analyzes the structure of the product range, the cost of medicinal products, consumption trends, which were carried out according to the data of the Equalizer system by Business Credit [18]; the period of analysis was December 2020 – December 2021. The study was also carried out in accordance with the State Register of Medicines of Ukraine and the ATC classification [19, 20]. When analyzing the range the number and structure of manufacturers, the variety of forms of production and other indicators characterizing the consumption of this group of drugs at the market of Ukraine were determined. The study objects were medicinal products registered in Ukraine and used for the treatment of hemorrhoids. In the course of our research, primary and secondary marketing information were analyzed. The work was performed using statistical, logical and graphical methods, as well as marketing analysis methods.

Presentation of the main material of the research. The International ATC Classification distinguishes the agents used in the treatment of hemorrhoids into a separate group – C05 Vasoprotectors, within which they are distributed as follows:

- C05A – Agents for treatment of hemorrhoids and anal fissures for topical use;
- C05C – Capillary stabilizing agents;

The further gradation is:

- C05AX – Other agents for treatment of hemorrhoids and anal fissures for topical use;
- C05CA – bioflavanoids;
- C05CX – other capillary stabilizing agents.

A special position in the group of angioprotectors is occupied by drugs of group C05A – Agents for treatment of hemorrhoids and anal fissures for topical use. They are about 30 % of all agents of group C05, but the most common drugs are capillary stabilizing agents (C05C) – about 53 % in packs.

The first step of the study was to analyze the total group of C05 Vasoprotectors. The analysis of the market structure shows that the lion's share of the total C05 group belongs to foreign manufacturers – today they cover more than 65 % of the Ukrainian market of angioprotectors (Table 1). As for the group of antihemorrhoidal agents for local use and the group of capillary stabilizing agents, in 2021 the ratio of domestic drugs to imported ones was 8.4:91.6 and 42.6:57.37, respectively. When analyzing the internal groups of drugs the same situation is observed, the share of the domestic manufacturers by the volume of sales in dollars is about 10 %. Germany, France, Israel, and others remain the main importers of these products to the Ukrainian market. As of the end of 2021, 107 trade names were present under group C05, 63 brands under 39 international non-proprietary names (INN) from 37 manufacturers.

According to group C05, Ukrainian producers occupy 52 % of the nomenclature although the market share in monetary units is 34.5 % (Fig. 1; Table 2). Thus, the pharmaceutical market of Ukraine is quite saturated with domestic drugs, but by the volume of sales the market belongs to foreign manufacturers.

As for foreign manufacturers, drugs from France, Switzerland, Bulgaria, Germany, Spain, Slovenia, Italy, and the United States are available on the market. The leaders of sales are products manufactured by Servier (France), Innotek International (France), Teva (Israel), Stada and Bayer AG (Germany) (Fig. 1). The leaders in the supply of domestic drugs of this group are Borshchagovsky Chemical Pharmaceutical Plant, JSC "Galichpharm", Kyiv Vitamin Plant, PJSC "Darnitsa" Pharmaceutical company", PJSC "Monpharm".

According to the results of 2021, the main factors affecting the development of the pharmaceutical market were the economic situation in the country and the well-being of the population. As for economic indicators, the GDP growth was about 3.1 %, inflationary processes exceeded expectations and amounted to more than 9 %. However, all categories of goods of the "pharmacy basket" showed an increase in dollar terms by 18.6 % in 2021 (compared to 2020) and by 4.7 % in 2020. Regarding group C05, market development trends indicate that the market is developing both in natural units and in monetary units (Table 3). Thus, in general, group C05 increased that year in natural units (GR TU), % = 20.17, as well as in dollar equivalent (GR SV), % = 36. Similar increments were shown by all groups included in C05 (C05A Antihemorrhoidal + C05C Capillary Stabilizing), except for herbal medicines.

