



# Marketing research of the domestic market of antibiotics and chemotherapeutic drugs for use in dermatology

T. P. Zarichna<sup>ID</sup>A,D,C, T. S. Brytanova<sup>ID</sup>\*B,D,E,F, T. S. Raikova<sup>ID</sup>C,D

Zaporizhzhia State Medical University, Ukraine

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

**The aim of work** is marketing research of the domestic market of antibiotics and chemotherapeutic drugs for use in dermatology.

**Materials and methods.** To achieve this goal, electronic official sources of information and pharmacy websites were used. System-analytical, mathematical-statistical, and comparative methods of analysis were employed.

**Results.** Analysis of the assortment structure of the domestic market of antibiotics and chemotherapeutic drugs for use in dermatology allowed us to establish that in this segment there are original drugs (30.4 %) and generics (69.6 %), monopreparations (84.1 %) and combined (15.9 %) ones. Drugs of the studied group are represented by various dosage forms, among which soft dosage forms dominate (85.4 %). When studying the corporate structure of this market segment, it was found that 56.6 % of drugs come from abroad from 12 countries of the world and 21 pharmaceutical companies, the leader of which is the United Kingdom ( $dij = 0.0758$ ). The study of the level of competition showed that the greatest competition is observed among the manufacturers of acyclovir and mupirocin generics ( $Kvi = 0.89$ ). Calculation of the liquidity ratio, which exceeds 0.5, confirms incomplete availability of these medicines for the population of Ukraine.

**Conclusions.** A marketing study of the domestic market of antibiotics and chemotherapeutic drugs for use in dermatology was conducted. The assortment and corporate structures of this market segment are defined. The level of competitiveness of the pharmaceutical companies is analyzed, and the most successful ones are identified. The liquidity and solvency ratio was calculated, which allowed us to draw conclusions about the availability of these medicines for the population of Ukraine. In the future, in the healthcare system of Ukraine, an important direction should be outlined to improve the system of providing medical care to patients with dermatological diseases.

**Key words:** marketing research, drug market, Dermatology, antibiotics, chemotherapeutic drugs.

**Current issues in pharmacy and medicine: science and practice 2022; 15 (1), 72–79**

## Маркетингові дослідження вітчизняного ринку антибіотиків і хіміотерапевтичних препаратів для застосування в дерматології

Т. П. Зарічна, Т. С. Британова, Т. С. Райкова

**Мета роботи** – маркетингове дослідження вітчизняного ринку антибіотиків і хіміотерапевтичних препаратів для застосування в дерматології.

**Матеріали та методи.** Для досягнення поставленої цілі використали електронні офіційні джерела інформації та інтернет-сайти аптек. Застосували системно-аналітичний, математико-статистичний, порівняльний методи аналізу.

**Результати.** Аналіз асортиментної структури вітчизняного ринку антибіотиків та хіміотерапевтичних препаратів для застосування в дерматології дав змогу встановити, що в цьому сегменті є оригінальні препарати (30,4 %) та генерики (69,6 %), монопрепарати (84,1 %) та комбіновані (15,9 %). Препарати групи, що досліджували, представлені різними лікарськими формами, серед них перевагу мають м'які лікарські форми (85,4 %). Досліджуючи фірмову структуру цього сегмента ринку, виявили, що 56,6 % препаратів імпортують із 12 країн світу (21 фармацевтична компанія), лідером є Велика Британія ( $dij = 0,0758$ ). Вивчення рівня конкуренції дало змогу зробити висновок: найбільша конкуренція спостерігається серед фірм, які випускають аналоги ацикловіру та мупіроцину ( $Kvi = 0,89$ ).

**Висновки.** Проведено маркетингове дослідження вітчизняного ринку антибіотиків та хіміотерапевтичних препаратів для застосування в дерматології. Визначена асортиментна та фірмова структури цього сегмента ринку. Проаналізували рівень конкурентоспроможності фармацевтичних компаній, виявлені найбільш успішні з них. Розрахували коефіцієнт ліквідності та платоспроможності, що дало змогу зробити висновки щодо доступності зазначених ліків для населення України. В перспективі в системі охорони здоров'я

### ARTICLE INFO



<http://pharmed.zsmu.edu.ua/article/view/251540>

UDC 339.13.021:[615.28+615.281]:615.26

DOI: [10.14739/2409-2932.2022.1.251540](https://doi.org/10.14739/2409-2932.2022.1.251540)

**Current issues in pharmacy and medicine: science and practice 2022; 15 (1), 72–79**

**Key words:** marketing research, drug market, dermatology, antibiotics, chemotherapeutic drugs.

\*E-mail: [goculyats@gmail.com](mailto:goculyats@gmail.com)

Received: 28.12.2021 // Revised: 10.01.2022 // Accepted: 14.01.2022

Україні важливим напрямом повинно бути вдосконалення системи надання лікарської допомоги пацієнтам із дерматологічними захворюваннями.

