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*Kazakh National Medical University named after S. D. Asfendiyarov, Almaty***ANALYSIS OF KAZAKHSTAN PHARMACEUTICAL MARKET OF DRUGS USED IN PARADONTOPATHY**

This article presents the results of a study of the pharmaceutical market of Kazakhstan, Russia, Ukraine, here is studied the range of drugs used in parodontopathy. Analyzed the structure of market, in accordance with the groups of drugs (ATC-classification), dosage form, composition of the active ingredients. Particular attention in this segment of drugs is given to Kazakhstan pharmaceutical market. Studied the structure of manufacturing countries (Kazakh manufacturers hold only 13% of the market), highlighted the possibilities and directions of development of the domestic pharmaceutical industry in this segment.

Key words: pharmaceutical market; dental drugs; parodontopathy; Republic of Kazakhstan; marketing analysis

STATEMENT OF THE PROBLEM

In recent years is rapidly growing market of dental services and great attention is paid to inflammatory diseases of the oral cavity and, in particular, the methods of treatment of periodontitis. This is due to the fact that these diseases can be the trigger for the emergence of a number of systemic diseases. Thus, close relationship between the set of oral diseases and diseases such as bacterial pneumonia, chronic obstructive pulmonary disease, bone disease, gastrointestinal disease, etc. [1, 3, 12, 13].

Inflammatory processes in the periodontium have a significant distribution and periodontal disease – is a rare disease (2-3 % of all periodontal diseases). Recent studies prove conclusively that the inflammatory periodontal disease (IPD) is not only the most widespread among the population, but also have an expressed multicomponent effect on the body.

In the Republic of Kazakhstan are also prevalent oral diseases among adults and among children. They are characterized by varying severity, premature loss of teeth and the possible formation of foci of chronic infection, so the search for drugs for their prevention and treatment is topical [4, 5, 7, 9]. Particular importance is attached to treatment of the following periodontal diseases:

- inflammatory periodontal diseases – gingivitis, periodontitis;
- degenerative diseases – periodontitis.

To the drugs used in the treatment of gingivitis and periodontitis, are given special requirements, namely multidirectional action – presence of an antimicrobial, immunomodulatory, dehydrating effects. Also, these drugs must provide stable drug concentration in the place of inflammation, not cause side effects, be stable during storage. The most efficient local dosage form, which allows to implement multifactorial, prolonged effect on periodontal tissue lesions is a gel form of the drug.

ANALYSIS OF RECENT RESEARCH AND PUBLICATIONS

Some theoretical and practical issues concerning the factors stimulating the development of these diseases, as well as the methods and principles of use and parapharmaceutical drugs in the form of gel in the treatment of periodontal disease are investigated worldwide. In particular, in Kazakhstan, principles and features of the treatment are covered in works of G. S. Stabaeva, V. P. Rusanov [5, 7], in Russia – O. A. Tsarahova [4, 10], in Ukraine – N. I. Gumenyuk [3], S. A. Tereshchuk [9] and of many other scholars and practitioners [6, 12, 13].

IDENTIFICATION OF ASPECTS OF THE PROBLEM UNSOLVED PREVIOUSLY

In dental practice, except for special dental materials, are used drugs of different pharmacological groups. Local anesthetic, analgesic, astringent, anti-inflammatory, antihistamine, enzyme [9], by means of stimulating the regeneration of tissues [10], etc., and with microbial lesions of the oral cavity – an

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tibiotics and other antimicrobials. Of great importance are also drug prevention and drug treatment of dental caries, periodontitis, parodontopathies and others. However, to date the marketing studies of the pharmaceutical market of Kazakhstan in relation to the drugs used in inflammatory diseases of the oral cavity are fragmented. All this determined the purpose and objectives of the study.

OBJECTIVE STATEMENT OF THE ARTICLE

Aim of the study was to analyze the range of pharmaceutical and medicinal drugs for the prevention and treatment of oral diseases, present in the pharmaceutical market of Kazakhstan.

PRESENTATION OF THE MAIN MATERIAL OF THE RESEARCH

Analysis was conducted using the National Registry of Kazakhstan [2], Russia directories of drugs [11], and Ukrainian ones [8], scientific literature and Internet sources.

To achieve the goal the following tasks were solved: to determine the presence and structure of the range of drugs used for the prevention and treatment of oral diseases presented at the market of Kazakhstan (local use).

Today at the Kazakhstan market is presented a wide range of drugs in various dosage forms used to treat inflammatory diseases of the oral cavity. Are used solutions, rinses, powders, pastes, ointments, emulsions, aerosols, etc. However, each form has certain disadvantages, such as: unevenness of contact of active components with the mucous membrane of the mouth, shortness of their interaction with tissues, rapid decrease in the concentration due to dilution of saliva and elution of drugs into the lower gastrointestinal tract. In this connection, in the dental practice for the treatment of this group rational is to use dental gels, as this dosage form provides a greater effectiveness of pharmacotherapy.