Table 2

THE RATIO OF DOMESTIC AND IMPORTED MEDICINAL PRODUCTS IN GROUP C05 DURING THE YEAR BY MONETARY INDICATORS (DECEMBER 2020 – DECEMBER 2021)

Market indicators of the group	Market volume (thousand USD)/%						
	C05	C05A	C05C	C05A + C05C	C05A + C05C (C05AX + C05CA + C05CX)	C05A + C05C (C05AX + C05CA + C05CX) (gel, ointment, cream, suppositories)	C05A + C05C (C05AX + C05CA + C05CX) (gel, ointment, cream, suppositories – rutins)
Total volume of drug sales	84.38/ 100	19.54/ 100	56.66/ 100	76.20/ 100	68.79/ 100	17.795/ 100	5690/ 100
Volume of sales of domestic drugs	29.07/ 34.45	1.64/ 8.4	24.15/ 42.62	25.79/ 33.84	25,350/ 35.85	1.721/ 9.67	613/ 10.77
Volume of sales of imported drugs	55.30/ 65.54	17.90/ 91.6	32.51/ 57.37	50.41/ 66.16	43.44/ 63.15	16.074/ 90.33	5077/ 89.23

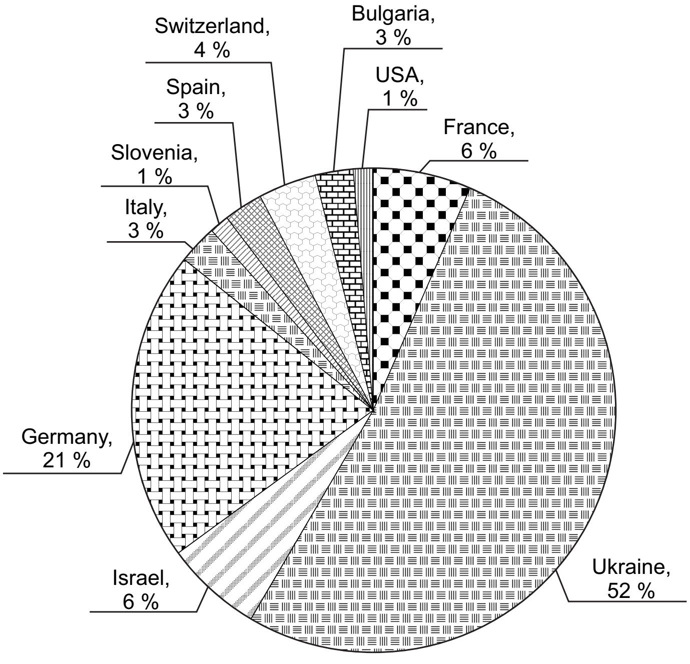

Fig. 1. Distribution of C05 group drugs by producing countries (by the number of names)

But today the segment of herbal medicines has insignificant sale volumes.

But today this segment has insignificant sale volumes. Drugs of group C05A showed an increase of 28 % in natural units, while capillary stabilizing agents (group C05C) increased by more than 40 % (Table 4).

The consumption of drugs of groups C05A and C05C (C05AX + C05CA + C05CX) in certain dosage forms – gel, ointment, cream, rectal suppositories (up to 13 % in natural units, up to 25 % in monetary units) also increased. Semisolid dosage forms in these two groups (C05A + C05C; gel, ointment, cream, suppositories) account for about 32 % of the total amount of all forms. Currently, there are 24 semisolid drugs under 17 INN from 21 manufacturers at the pharmaceutical market. Domestic manufacture of semisolid dosage forms for the treatment or prevention of hemorrhoids occupies up to 10 % of all those present at the market. The leaders of sales (in natural units)

Table 3

GENERAL INDICATORS OF THE PHARMACEUTICAL MARKET FOR GROUPS OF MEDICINAL PRODUCTS FOR THE CONSERVATIVE TREATMENT OF HEMORRHOIDS (DECEMBER 2020 – DECEMBER 2021)