**Ключові слова:** маркетингові дослідження, ринок лікарських засобів, дерматологія, антибіотики, хіміотерапевтичні препарати.

**Актуальні питання фармацевтичної і медичної науки та практики. 2022. Т. 15, № 1(38). С. 72–79**

## Маркетинговые исследования отечественного рынка антибиотиков и химиотерапевтических препаратов для применения в дерматологии

Т. П. Заричная, Т. С. Британова, Т. С. Райкова

**Цель работы** – маркетинговое исследование отечественного рынка антибиотиков и химиотерапевтических препаратов для применения в дерматологии.

**Материалы и методы.** Для достижения поставленных целей использованы электронные официальные источники информации, а также интернет-сайты аптек. Применяли системно-аналитический, математико-статистический и сравнительный методы анализа.

**Результаты.** Анализ ассортиментной структуры отечественного рынка антибиотиков и химиотерапевтических препаратов, которые применяют в дерматологии, позволил установить, что в данном сегменте есть оригинальные препараты (30,4 %) и дженерики (69,6 %), монопрепараты (84,1 %) и комбинированные (15,9 %). Препараты исследуемой группы представлены разными лекарственными формами, среди которых преимущество имеют мягкие лекарственные формы (85,4 %).

При исследовании фирменной структуры указанного сегмента рынка выявлено, что 56,6 % препаратов поступает из-за рубежа – из 12 стран мира и 21 фармацевтической компании, лидером среди которых является Великобритания ( $dij = 0,0758$ ). Изучение уровня конкуренции показало, что самая большая конкуренция наблюдается среди фирм, выпускающих аналоги ацикловира и мупироцина ( $Kvi = 0,89$ ).

**Выводы.** Проведено маркетинговое исследование отечественного рынка антибиотиков и химиотерапевтических препаратов для применения в дерматологии. Определена ассортиментная и фирменная структура данного сегмента рынка. Проанализирован уровень конкурентоспособности фармацевтических компаний, выявлены наиболее успешные из них. Рассчитан коэффициент ликвидности и платежеспособности, что позволило сделать выводы о доступности указанных лекарств для населения Украины. В перспективе в системе здравоохранения Украины важным направлением должно быть усовершенствование системы предоставления врачебной помощи больным дерматологическими болезнями.

**Ключевые слова:** маркетинговые исследования, рынок лекарственных средств, дерматология, антибиотики, химиотерапевтические препараты.

**Актуальные вопросы фармацевтической и медицинской науки и практики. 2022. Т. 15, № 1(38). 72–79**

The incidence of dermatoses today is an urgent medical and social problem not only in Ukraine, but also around the world [1]. Moreover, over the past 10 years, there has been an increase in the share of dermatological and venereal diseases in the overall structure of morbidity in our country.

Treatment of patients with skin diseases is a rather complex task, requiring, in addition to special knowledge of the essence of certain dermatoses and their causes, as well as thorough familiarity with the effect of the drugs used [2].

Skin infections are among the most common disorders found in community and hospital environments. These can present in a variety of forms, ranging from limited superficial infections that are controlled by treatment with topical antibiotics to severe infections of deep tissues that can lead to death if the patient is not appropriately treated [3].

Although the vast majority of skin infections must be treated with systemic antibiotics, topical antibiotics are used overwhelmingly in the world, often as self-prescribed medications without taking into account the sensitivity of the presumed bacteria. Dermatologists are aware that different types of topical antibiotics kill different species of bacteria and tend to be more specific in their prescriptions. At present, local antibiotics are advised to treat minor superficial uncomplicated skin infections (e.g. impetigo) and to prevent bacterial infections caused into minor cuts, scrapes, and burns [4,5].

## Aim

The purpose of work is marketing research of the domestic market of antibiotics and chemotherapeutic drugs for use in dermatology.

## Materials and methods

To achieve this goal, electronic official sources of information [6,8] and pharmacy websites were used [9]. Desk reaserch and selective analytical method were used.

## Results

The study of the assortment structure was carried out in accordance with the “State Register of Medicines of Ukraine” (PBX code D06), which registered 69 names of medicines for topical use of these pharmacological subgroups (D06A, D06B, D06C) [6,8].

It was found that this market segment includes 21 (30.4 %) original drugs and 48 (69.6 %) generics.

Of the studied group, 84.1 % were monopreparations and 15.9 % were combined medicines.

The range of medical products of the studied group includes various dosage forms. Soft dosage forms have an advantage (85.4 %): ointments (33.3 %), creams (39.1 %), gels (5.8 %), liniments (7.2 %).

Other dosage forms were distributed as follows: powders – 8.7 %; liquid dosage forms – 5.9 %, of which solutions – 2.9 %; sprays – 3.0 % (Fig. 1).

The results of the analysis of the corporate structure of the market segment under study are presented in Table 1.

### Discussion

Table 1 shows that only 46.38 % of the drugs in the study group are produced on the territory of Ukraine.