Gels have many advantages over other dosage forms: they retain their shape for a long time, easily applied to the surface of the mucous membranes, including oral mucosa, are able to be retained on it for a long period of time (so that a long time is provided in contact with mucosal tissue). Due to the high viscosity of the dispersion medium is possible adding into gels chemically incompatible components, as dispersion medium interferes with the interaction between them. Therefore, special attention was paid to the assortment and evaluation of dental gels.

During the analysis of the pharmaceutical market of Kazakhstan, Russia, Ukraine, was formed a list of trade names of drugs most commonly used for the treatment and prevention of periodontal

disease (Table). Market of dental products for topical application is represented by 29 names, of which 22 drugs are registered in Kazakhstan, in Russia – 16 drugs, and in Ukraine – 19 drugs.

Most of the drugs (90 %) are complex. The most popular compositions of the studied drugs include metronidazole and chlorhexidine digluconate, at least at part of the active substances is found lidocaine, and even less the drugs include herbal extracts.

Regarding the release forms the large part are gels (n=14), then solutions (n=5), sprays (n=2), tablets (n=2), pastilles (n=2), paste (n=1), ointment (n=1). Only 3 of the drug are manufactured by Kazakh industry (Rotokan, Kamesan, Topolin), they all refer to the drugs made of herbal raw materials and are different in composition. Of the 14 drugs in the form of gels, only one drug – is manufactured in Kazakhstan, other drugs are presented by foreign manufacturers.

According to ATC classification list of products consists mainly of drugs group A01A “Dental drugs”, which includes: subgroup A01AB “Anti-infectives and antiseptics for local treatment of oral diseases” (A01A B12, A01A B67, A01AB11, A01A B53, A01A B09, A01A B53), subgroup A01AD “Other drugs for the treatment of oral diseases” (A01AD11), as well as drugs of a group D01A “Antifungals for topical use” (D01A C01).

We studied drugs range depending on the form (solutions, ointments, gels, tablets, lozenges, pastes), as well as their specific gravity (Fig. 1).

Analysis shows that dental gels are quite popular dosage form for treatment of periodontal disease (about a half of presented drugs). This is due to the fact that this dosage form has a high bioavailability, lower toxicity and the maximum effect for treatment of inflammatory diseases of the oral cavity. Analysis of dosage forms of the drugs showed that unoccupied niche in this segment is a group of drugs based on herbal raw materials. This opens up opportunities for Kazakh manufacturers, especially due to the fact, that the country has a strong resource base. In this regard, development of drugs based on the use of domestic raw materials is an important task.

At the next step the analysis of the drugs presented in Kazakhstan market according to manufacturing countries (Fig. 2) was carried out. Results indicate that the market for dental products for topical application depends on import – only 3 out of 15 drugs are manufactured in the Republic of Kazakhstan.

Markets are saturated enough, however, for Kazakh producers there are sufficiently broad niche as domestic manufacturers occupy only 13 % of the market. Particularly interesting are the opening

Table

RANGE OF LEADING DENTAL DRUGS FOR TOPICAL APPLICATION, REGISTERED ON THE TERRITORY OF THE REPUBLIC OF KAZAKHSTAN, RUSSIA, UKRAINE