Market Indicators	The groups and subgroups of drugs studied according to the ATC classification						
	C05	C05A	C05C	C05A + C05C	C05A + C05C (C05AX + C05CA + C05CX)	C05A + C05C (C05AX + C05CA + C05CX) (gel, ointment, cream, suppositories)	C05A + C05C (C05AX + C05CA + C05CX) (herbal medicines)
Total sale volume (SV), thousands USD	84379	19544	56660	76204	68792	17994	11
Market Growth / Decrease Rate in USD (to the previous year) (GR SV), %	36	28	40.61	37.04	38.17	25.08	-54.5
Total sale volume, thousands units (TU)	11522	3060	6807	9876	8836	3311	1.6
Market Growth / Decrease Rate in units (to the previous year) (GR TU), %	20.17	15.92	23.66	21.15	21.88	13.15	-62
Weighted average cost of a pack (Pw_i), USD	7.30	6.39	8.32	7.72	7.79	5.43	0.7
Growth /decrease in the weighted average cost compared to the previous year, %	12.95	10.10	13.71	13.11	13.37	10.55	20.16
Inflation index* (consumer price index)	1.068	1.093	1.060	1.069	1.065	1.058	1.202

Note: * The inflation index, or consumer price index, is an indicator that characterizes changes in the overall price level for goods and services purchased by the population for non-productive consumption

Table 4

GENERAL INDICATORS CHARACTERIZING THE STRUCTURE OF THE RANGE OF DRUGS FOR THE CONSERVATIVE TREATMENT OF HEMORRHOIDS (DECEMBER 2020 – DECEMBER 2021)

Market Indicators	The groups and subgroups of drugs studied according to the ATC classification						
	C05	C05A	C05C	C05A + C05C	C05A + C05C (only C05AX + C05CA + C05CX)	C05A + C05C (C05AX + C05CA + + C05CX) (gel, ointment, cream, suppositories)	C05A + C05C (C05AX + C05CA + C05CX) (herbal medicines)
1	2	3	4	5	6	7	8
Number of trade names (stock keeping units), SKU*	118	30	56	86	75	34	1
Number of brands	68	17	36	53	49	24	1
Number of corporations	42	11	29	40	34	21	1
Number of INN	39	15	20	35	29	17	1

Continuation of Table 4

1	2	3	4	5	6	7	8
I_{new} (Index of goods appeared in this period)	1.001	1	1.001	1	1.001	1	1
I_{out} (out-of-market index)	1	1	1	1	1	1	1
The share of the subgroup in the total group of C05 drugs in UAH, %	100	23.16	67.14	90.30	81.52	21.32	0.01
The share of the subgroup in the total group of C05 drugs in natural units, %	100	28.03	52.33	80.36	70.09	31.77	0.93

Note: *SKU – stock keeping unit)

among domestic and foreign manufacturers, and the generalized rating of the above-mentioned products are given in Table 5.

It should be noted that Troxevasin occupies more than 50 % of the market of semisolid dosage forms for the conservative treatment of hemorrhoids.

However, despite the fact that the market is attractive and the number of domestic drugs presented has increased recently, the desired market size and the range width for a domestic manufacturer have not yet been achieved.

In general, the price policy of firms in this group of drugs is divided into high, medium and low. Traditionally, domestic drugs are in the low price group, most of the drugs are at the medium level (from 7 to 9 dollars/pack), and there are drugs of a high price level – 14-15 dollars/pack (Fig. 2). Unfortunately, domestic drugs are products with a high sensitivity to price changes; therefore, with inflationary processes, there may be a decrease in demand against the background of price increases. The weighted average price of drugs

Table 5

RATING OF ANTIHEMORRHOIDAL AGENTS FOR THE CONSERVATIVE TREATMENT IN THE FORMS OF GEL, OINTMENT, CREAM, SUPPOSITORIES AT THE MARKET OF UKRAINE (2021) BY SALE VOLUMES IN NATURAL UNITS