Among 15 domestic manufacturers of such medicines, the leaders are LLC “Pharmaceutical Company “Zdorovie”, Ukraine (7.25 %), PJSC “Lubnypharm”, Ukraine (7.25 %).

53.62 % of drugs in this group come from abroad, from 12 countries from 21 pharmaceutical companies.

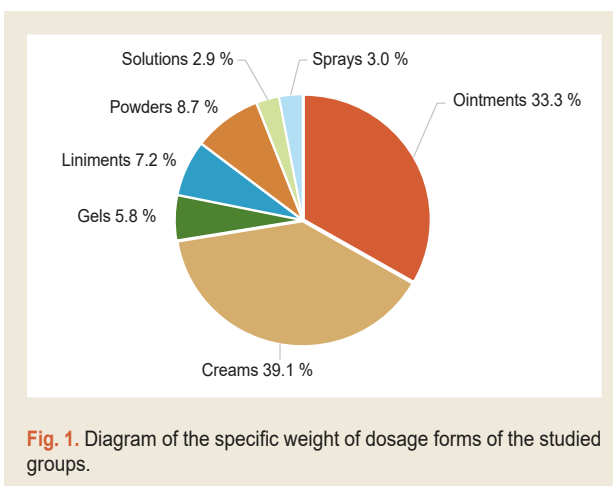


Fig. 1. Diagram of the specific weight of dosage forms of the studied groups.

Table 1. Data on pharmaceutical companies that provide local antibiotics and chemotherapeutic drugs to the pharmaceutical market of Ukraine

| #  | Manufacturing enterprise, country                          | The number of dosage forms | The ratio of total, % | The market share (dij) |
|----|--|----------------------------|-----------------------|------------------------|
| 1  | Zdorovie, Pharm. Company, LLC, Ukraine                     | 5                          | 46.38                 | 0.0725                 |
| 2  | PJSC “Khimpharmzavod “Chervona zirka”, Ukraine             | 4                          |                       | 0.0580                 |
| 3  | PJSC “Lubnypharm”, Ukraine                                 | 5                          |                       | 0.0725                 |
| 4  | PJSC “Fitopharm”, Ukraine                                  | 2                          |                       | 0.0290                 |
| 5  | PJSC Pharm. Factory “Viola”, Ukraine                       | 3                          |                       | 0.0435                 |
| 6  | Eurasia LLC, Ukraine                                       | 1                          |                       | 0.0145                 |
| 7  | LLC “DKP Pharm. Factory”, Ukraine                          | 3                          |                       | 0.0435                 |
| 8  | LLC “Ternopharm”, Ukraine                                  | 1                          |                       | 0.0145                 |
| 9  | East-Plus LLC, Ukraine                                     | 1                          |                       | 0.0145                 |
| 10 | Ukrainian-Spanish joint venture “Sperco Ukraine”           | 1                          |                       | 0.0145                 |
| 11 | PJSC “Farma”, Ukraine                                      | 1                          |                       | 0.0145                 |
| 12 | PJSC “Kyivmedpreparat”, Ukraine                            | 2                          |                       | 0.0290                 |
| 13 | PJSC “Pharm. Firm “Darnitsa”, Ukraine                      | 1                          |                       | 0.0145                 |
| 14 | JSC Borschagovsky Chemical Pharm. Plant, Ukraine           | 1                          |                       | 0.0145                 |
| 15 | PJSC “Pharm. Firm “FarCoS”, Ukraine                        | 1                          |                       | 0.0145                 |
| 16 | Tarkhominsky Pharm. Plant Polfa JSC, Poland                | 1                          | 4.35                  | 0.0145                 |
| 17 | Elfa Pharm Polska, Poland                                  | 2                          | 0.0290                |                        |
| 18 | JSC “Nizhpharm”, RF  | 1                          | 1.45                  | 0.0145                 |
| 19 | Sandoz GmbH-TechOps, Merck KGaA & Co Verk Spittal, Austria | 2                          | 2.90                  | 0.0290                 |
| 20 | mibe GmbH Arzneimittel, Germany                            | 2                          | 10.14                 | 0.0290                 |
| 21 | Engelhard Arzneimittel GmbH & Co. KG, Germany              | 2                          |                       | 0.0290                 |
| 22 | Salutas Pharma GmbH, Germany                               | 2                          |                       | 0.0290                 |
| 23 | STADA Arzneimittel AG, Germany                             | 1                          |                       | 0.0145                 |
| 24 | Glaxo Operations UK Ltd, UK                                | 5                          | 11.60                 | 0.0580                 |
| 25 | 3M Health Care Ltd, UK                                     | 2                          |                       | 0.0290                 |
| 26 | Dendron Brands Ltd, UK                                     | 1                          |                       | 0.0145                 |
| 27 | Bosnalek d.d., Bosnia and Herzegovina                      | 1                          | 1.45                  | 0.0145                 |
| 28 | Pharma International Company, Jordan                       | 3                          | 4.35                  | 0.0435                 |
| 29 | Belupo, medicines and cosmetics, etc., Croatia             | 2                          | 4.35                  | 0.0290                 |
| 30 | Jadran-Galensky Laboratory dd, Croatia                     | 1                          |                       | 0.0145                 |

