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COMPARATIVE STUDY OF MARKETS OF UKRAINE, POLAND AND RUSSIA ON REGISTERED MEDICATIONS FOR LOCAL TREATMENT OF BURNS

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Summary: the domestic market of medications for local treatment of burns is investigated, their correlation is analysed according to the release forms, imported and domestic medications registered in Ukraine and their use under the ATC classification system. The analysis of medication assortment in the pharmaceutical markets of Poland and Russia is represented.

Key words: medications, soft dosage forms, analysis of the pharmaceutical market.

Introduction. The problem of burn wounds treatment is relevant today in Ukraine and all over the world because the burn pathologies are among the most common and serious types of injuries. Each year about 11 million of people in the world ask for medical help, and 300 000 of them die of burns. [1] About 4 % of taken to the burn center die from burn injuries in the United States of America [2]. In India, from 700 000 to 800 000 people receive significant burns of varying severity, but very few of them ask for help to the specialists. [3] 80 thousand people with burns are registered in Ukraine each year [4], 10 % of which are children. In Russia, the prevalence of the problem is in an average of 294.2 incidents per 10 thousand of population [5]. Burn wounds involve high risk of infection of wounds, certain complications appear in the treatment and takes third place in the general structure of the injuries [6].

Wound-healing medications (M) are used for local treatment of burns (LTB), that meet basic medical and biological requirements, especially, treatment that is aimed at antibacterial protection of burn wounds with prevention of secondary contamination, restoring of microcirculation and stabilization of biomembranes, keeping vital functions of tissues and protection against mechanical damage, creating conditions for engraftment of transplanted parts of skin, as well as prevention of the formation of hypertrophic and keloid scars and accelerating wound healing process [4, 6].

Today at the pharmaceutical market, there is a large number of medication available for local treatment of burns – ointments with antiseptics and antibiotics, gels, creams, pastes, sprays, aerosols, solutions for external use, biological medications.

Analysing, in more details, medications registered at the pharmaceutical markets of Russia and Poland, it has been studied those medications, which are not represented in Ukraine, especially sponges and plasters.

The aim of study was to investigate the range of medications for LTB and determine prospects for development new medications.

Methods of the research. The object of study was information about registered medications at the territory of Ukraine, posted on the website «Regulatory and directive documents of the Ministry of Healthcare of Ukraine» [7], and the method of derivative marketing information analysis was used too. «Compendium» was used as an informational source [8]. Online guides were used for analysis of medications that are used for burn wounds treatment in Russia and Poland [9, 10]. During the research, the following methods of analysis have been used: systematic and observation, graphic and documentary.

Results and discussions. According to the results of the research on September 2015, there are 54 medications of different forms of release in Ukraine, which are directly used for LTB. This number of medications is much smaller comparing to the medications with the same features, that are registered at markets of Poland (72 medications) and Russia (63 medications).

According to the instructions of using medications, these preparations belong to the group that goes without a prescription and can be used for treatment of superficial and deep burns (II-III degrees) [9, 10, 11].

All investigated medications that are registered in Ukraine, Poland and Russia were analysed in the form of release according to the «Classification of medical form», approved by order of the Ministry of Healthcare of Ukraine No. 235 [12] (Fig. 1).

Analysis of medication range registered in Ukraine for burn treatment, showed that most of them are presented as soft dosage forms (DF) – 78 %, among them ointments are the most popular – 56.41 %, and creams – 23.08 %. The main position at markets of Poland and Russia is taken with soft medications, which have 75 % and almost 69 % respectively.