No.	Domestic manufacturers	No.	Foreign manufacturers	No.	General group (domestic+foreign)
1	Anusol, rect. supp., No.10, Monpharm	1	Troxevasin, gel tube, 2 %, 40 g, No.1, Teva	1	Troxevasin, gel tube, 2 %, 40 g, No.1, Teva
2	Belladonna rect. supp., 15 mg, No.10, LEKKHIM JSC	2	Troxevasin, gel tube, 2 %, 100 g, No.1, Teva	2	Troxevasin, gel tube, 2 %, 100 g, No.1, Teva
3	Troxerutin-Darnitsia, gel, 2 %, 30 g, No.1, Darnitsia	3	Proctosan Neo, ointment tube, 20 g, No.1, Stada	3	Proctosan Neo, ointment tube, 20 g, No.1, Stada
4	Ichthyol, rect. supp., 0.2 g, No.10, Monpharm	4	Procto-glivenol, cream tube, 30 g, No.1, Recordati	4	Troxerutin-Darnitsia, gel, 2 %, 30 g, No.1, Darnitsia
5	Propolis, rect. supp., 0.1 g, No.10, Lekkhim JSC	5	Relief, ointment tube, 2.5 mg/g, 28.4 g, No.1, Bayer Healthcare	5	Procto-glivenol, cream tube, 30 g, No.1, Recordati
6	Troxerutin, gel tube, 2 %, 35 g, No.1, Chervona Zirka	6	Troxevasin, gel tube, 2 %, 20 g, No.1, Teva	6	Relief, ointment tube, 2.5mg/g, 28.4 g, No.1, Bayer Healthcare
7	Belladonna, rect. supp., 15 mg, No.10, Monpharm	7	Reparil – gel H, gel, 40 g, No.1, Madaus	7	Troxevasin, gel tube, 2 %, 20 g, No.1, Teva
8	Betiol, rect. supp., No.10 (5 x 2), Lekkhim JSC	8	Phleboton, gel tube, 2 %, 40 g, No.1, Sopharma	8	Troxerutin, gel tube, 2 %, 35 g, No.1, Chervona Zirka
9	Troxegel KMP, gel tube, 2 %, 40 g, No.1, Arterium	9	Trombocyd, gel, 15 mg/g, 40 g, No.1, Bene Artzneimitt	9	Reparil – gel H, gel, 40 g, No.1, Madaus
10	Eskuven, gel tube, 1 %, 50 g, No.1, Ternopharm	10	Posterisan, ointment tube, 25 g, No.1, Forte Dr. Kade	10	Phleboton, gel tube, 2 %, 40 g, No.1, Sopharma

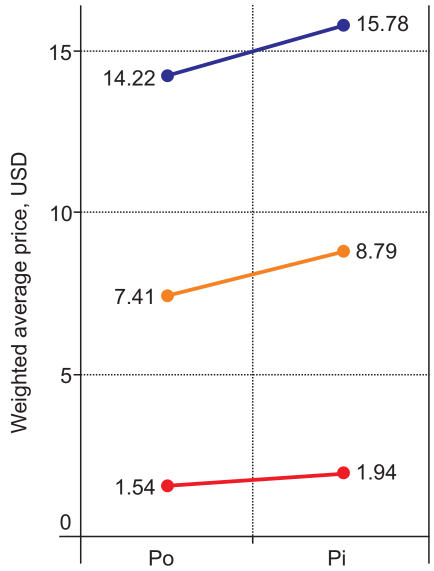

Fig. 2. Prices by levels (low, medium, high) for drugs of group C05, USD/pack

in this group is also higher than the average – $8.32 against $7.30 on average in group C05 (Fig. 2). These two levels account for about 90 % of the nomenclature of group C05.

The Ukrainian market was stable for drugs in this group as during the year the indices of products entered or left the market fluctuated around 1. Thus, the demand and sale of drugs were satisfactory, and no drug left the market. It should be noted that the Russian drugs of the above groups, which were sold in Ukraine in previous years, were eliminated from the market at that time [16, 18].