No.	Trade name	Dosage form	Manufacturer	Country	Active ingredients	Registration on site			ATC-classification
						Kazakhstan	Russia	Ukraine	
1	2	3	4	5	6	7	8	9	10
1	Bronspray	Spray for oral cavity	Kvizda Pharma GmbH	Austria	Sage, thyme, peppermint infusion	+	-	+	A01AD11
2	Hexoral	Fluid for oral cavity	McNeil Products Limited	France	Hexetidine	+	+	+	A01A B12
3	Dologel CT	Dental gel	Dr. Reddies Laboratories LTD	India	Benzalkonium chloride, lidocaine, choline	+	+	-	A01AD11
4	Dentinox gel	Dental gel	Dentinox	Germany	Lauroacrogol-600 + lidocaine + extr. of chamomile flowers	+	+	+	A01AD11
5	Dentagel	Gingival gel	PJSC Phytopharm	Ukraine	Metronidazole + Chlorhexidine digluconate	-	-	+	A01A B67
6	Dentamet	Dental gel	CJSC Altayvitamins	Russia	Metronidazole + Chlorhexidine digluconate	+	+	-	A01AB11
7	Kamistad	Dental gel	STADA Arzneimittel AG	Germany	Lidocaine + extr. of chamomile flowers	+	+	+	A01AD11
8	Kamistad	Dental gel	JSC Chempharm	Kazakhstan	Lidocaine, chamomile	+	-	-	A01AD11
9	Candide solution	Solution for topical use	Glenmark	India	Clotrimazole	+	+	+	D01A C01
10	Metrogil Denta	Dental gel	Ltd. Johnson & Johnson	Russia	Metronidazole + Chlorhexidine digluconate	+	+	-	A01AD11
11	Metrogil	Dental gel	Unique Pharma-ceutical Laboratories	Ukraine	Metronidazole + Chlor-hexidine digluconate	+	+	+	A01AD11
12	Metrodent	Tooth gel	Organosyn Life Sciences	India	Metronidazole + Chlor-hexidine digluconate	-	+	+	A01A B11
13	Metrogil Denta	Gingival gel	PC Viola	Ukraine	Metronidazole + Chlor-hexidine digluconate	-	-	+	A01A B11
14	Mikonaz	Dental gel	Medical Union Pharmaceuticals	Egypt	Miconazole nitrate	+	-	-	A01AB09
15	Propsol	Spray for topical use	CJSC Altayvitamins	Russia	Propolis	+	+	-	A01AB11
16	Propsol	Aerosol	JSC Stoma	Ukraine	Propolis + ethanol + glycerol	-	-	+	A01A B11
17	Propsol-Zdorovie	Aerosol	Ltd. Zdorovie	Ukraine	Propolis	-	-	+	A01A B11

Continuation of the Table

1	2	3	4	5	6	7	8	9	10
18	Rotokan	Solution for topical use	Ltd. Daulet Farm	Kazakhstan	Liquid extract of yarrow, calendula, chamomile	+	+	+	A01AB11
19	Stomagel	Dental gel	Ltd. LMP	Latvia	Lidocaine, Methyluracilum	+	-	-	A01AD11
20	Stomatidin	Fluid for oral cavity	Bosnalijek	Czech Republic	Hexetidine	+	+	+	A01A B12
21	Solkoseril	Lozenge for topical use	MEDA Pharmaceuticals	Switzerland	Solkoseril, polidocanol	+	+	+	A01A D11
22	Septalor	Tablets for oral cavity	Ltd. Ternopharm	Ukraine	Chlorhexidine dihydro-chloride, ascorbic acid	+	-	+	A01A B53
23	Dental Gel - Zdorovie	Gingival gel	Ltd. Zdorovie	Ukraine	Metronidazole + Chlor-hexidine digluconate	-	-	+	A01A B67
24	Topolin	Ointment	Ltd Karaganda pharmaceutical plant	Kazakhstan	Topolin	+	-	-	A01AD11
25	Sage	Orodispersible tablets	Natur Produkt Europe B.V.	Netherlands	Tanshinone	+	-	-	A01AD11
26	Sage	Lozenge	Natur Produkt Europe B.V.	Netherlands	Tanshinone	+	+	-	A01AD11
27	Sage	Lozenge	VALEANT Pharmaceuticals	USA	Tanshinone	-	-	+	A01AD11
28	Chlorhexidine	Spray for oral cavity	PJSC KhPP Red Star	Ukraine	Chlorhexidine digluconate	+	+	+	A01A B53
29	Cholisal	Dental gel	Pharmaceutic Plant Jelfa SA	Poland	Choline salicylate+ cetalonium chloride	+	+	+	A01AD11

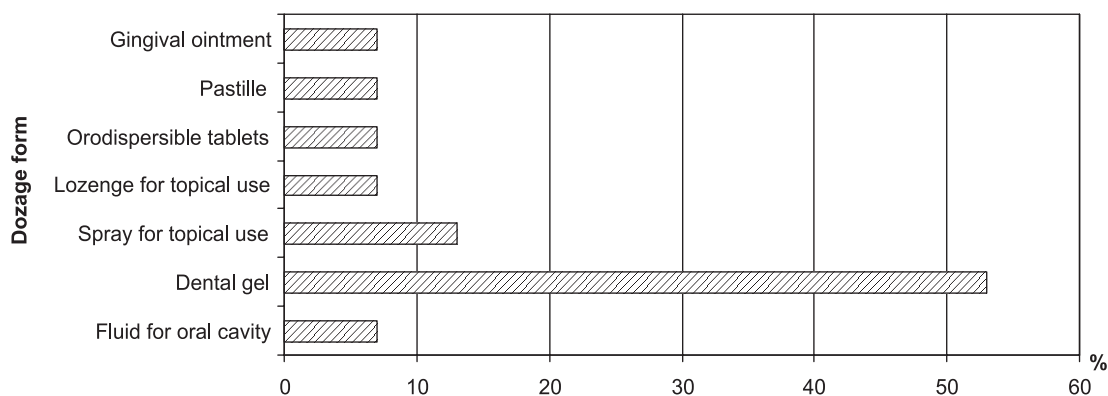


Fig. 1. Structure of dental drugs presented at the market of Kazakhstan, according to the dosage forms