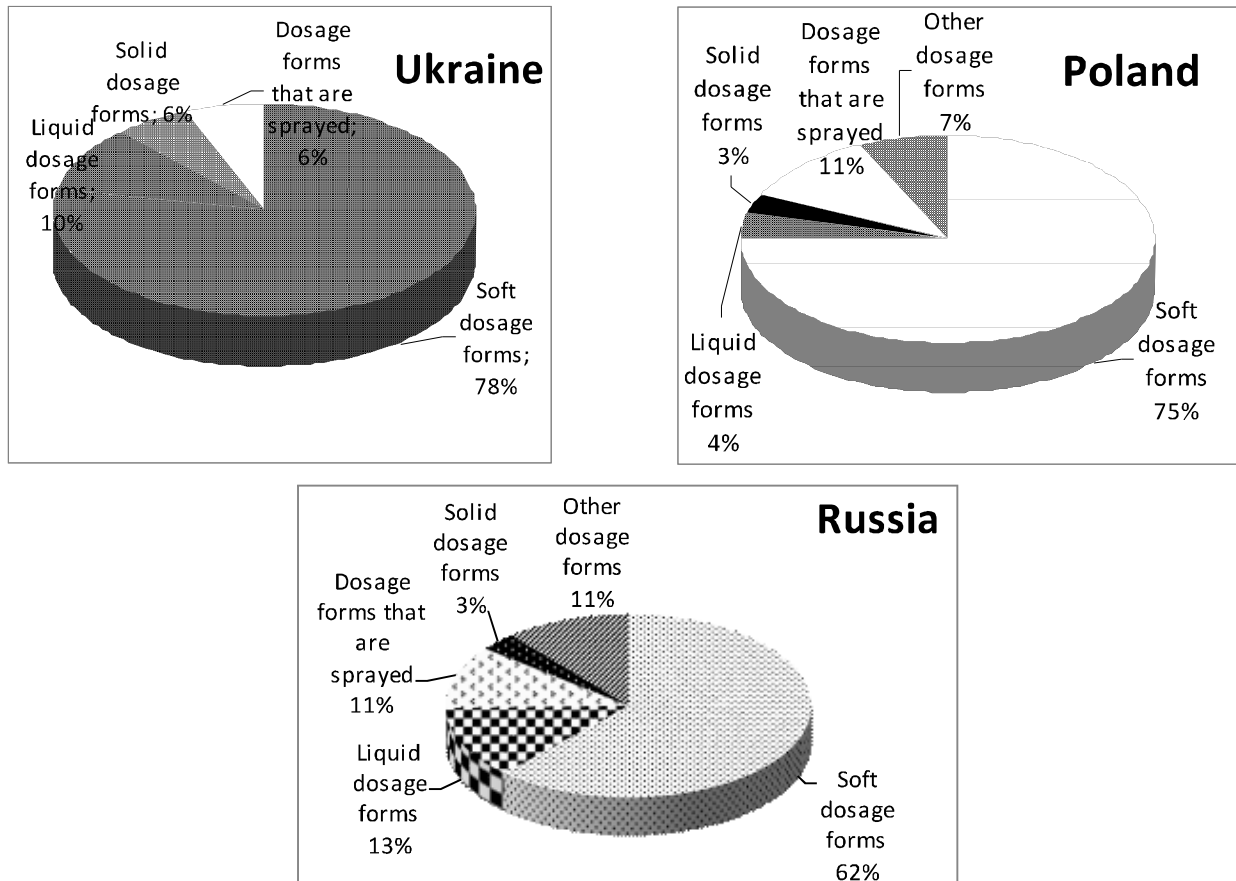


Fig. 1. Comparative analysis of medication markets in Poland, Russia, Ukraine to treat burns

After examining the domestic and foreign markets of studied medications in more details and comparing their range of products, we can conclude, there are certain differences in presence of medications. In particular, there are no medications for LTB surfaces in the forms of pastes, balms, emulsions, plasters at the domestic market, while

in Poland there are no liniments and solutions for outward applications, and the range of hard medications in Russia is very limited, including tablets soluble, which are used for dissolving in water to form a solution that should be used for the treatment of burn surfaces and to improve regeneration and wound healing (Table 1).

Table 1. The range and number of medications for local treatment of burns at pharmaceutical market of Ukraine, Russia and Poland

No	Kind of DF	Number M in Ukraine	Number M in Poland	Number M in Russia
1	Ointment	22	29	24
2	Gel	6	13	2
3	Cream	9	11	7
4	Liniment	6	-	2
5	Pasta	-	1	4
6	Solutions for external use	5	-	6
7	Aerosol	1	2	6
8	Spray	2	6	1
9	Tablets	1	-	2
10	Powders	1	1	-
11	Capsules	1	1	-
12	Emulsion	-	2	-
13	Balm	-	1	2
14	Plaster	-	5	2
15	Medical sponges	-	-	5

After examining Polish and Russian markets of studied group of medications and comparing them with domestic, it has been found that there are registered medications such as medical sponges and plasters for LTB surfaces in Russia and Poland, which are not represented in Ukraine.