The study of the composition of drugs for the local treatment of hemorrhoids showed that they could contain chemical, biogenic, and herbal components. Moreover, the list of possible plant combinations is quite large. It should be noted that the proportion of herbal medicines that are part of the two above-mentioned groups is quite insignificant, and is about 1 %. The sources of herbal therapy are *Artemisia* – an anti-inflammatory and analgesic effect; *Tanacetum vulgare* – an anti-inflammatory, anti-microbial, and wound-healing effect; *Polygonum persicaria* – healing of minor wounds, relief of inflammation, and drying of nodes in hemorrhoids; *burdock* – reduction of nodes in hemorrhoids; *aloe* – smearing of anal cracks and external hemorrhoidal nodes with a fresh juice (it is a reliable way of accelerating their healing); *chamomile* – an anti-inflammatory agent; the extract from *Potentilla* rhizome and the extract from yarrow herb – anti-inflammatory and astringent effects. The thick extract of *horse chestnut* bark, which contains esculin with a small amount of escin, increases the vein elasticity. A thick extract from belladonna roots exerts an antispasmodic effect on smooth muscles [7, 12, 21, 22].

Unfortunately, herbal medicines in the groups used in the conservative treatment of hemorrhoids have a small share and have recently lost their position at the market: over the past year, they reduced sales in both natural and monetary units by more than half (-54 % and -62 %, respectively). It is possible that there is a "washout" of cheap drugs with low profitability from the market: with an average price of drugs of group C05 of 7.3 dollars, the average cost of a pack for herbal medicines is 0.7 dollars, i.e. 10 times lower. The price for them grew very slowly – the cost of drugs increased by about 20 % (against the background of the consumer price index = 1.2) although for all other groups of drugs, the price increase exceeded the inflation index (Table 2). This group of drugs does not bring significant profits and, therefore, has weak promotion, the pharmacy staff is not motivated to promote these drugs.

A particular attention should be paid to drugs that contain rutin both separately and in combination with other APIs (troxerutin, troxerutin + dexopanthenol, troxerutin + indomethacin, etc.). There are a limited number of these drugs, including both domestic and foreign drugs. The following products are present at the Ukrainian market: Venorutinol, gel tube, 40 g, and Pantevenol, gel tube, 40 g (Borschagivsky CPP), Troxevasin, gel tube, 2 %, 20 g, 40 g, 100 g (Teva Pharmaceutical Industries), Troxevenol, gel tube (Viola PF), Troxegel KMP, gel tube (Arterium), Troxerutin, gel tube (Chervona Zirka PF), Troxerutin-Darnitsa, gel, 30 g, Phleboton, gel tube, 2 %, 40 g (Sopharma). However, the market leaders by sales of products in units are Teva Pharmaceutical Industries (it owns about 63 % of the market) and Darnitsa (it occupies more than 22 % of the market of rutin-containing drugs). The average cost of a pack of a drug with rutin is $4.4, i.e. it is between a low and a medium price level, and is affordable for the Ukrainian consumer. Drugs with rutin are effective and have a minimal number of adverse reactions [21, 22].

Table 6

ACTIVE SUBSTANCES IN SEMISOLID DOSAGE FORMS (GELS, OINTMENTS, CREAMS, SUPPOSITORIES, ETC.) APPROVED FOR SALE IN UKRAINE TO TREAT HEMORRHOIDS

INN	Number of references in the composition of drugs	INN	Number of references in the composition of drugs
Aescin	4	Phytocomponents (belladonna)	3
Aescin, diethylamine salicylate	1	Propolis	2
Aescin, thiamine	1	Sulfanilamide, camphora	1 proctan
Bufexamac	1	Tribenoside, lidocaine	2
Combinations	5	Troxerutin	8
Dexpanthenol	1	Troxerutin, dexpantenol	1
Emoxypine	1	Troxerutin, indomethacin	1 troxevenol
Heparin sodium, prednisolone	2 proctozan	Xeroform, belladonna extract	2 annuzol
Pentosan polysulfate	1		

In total, there are 10 SKU names with rutins at the market, the number of brands is 7, the number of corporations is 7, and the number of INN is 3. The group of drugs with rutins also showed growth in both natural and monetary units (+10 % and +20 %). Among them, the leading drugs are Troxevasin (Teva) and Troxerutin (PJSC "Darnitsia" Pharmaceutical company" and PJSC "Khimpharmzavod "Chervona Zirka", Ukraine). Troxevazine, gel tube, 2 %, in various volumes in general occupies more than 65 % of sales for this group of medicinal products in natural units and more than 80 % of the market in monetary units. New drugs containing rutins did not appear on the market this year. But in general, the market for drugs containing rutins has shown positive growth rates in any units, which is a positive moment for domestic developers.