Cont. of Table 1.

| #         | Manufacturing enterprise, country           | The number of dosage forms | The ratio of total, % | The market share (dij) |
|-----------|---|----------------------------|-----------------------|------------------------|
| 31        | Medgenix Benelux NV, Belgium                | 2                          | 2.90                  | 0.0345                 |
| 32        | Kusum Healthcare Pvt Ltd, India             | 1                          | 7.25                  | 0.0145                 |
| 33        | Glenmark Pharmaceuticals Co., Ltd., India   | 3                          |                       | 0.0435                 |
| 34        | "Unique Pharmaceutical Laboratories", India | 1                          |                       | 0.0145                 |
| 35        | JSC Grindeks, Latvia                        | 1                          | 1                     | 0.0145                 |
| 36        | B.Braun Medical S. A., Spain                | 1                          | 1.45                  | 0.0145                 |
| <b>36</b> |   | <b>69</b>                  | <b>100</b>            |                        |

Table 2. Distribution of medicines by active ingredients

| For monodrugs               |                             |
|-----------------------------|-----------------------------|
| – Tetracycline group        | – Silver sulfatiazole group |
| – Fusidic acid group        | – Sulfonamide group         |
| – Sodium fusidate group     | – Denotivir group           |
| – Chloralphenicol group     | – Glycyrrhizic acid group   |
| – Neomycin group            | – Acyclovir group           |
| – Gentamicin group          | – Penciclovir group         |
| – Thyrotrecin group         | – Imiquidomu group          |
| – Mupiracin group           | – Docosanol group           |
| – Silver sulfadiazine group | – Metronidazole group       |
| For combined drugs          |                             |
| – Zinc bacitracin group     | – Metronidazole group       |
| – Acyclovir group           | – Gentamicin group          |
| – Amikacin group            | – Chloramphenicol group     |
|                             | – Ofloxacin group           |

Table 3. Indicators of the tension coefficient between manufacturers of topical antibacterial and chemotherapeutic agents

| The name of the active ingredients of drugs | Coefficient of tension (K <sub>v1</sub> ) | The name of the active ingredients of drugs | Coefficient of tension (K <sub>v1</sub> ) |
|---|---|---|---|
| Monodrugs                                   |   |   |   |
| Tetracycline                                | –   | Sulfonamide                                 | 0.83                                      |
| Fusidic acid                                | 0.75                                      | Denotivir                                   | –   |
| Sodium fusidate                             | –   | Glycyrrhizic acid                           | –   |
| Neomicin                                    | –   | Acyclovir                                   | 0.89                                      |
| Gentamicin                                  | -0.5                                      | Penciclovir                                 | 0.85                                      |
| Tyrothricin                                 | 0   | Imiquimod                                   | 0.67                                      |
| Mupirocin                                   | 0.89                                      | Docosanol                                   | –   |
| Sulfadiazine silver                         | 0.67                                      | Metronidazole                               | 0.5                                       |
| Sulfatiazole silver                         | –   | Chloramphenicol                             | 0.83                                      |
| Combined drugs                              |   |   |   |
| Bacitracin                                  | 0.75                                      | Gentamicin                                  | 0.5                                       |
| Acyclovir                                   | –   | Chloramphenicol                             | 0.5                                       |
| Amikacin                                    | –   | Ofloxacin                                   | –   |
| Metronidazole                               | –   |   |   |