Particularly, 5 types of medications such as medical sponges, namely, «Meturakol», which contains Methyluracilum and dry collagen; «Alhimaf», which contains sodium alginate, calcium gluconate, mafenide acetate and phenosanic acid; «Alhypor», which contains sodium alginate, calcium gluconate and furatsillina; «Sponge with kanamycin» (kanamycin, nitrofurazone) and «Kombutek-2», which contains collagen as a basis, glutaraldehyde, hinozola and boric acid have been registered in Russia.

Polish pharmaceutical companies for the LTB produce plasters of different sizes based on hydrogel – «Derma-Plast», «Urgo Burns». The medication, such as «Versiva XC», produced by «Bristol Myers Squibb» company, consists of natural and synthetic polymers (polyvinyl pyrrolidone, polyethylene glycol and agar) [10].

During the study it was taken into account medications, used for LTB, which are not composed of chemical substance or medicinal herbs as active pharmaceutical ingredients, but only biologically active materials. For example, medication «Solcoseryl» of Swiss production, which is registered in Poland, Ukraine and Russia, has no protein dialysate of the blood of calves, and can be used for burn treatment of I-II degrees. The medication «Kombutek 2» of Russian production, which is registered only in Russia and contains collagen as a basis taken from the Achilles tendon or skin of cattle, and it is used to treat burns of II-III A degrees.

The next stage of our research was the comparative analysis of the range of examined medications in Ukrainian, Russian and Polish markets, depending on the country of manufacturers (Fig. 2).

The results of the study of medication assortment for the LTB, registered in Ukraine, showed no significant difference in the ratio between imported (51.85 %) and domestic (48.15 %) medications and foreign produced medications have slightly predominating.

In Poland and Russia, the ratio of medications produced by domestic manufacturers is much higher comparing to the number of imported products, especially the ratio of medications of domestic and imported production by Polish and Russian pharmaceutical market is equal to 61.9 : 38.1 and 62.5 : 37.5 respectively [Fig. 2].

At the Ukrainian market, medications for the local treatment of burns are represented by 10 countries, among which are the following leaders: Germany – 25 %, Russia – 14.28 %, Poland – 10.71 %, Austria and Croatia 7.14 % each. Other countries import a small number of these medications and occupy together 35.73 % of the imported range.

The medications used in the pharmacotherapy of burns, are produced by 15 pharmaceutical enterprises of different ownership in Ukraine. Due to the amount of production, leading position are occupied by PJSC «Lubnyfarm» (19.23 %), PJSC «Darnytsya», PJSC «Viola» and joint Spanish-Ukrainian enterprise «Sperco Ukraine», which have 11.54 % each of the investigated medication market.

During researching of the Russian pharmaceutical market, it was found that 61,90 % of the studied medications are produced by Russian manufacturers. These