We have analyzed the composition of antihemorrhoids present at the Ukrainian market. The results are presented in Table 6.

In general, over 17 active substances are used to manufacture medicinal products with the local action.

Conclusions

1. The structure and trends of the development of the Ukrainian market of medicines for the conservative treatment of hemorrhoids have been studied in order to determine marketing opportunities for domestic developers and manufacturers.

2. Based on the marketing analysis conducted, it has been found that recently the market of antihemoroidal agents for topical application and capillary-stabilizing agents developed quite vigorously – the market growth rates in the period of 2020-2021 were from 15 to 23 % in physical units and from 28 to 40 % in monetary units (compared to the overall growth rate of the pharmaceutical market of Ukraine in 2021 in the dollar equivalent of 18 %). However, according to the structure of the producing countries, the market remains import-dependent – imported drugs occupy from 60 to 90 % of the domestic market by nomenclature. Regarding foreign manufacturers, drugs from France, Switzerland, Bulgaria, Germany, Spain, Slovenia, Italy, and the United States are available on the market. The leaders of sales are products manufactured by Servier (France), Innotek International (France), Teva (Israel), Stada (Germany) and Bayer AG (Germany). The leaders in the supply of domestic drugs of this group are Borshchagovsky Chemical Pharmaceutical Plant, JSC "Galichpharm", Kyiv Vitamin Plant, PJSC "Darnitsa" Pharmaceutical company", PJSC "Monpharm".

3. The study has found that the most popular dosage forms of the group of antihemoroidal drugs for topical application and capillary-stabilizing agents are tablets, capsules, gels, ointments, suppositories. The consumption of these drugs increased to 13 % in natural units, to 25 % in monetary units. Semisolid dosage forms and suppositories in these two groups (C05A + C05C; gel, ointment, cream, suppositories) account for about 32 % of the total number of all forms. Currently, at the pharmaceutical market of Ukraine, there are 24 drugs

with 17 international non-proprietary names (INN) from 21 manufacturers in these dosage forms. The market leader is Troxevasin gel – it occupies more than 50 % of the market of soft dosage forms for the conservative treatment of hemorrhoids. The market is import-dependent as domestic production of semisolid dosage forms and suppositories takes up to 10 %.

4. The study of the composition of drugs for the conservative treatment of hemorrhoids has shown that they can contain chemical, biogenic, and herbal components. In general, benzopyrones (flavonoids), glucocorticoids, nonsteroidal anti-inflammatory agents, anticoagulants, anticongestants, hemostatic agents, local anesthetics, herbal extracts are used in the composition of drugs present at the Ukrainian market.

5. A particular attention was paid to drugs containing rutin both separately or in combination with other APIs (troxerutin, troxerutin + dexopanthenol, troxerutin + indomethacin, etc.). There are a limited number of these drugs, including both domestic and imported drugs. In total, there are 10 SKU names with rutins at the market, the number of brands is 7, the number of corporations – 7, and the number of INN – 3. The market leaders by the product sales in units are Teva Pharmaceutical Industries (it owns about 63 % of the market) and PJSC "Darnitsia" Pharmaceutical company" (it occupies more than 22 % of the market of rutin-containing drugs). The drugs are effective and have a minimal number of adverse reactions. The group of drugs with rutins also showed growth in both physical and monetary units (+10 % and +20 %). Among the leading drugs are Troxevasin (Teva) and Troxerutin (PJSC "Darnitsia" Pharmaceutical company" and PJSC "Khimpharmzavod "Chervona Zirka", Ukraine). In general, the market of rutin-containing drugs has shown stability and positive growth rates in all units; and it is attractive for domestic developers.