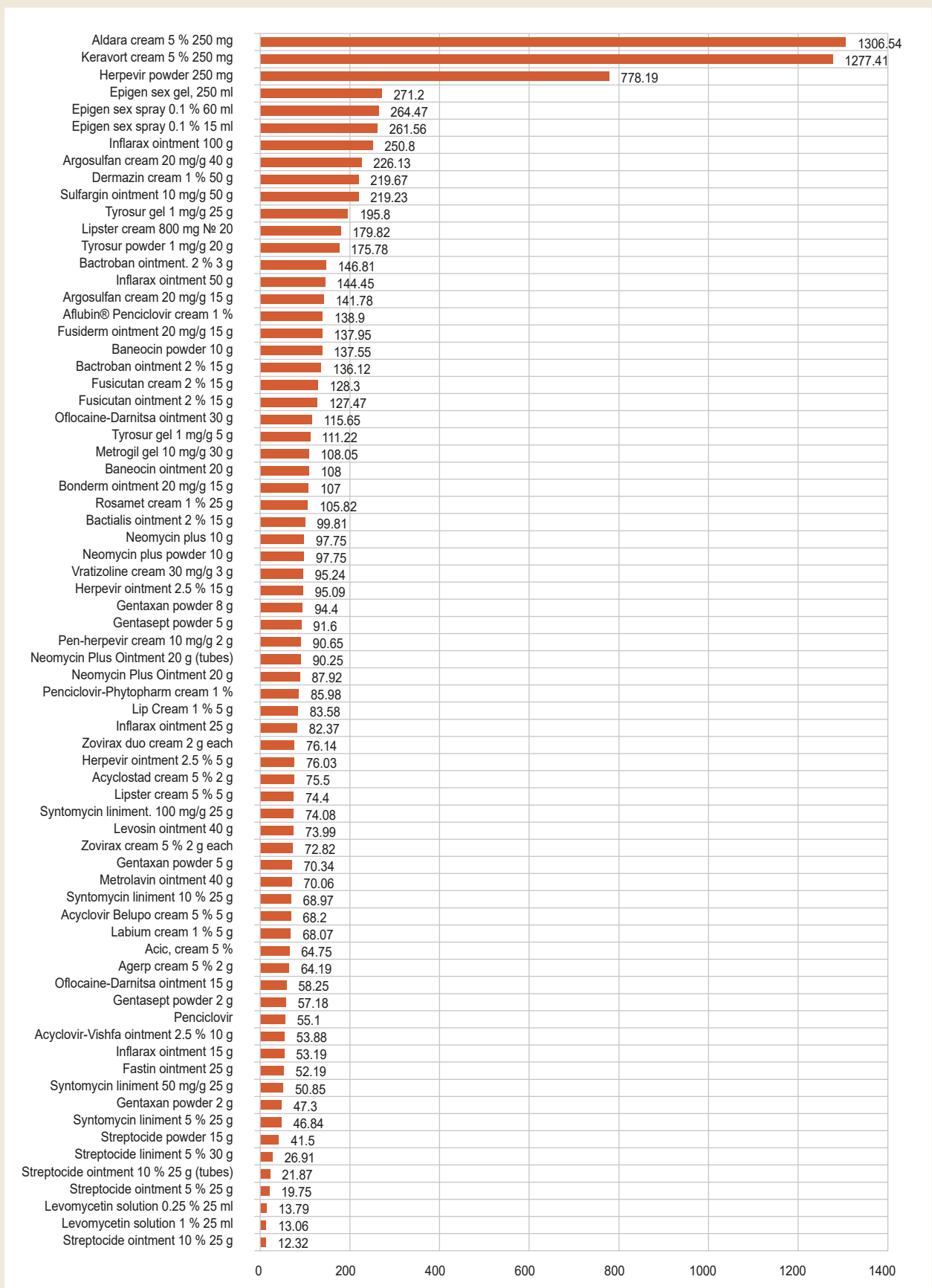


Fig 2. Average retail price local antibiotics and chemotherapeutic drugs to the pharmaceutical market of Ukraine, UAH.

**Table 4.** Monopolization coefficient of topical antibacterial and chemotherapeutic agents

| #  | Name of the manufacturer's company          | Patenting | K $\mu$ |
|----|---|-----------|---------|
| 1  | PJSC "Pharm. Firm «FarCoS», Ukraine         | 1         | 0.0145  |
| 2  | PJSC "Kyivmedpreparat", Ukraine             | 2         | 0.0290  |
| 3  | PJSC "Pharm. Firm «Darnitsa», Ukraine       | 1         | 0.0145  |
| 4  | Elfa Pharm Polska, Poland                   | 1         | 0.0145  |
| 5  | STADA Arzneimittel AG, Germany              | 1         | 0.0145  |
| 6  | Salutas Pharma GmbH, Germany                | 1         | 0.0145  |
| 7  | Glaxo Operations UK Ltd, UK                 | 1         | 0.0145  |
| 8  | Pharma International Company, Jordan        | 3         | 0.0435  |
| 9  | Jadran-Galensky Laboratory dd, Croatia      | 1         | 0.0145  |
| 10 | Medgenix Benelux NV, Belgium                | 2         | 0.0290  |
| 11 | "Unique Pharmaceutical Laboratories", India | 1         | 0.0145  |
| 12 | JSC Grindeks, Latvia                        | 1         | 0.0152  |
| 13 | mibe GmbH Arzneimittel, Germany             | 2         | 0.0290  |
| 14 | Bosnalek d.d., Bosnia and Herzegovina       | 1         | 0.0145  |

**Table 5.** Results of analysis of indicators of socio-economic availability of antibacterial and chemotherapeutic agents for topical use of a retail pharmacy chain