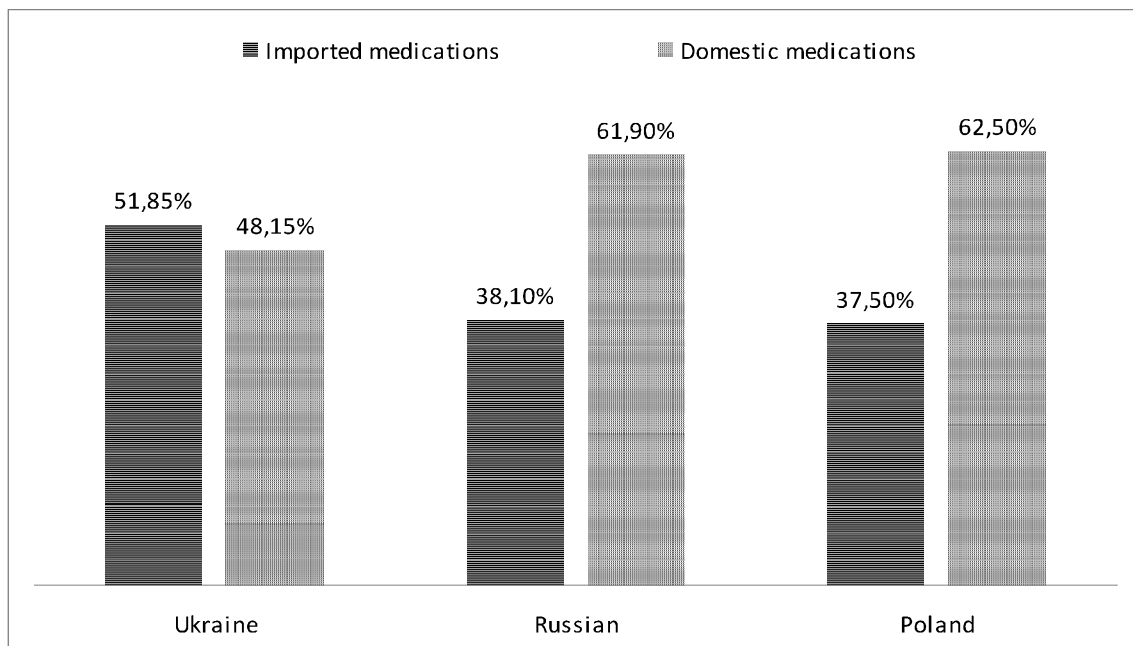


Fig. 2. The diagram on distribution of domestic and imported medications for the local treatment of burns at the studied markets.

medications are produced by 24 pharmaceutical enterprises of different ownership, among which are the following leaders: PJSC «Nizhpharm», CJSC «Varteks», «Akryhyn Chemical and pharmaceutical factory», JSC «Belkozyn Luha Factory».

Imported medications have 38.10 % of the pharmaceutical market; moreover, medications for LTB are imported to Russia from 14 countries. The leaders are Germany, Ukraine and Poland, the share of manufacturing companies is the following: 29.16 %, 16.67 % and 8.34 % respectively of the total range of the studied group of medications.

Studying the Polish market of medications, it was found, that 62.50 % of medications from total number of this range, used for LTB, are produced by Polish manufacturers, which include the following leaders: «Polfa» Grodzisk Pharmaceutical Works Sp.z.o.o., «UNIA» Pharmaceutical Plant Coop, «Jelfa» Pharmaceutical Works S.A, «CHEMA ELEKTROMET».

Medications for burn treatment are represented by 12 countries at the Polish market, as at the Russian market among them are the following leaders: Germany – 25.93 % and Switzerland – 14.81 %. Britain and Hungary import 11.12 % each of the total number of studied medications, other countries have 37.02 % of the market and their import is not significant.

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**ПОРІВНЯЛЬНЕ ДОСЛІДЖЕННЯ РИНКІВ УКРАЇНИ, ПОЛЬЩІ ТА РОСІЇ ЩОДО НАЯВНОСТІ
ЗАРЕЄСТРОВАНИХ ЛІКАРСЬКИХ ЗАСОБІВ ДЛЯ МІСЦЕВОГО ЛІКУВАННЯ ОПІКІВ**

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Резюме: досліджено вітчизняний ринок лікарських засобів для місцевого лікування опіків, проаналізовано їх співвідношення згідно з формою випуску, розглянуто лікарські засоби імпортного та вітчизняного виробництва, які зареєстровані в Україні та їх застосування відповідно до АТС-класифікації. Проведено аналіз асортименту лікарських засобів представлених на фармацевтичних ринках Польщі та Росії.

Ключові слова: лікарські засоби, м'які лікарські форми, аналіз фармацевтичного ринку.

**СРАВНИТЕЛЬНОЕ ИССЛЕДОВАНИЕ РЫНКОВ УКРАИНЫ, ПОЛЬШИ И РОССИИ О НАЛИЧИИ
ЗАРЕГИСТРИРОВАННЫХ ЛЕКАРСТВЕННЫХ СРЕДСТВ ДЛЯ МЕСТНОГО ЛЕЧЕНИЯ ОЖОГОВ**

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Резюме: исследовано отечественный рынок лекарственных средств для местного лечения ожогов, проанализировано их соотношение по форме выпуска, рассмотрены лекарственные средства импортного и отечественного производства, которые зарегистрированы в Украине и их применение в соответствии с АТС-классификации. Проведен анализ ассортимента лекарственных средств представленных на фармацевтических рынках Польши и России.

Ключевые слова: лекарственные средства, мягкие лекарственные формы, анализ фармацевтического рынка.

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