6. According to the general results of the development of the pharmaceutical market of drugs for the conservative treatment of hemorrhoids, the market has a positive tendency to develop both in the dynamics of sale volumes and in the range structure for the domestic manufacturer.

7. Further research should be aimed at determining the volume of possible demand for a new drug, its positioning at the pharmaceutical market, determining competitiveness factors among similar drugs of the group and possible competing drugs.

Prospects for further research. In our opinion, the following main trends can be distinguished: the market of drugs for the conservative treatment of hemorrhoids is represented by a rather wide range of products. However, the study of the dynamics of changes in sale volume the structure of the range of drugs shows that the market is dominated by drugs of foreign manufacture, the share of Ukrainian products is from 8 to 40 % for various groups and dosage forms. As for development trends, there are some market fluctuations due to the crisis phenomena in this country; however, the general trend indicates a positive development of the market for drugs of the groups studied and its high rates. In addition, a promising segment of the market for domestic developers and manufacturers can be called the segment of drugs for the complex therapy of these diseases; these drugs contain rutin, aescin, anti-inflammatory agents, drugs for improving blood circulation, other components of natural origin. Complex drugs can provide effective therapy, are well tolerated by patients, and have few side effects. Of particular interest are semisolid dosage forms and suppositories that are popular in the treatment of hemorrhoids. For manufacturers, they are interesting for the possibility of using a wide domestic raw materials base, which reduces the cost of products and simplifies the logistics component, facilitates the quality control process. Most preparations in a gel form, namely emulsion, have certain advantages: they will have a gentle effect on the mucous membrane, improve bioavailability and increase the rate of absorption of active components. The further search for an effective complex drug is in demand by the market, can provide sufficient profits, but requires aggressive promotion.

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Information about authors:
Al Sayasneh Mohammad, postgraduate student of the Department of Industrial Technology of Drugs, National University of Pharmacy of the Ministry of Health of Ukraine (https://orcid.org/0000-0002-7964-8058). E-mail: Z571491@gmail.com
Ruban O. A., Doctor of Pharmacy (Dr. habil.), professor, head of the Department of Industrial Technology of Drugs, National University of Pharmacy of the Ministry of Health of Ukraine (https://orcid.org/0000-0002-2456-8210). E-mail: ruban_elen@ukr.net
Ievtushenko O. M., Doctor of Pharmacy (Dr. habil.), professor of the Department of Pharmaceutical Management and Marketing, National University of Pharmacy of the Ministry of Health of Ukraine (https://orcid.org/0000-0001-5276-9784). E-mail: evtyshenkolena1@gmail.com
Kovalevska I. V., Doctor of Pharmacy (Dr. habil.), associate professor of the Department of Industrial Technology of Drugs, National University of Pharmacy of the Ministry of Health of Ukraine (https://orcid.org/0000-0001-5610-8334). E-mail: i.kovalevska@nuph.edu.ua
Відомості про авторів:
Аль Саяснех Мохаммад, аспірант кафедри заводської технології ліків, Національний фармацевтичний університет Міністерства охорони здоров'я України (https://orcid.org/0000-0002-7964-8058). E-mail: Z571491@gmail.com
Рубан О. А., докторка фармацевтичних наук, професорка кафедри заводської технології ліків, Національний фармацевтичний університет Міністерства охорони здоров'я України (https://orcid.org/0000-0002-2456-8210). E-mail: ruban_elen@ukr.net
Євтушенко О. М., докторка фармацевтичних наук, професорка кафедри фармацевтичного менеджменту та маркетингу, Національний фармацевтичний університет Міністерства охорони здоров'я України (https://orcid.org/0000-0001-5276-9784). E-mail: evtyshenkolena1@gmail.com
Ковалевська І. В., докторка фармацевтичних наук, доцентка кафедри заводської технології ліків, Національний фармацевтичний університет Міністерства охорони здоров'я України (https://orcid.org/0000-0001-5610-8334). E-mail: i.kovalevska@nuph.edu.ua

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