| Name of the medicinal product        | K $lq$ | Ca.s. | Name of the medicinal product      | K $lq$ | Ca.s. |
|--------------------------------------|--------|-------|------------------------------------|--------|-------|
| Zovirax cream 5 % 2 g each           | 0.46   | 0.52  | Vratizoline cream 30 mg/g 3 g      | 0.44   | 0.68  |
| Zovirax duo cream 2 g each           | 0.17   | 0.54  | Epigen sex spray 0.1 % 60 ml       | 0.25   | 1.88  |
| Acic, cream 5 %                      | 0.38   | 0.46  | Epigen sex spray 0.1 % 15 ml       | 0.11   | 1.86  |
| Aflubin® Penciclovir cream 1 %       | 0.29   | 0.99  | Epigen sex gel, 250 ml             | 0.86   | 1.93  |
| Penciclovir-Phytopharm cream 1 %     | 0.56   | 0.61  | Oflocaine-Darnitsa ointment 15 g   | 0.48   | 0.41  |
| Penciclovir-Health cream 10 mg/5g    | 0.21   | 0.39  | Oflocaine-Darnitsa ointment 30 g   | 0.40   | 0.82  |
| Pen-herpevir cream 10 mg/g 2 g       | 1.16   | 0.65  | Metrogil gel 10 mg/g 30 g          | 0.47   | 0.77  |
| Labium cream 1 % 5 g                 | 0.47   | 0.48  | Rosamet cream 1 % 25 g             | 0.24   | 0.75  |
| Lip Cream 1 % 5 g                    | 0.64   | 0.60  | Inflarax ointment 25 g             | 0.36   | 0.59  |
| Aldara cream 5 % 250 mg              | 0.33   | 9.32  | Inflarax ointment 50 g             | 0.39   | 1.03  |
| Keravort cream 5 % 250 mg            | 0.17   | 9.09  | Inflarax ointment 100 g            | 0.26   | 1.79  |
| Acyclovir-Vishfa ointment 2.5 % 10 g | 0.74   | 0.38  | Inflarax ointment 15 g             | 0.38   | 0.38  |
| Acyclovir Belupo cream 5 % 5 g       | 0.88   | 0.49  | Metrolavin ointment 40 g           | 0.19   | 0.50  |
| Herpevir ointment 2.5 % 5 g          | 0.46   | 0.54  | Gentasept powder 5 g               | 0.51   | 0.65  |
| Herpevir ointment 2.5 % 15 g         | 0.38   | 0.68  | Gentasept powder 2 g               | 0.54   | 0.41  |
| Herpevir powder 250 mg               | 0.08   | 5.54  | Gentaxan powder 5 g                | 0.35   | 0.50  |
| Agerp cream 5 % 2 g                  | 0.65   | 0.46  | Gentaxan powder 2 g                | 0.24   | 0.34  |
| Lipster cream 5 % 5 g                | 0.98   | 0.53  | Gentaxan powder 8 g                | 0.29   | 0.67  |
| Lipster cream 800 mg N0 20           | 0.39   | 1.28  | Fastin ointment 25 g               | 0.96   | 0.37  |
| Acyclostad cream 5 % 2 g             | 0.57   | 0.54  | Levosin ointment 40 g              | 0.44   | 0.53  |
| Neomycin Plus Ointment 20 g          | 0.17   | 0.63  | Fusicutan ointment 2 % 15 g        | 0.22   | 0.91  |
| Neomycin plus powder 10 g            | 0.10   | 0.69  | Fusicutan cream 2 % 15 g           | 0.16   | 0.91  |
| Baneocin powder 10 g                 | 0.44   | 0.98  | Fusiderm ointment 20 mg/g 15 g     | 0.33   | 0.98  |
| Baneocin ointment 20 g               | 0      | 0.77  | Syntomycin liniment. 100 mg/g 25 g | 0.48   | 0.53  |

Cont. of Table 5.

| Name of the medicinal product   | Kliq | Ca.s. | Name of the medicinal product     | Kliq | Ca.s. |
|---------------------------------|------|-------|-----------------------------------|------|-------|
| Bactialis ointment 2 % 15 g     | 0.66 | 0.71  | Syntomycin liniment 5 % 25 g      | 0.87 | 0.33  |
| Bactroban ointment. 2 % 3 g     | 0.31 | 1.05  | Syntomycin liniment 50 mg/g 25 g  | 0.89 | 0.36  |
| Bactroban ointment 2 % 15 g     | 0.13 | 0.96  | Syntomycin liniment 10 % 25 g     | 0.11 | 0.49  |
| Sulfargin ointment 10 mg/g 50 g | 0.47 | 1.56  | Levomycesin solution 0.25 % 25 ml | 0.58 | 0.10  |
| Dermazin cream 1 % 50 g         | 1.41 | 1.56  | Levomycesin solution 1 % 25 ml    | 1.23 | 0.09  |
| Argosulfan cream 20 mg/g 40 g   | 0.29 | 1.61  | Neomycin Plus Ointment 20 g       | 0.11 | 0.64  |
| Argosulfan cream 20 mg/g 15 g   | 0.31 | 1.09  | Neomycin plus 10 g                | 0.10 | 0.69  |
| Streptocide ointment 10 % 25 g  | 1.06 | 0.16  | Tyrosur gel 1 mg/g 5 g            | 0.46 | 0.79  |
| Streptocide ointment 10 % 25 g  | 0.32 | 0.09  | Tyrosur gel 1 mg/g 25 g           | 0.16 | 1.39  |
| Streptocide ointment 5 % 25 g   | 1.24 | 0.14  | Tyrosur powder 1 mg/g 20 g        | 1.06 | 1.25  |
| Streptocide ointment 5 % 25 g   | 0.62 | 0.11  | Bonderm ointment 20 mg/g 15 g     | 0.16 | 0.76  |
| Streptocide liniment 5 % 30 g   | 0.74 | 0.19  | Baktopik ointment 2 % 15 g        | 0.27 | 0.93  |
| Streptocide powder 15 g         | 0.60 | 0.29  |                                   |      |       |

The leader among foreign manufacturers is the United Kingdom, whose 3 pharmaceutical companies provide 11.6 % of antibacterial and chemotherapeutic agents for the treatment of dermatological diseases to the Ukrainian market.

The share of the national pharmaceutical market segment occupied by each of the manufacturers of medicines for the treatment of dermatological diseases was calculated using the formula:

$$d_{ij} = n_{ij} / \Sigma n_{ij}, \quad (1)$$

where  $n_{ij}$  – is the number of drugs of the  $j$ -th company in the  $i$ -segment;  $\Sigma n_{ij}$  – total number of segment of  $i$ -drugs registered in Ukraine.

The calculation data are shown in *Table 2*.

The results showed that the largest share in the study segment belongs to the pharmaceutical company Glaxo Operations UK, Limited, Great Britain ( $d_{ij} = 0.0758$ ).

At the next stage, the competitiveness of firms providing medicines of the study group to the national pharmaceutical market was analyzed [7].

To determine the level of competition between manufacturers of analogue drugs, the intensity coefficient  $K_{vi}$  was calculated using the formula:

$$K_{vi} = (n - 1) / n, \quad (2)$$

where  $n$  – is the number of all competitive analogues produced by different manufacturers.

At the same time, the studied drugs were grouped by active substances into 18 groups for monodrugs and 7 groups for combined drugs according to the ATC classification:

After analyzing the data obtained, we can conclude that the greatest competition is observed among companies that produce analogues of Acyclovir and Mupirocin ( $K_{vi} = 0.89$ ), (*Table 3*). Among the pharmaceutical companies-enterprises that produce these drugs, there are domestic ones: LLC

DKP pharmaceutical factory, Ukraine; Ukrainian–Spanish joint venture “Sperco Ukraine”, Ukraine; PJSC “Farmak”, Ukraine; PJSC “Kyivmedpreparat”, Ukraine.

A number of drugs from the groups of Tetracycline, Sodium Fusidate, Neomycin, Gentamicin, Silver Sulfathiazole, Denotivir, Glycerizic Acid, Doconazole among monopreparations and Acyclovir, Amikacin, Metronidazole, Ofloxacin have no analogues in the pharmaceutical market of Ukraine, so in this case there is no competition ( $K_{vi} = 0$ ).

Among the studied drugs, there are original proprietary drugs. Their specific weight in a particular pharmacotherapeutic group shows how attractive this group is for research in terms of updating with new drugs. These are the so-called “Brandname”.

The specific weight of branded drugs by group allows us to determine the level of monopolization of the corresponding market segments. For a comparative assessment of these indicators, the conditional coefficient of monopolization of market segments- $K_{\mu}$  – is used.

$$K_{\mu} = B_n / \Sigma N_j, \quad (3)$$

where  $B_n$  – number of branded drugs;  $\Sigma N_j$  – the total number of registered drugs in the  $j$ th pharmacotherapeutic group.

We calculated the monopolization coefficient (*Table 4*). This table shows that among pharmaceutical companies supplying antibacterial and chemotherapeutic agents for the treatment of dermatological diseases, Pharma International Company, Jordan has the highest monopolization coefficient ( $K_{\mu} = 0.0455$ ).

To study the indicators of socio-economic accessibility, the liquidity ratio and the solvency adequacy ratio were determined.

The liquidity ratio was calculated using the formula:

$$K_{liq} = (P_{max} - P_{min}) / P_{min}, \quad (4)$$

where  $K_{liq}$  – price liquidity ratio;  $P_{max}$  – maximum price for medicines;  $P_{min}$  – minimum price for the drug.

Site data was used for analysis Tabletki.ua as of November 2021 [9].

One of the relative indicators of socio-economic availability of medicines is the coefficient of adequacy of solvency, which is determined by the formula:

$$Ca.s. = P / Wa.w. \times 100 \%, \quad (5)$$

where *Ca.s.* – solvency adequacy ratio; *P* – average price of the drug for a certain period of time (November 2021); *Wa.w.* – average salary for a certain period (according to the state statistics service of Ukraine). In November 2021, the average salary was UAH 14.282 [10].

The results obtained indicate a fairly high level of local antibacterial and chemotherapeutic agents on the market, and these drugs are all the more accessible to consumers (Fig. 1, Table 5).

## Conclusions

1. A marketing study of the domestic market of antibiotics and chemotherapeutic drugs for use in dermatology has been conducted.

2. The assortment and corporate structures of this market segment are determined.

3. The level of competitiveness of the above-mentioned pharmaceutical companies is analyzed, and the most successful ones are identified.

4. The liquidity and solvency ratio was calculated, which allowed us to draw conclusions about the availability of these medicines for the population of Ukraine.

5. In the future, in the healthcare system of Ukraine, an important direction should be introduced to improve the system of providing medical care to patients with dermatological diseases.

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

## Information about authors:

Zarichna T. P., PhD, Associate Professor of the Department of Management and Pharmacy Economics, Zaporizhzhia State Medical University, Ukraine.

ORCID ID: [0000-0002-3711-4453](https://orcid.org/0000-0002-3711-4453)

Brytanova T. S., PhD, Teaching Assistant of the Department of Organic and Bioorganic Chemistry, Zaporizhzhia State Medical University, Ukraine.

ORCID ID: [0000-0003-1805-4552](https://orcid.org/0000-0003-1805-4552)

Raikova T. S., PhD, Associate Professor of the Department of Clinical Pharmacy, Pharmacotherapy, Pharmacognosy and Pharmaceutical Chemistry, Zaporizhzhia State Medical University, Ukraine.

ORCID ID: [0000-0001-7541-4003](https://orcid.org/0000-0001-7541-4003)

## Відомості про авторів:

Зарічна Т. П., канд. фарм. наук, доцент каф. управління та економіки фармацевції, Запорізький державний медичний університет, Україна.

Британова Т. С., канд. фарм. наук, асистент каф. органічної та біоорганічної хімії, Запорізький державний медичний університет, Україна.

Райкова Т. С., канд. фарм. наук, доцент каф. клінічної фармацевції, фармакоterapiї, фармакогнозії та фармацевтичної хімії, Запорізький державний медичний університет, Україна.

## Сведения об авторах:

Заричная Т. П., канд. фарм. наук, доцент каф. управления и экономики фармацевции, Запорожский государственный медицинский университет, Украина.

Британова Т. С., канд. фарм. наук, ассистент каф. органической и биорганической химии, Запорожский государственный медицинский университет, Украина.

Райкова Т. С., канд. фарм. наук, доцент каф. клинической фармацевции, фармакоterapiи, фармакогнозии и фармацевтической химии, Запорожский государственный медицинский университет, Украина.

## References

- [1] Ministry of Health of Ukraine. (2009, May 8). *Pro zatverdzhennia klinichnykh protokoliv nadannia medychnoi dopomohy khvorym na dermatovenerolohichni zakhvoriuvannia* [About the statement of clinical protocols of rendering of medical care to patients with dermatovenerological diseases (No. 312)]. <https://zakon.rada.gov.ua/rada/show/v0312282-09#Text>
- [2] Med-servis (n.d.). *Antibiotiki i khimioterapevtycheskie preparaty dlya ispol'zovaniya v dermatologii* [Antibiotics and chemotherapy drugs for use in dermatology]. [in Russian]. <https://online-apteka.com.ua/articles/lekarstvennye-sredstva/antibiotiki-i-khimioterapevtycheskie-preparaty-dlya-ispolzovaniya-v-dermatologii/>
- [3] Lim, J. S., Park, H. S., Cho, S., & Yoon, H. S. (2018). Antibiotic Susceptibility and Treatment Response in Bacterial Skin Infection. *Annals of dermatology*, 30(2), 186-191. <https://doi.org/10.5021/ad.2018.30.2.186>
- [4] Gelmetti, C. (2008). Local antibiotics in dermatology. *Dermatologic therapy*, 21(3), 187-195. <https://doi.org/10.1111/j.1529-8019.2008.00190.x>
- [5] Zvenihorodska, T., Hotsulia, A., Kravchenko, S., Fedotov, S., & Kyrychko, B. (2021). Synthesis and antimicrobial action of 1,2,4-triazole derivatives containing theophylline and 1,3,4-thiadiazole fragments in their structure. *African Journal of Biomedical Research*, 24(1), 159-163.
- [6] Ministry of Health of Ukraine. (n.d.). *Derzhavnyi reiestr likarskykh zasobiv Ukrainy* [State register of medicines of Ukraine]. <http://www.driz.kiev.ua>
- [7] Hromovyk, B. P. (2004). Kharakterystyka osnovnykh metodyk vyznachennia konkurentospromozhnosti likarskykh zasobiv [Characteristics of the main methods of determining the competitiveness of drugs]. *Zaporozhye medical journal*, (2), 109-111. [in Ukrainian].
- [8] Kompendium – lekarstvennye preparaty [Compendium – Drugs]. <http://compendium.com.ua/>
- [9] Tabletki.ua [website]. <https://tabletki.ua/uk/>
- [10] MinfinMedia. (2022, January 31). *Serednia misiachna zarplata po rehionakh Ukrainy v 2021 r. (hrn.)* [Average monthly salary by regions of Ukraine in 2021]. <https://index.minfin.com.ua/ua/labour/salary/average/>