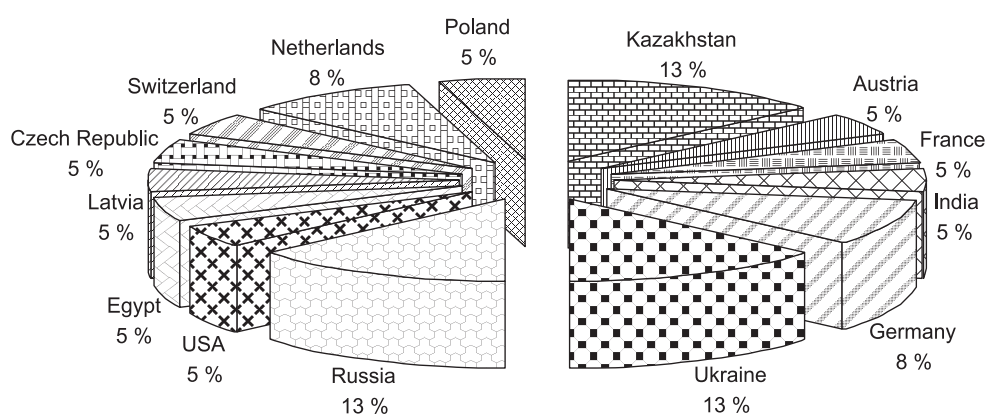


Fig. 2. Analysis of the drugs presented in Kazakhstan market according to manufacturing countries

opportunities at this stage of development of the pharmaceutical market of Kazakhstan. In a crisis, consumers are switching to cheaper drugs. This suggests that domestic companies having obtained additional resources by redistributing consumption towards low price segment can actively build up its product portfolio at the expense of dental drugs for topical use.

Thus, the carried out studies have shown the possibilities and directions of development of the Kazakhstan pharmaceutical industry in the group of the above mentioned drugs. Next stage of the research can be definition of consumer's preferences in this category of drugs, development of offers for the production of certain forms and composition of the drugs, as well as forecasting of possible future sales volumes in the country and neighboring countries.

CONCLUSIONS AND PROSPECTS FOR FURTHER RESEARCH

Studied pharmaceutical market of Kazakhstan, Russia, Ukraine, studied range of drugs for topical application used in parodontopathy. Analyzed structure of the market, in accordance with the

groups of drugs (ATC-classification), dosage form, composition of active ingredients, manufacturing countries.

It was determined that the range of dental products in the market of Kazakhstan and neighboring countries is quite wide. However, Kazakhstan is characterized by low presence of domestic manufacturers in this group of drugs (13 %) at the market. Were selected the most popular formulations (gels) and widely used formulations of drugs, on the basis of what is possible the development of further offers for Kazakh manufacturers to form product portfolio in the group dental drugs.

In view of these results, development of dental drugs for topical application on the basis of domestic raw materials is an urgent task.

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АНАЛИЗ КАЗАХСТАНСКОГО ФАРМАЦЕВТИЧЕСКОГО РЫНКА ЛЕКАРСТВЕННЫХ СРЕДСТВ, ПРИМЕНЯЕМЫХ ПРИ ПАРОДОНТОПАТИЯХ

Приведены результаты исследования фармацевтического рынка Казахстана, России, Украины, исследован ассортимент лекарственных средств, применяемых при пародонтопатиях. Проанализирована структура рынка в соответствии с группами применяемых препаратов (АТХ-классификация), лекарственной формой, составом активных ингредиентов. Особое внимание в данном сегменте препаратов уделено казахстанскому фармацевтическому рынку. Изучена структура стран-производителей (казахские производители занимают всего 13 % рынка), выделены возможности и направления развития для отечественной фармацевтической промышленности в данном сегменте.

Ключевые слова: фармацевтический рынок; стоматологические препараты; пародонтопатии; Республика Казахстан; маркетинговый анализ

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АНАЛІЗ КАЗАХСТАНСЬКОГО ФАРМАЦЕВТИЧНОГО РИНКУ ЛІКАРСЬКИХ ЗАСОБІВ, ЩО ВИКОРИСТОВУЮТЬСЯ ПРИ ПАРОДОНТОПАТІЯХ

Наведені результати дослідження фармацевтичного ринку Казахстану, Росії, України, досліджений асортимент лікарських засобів, що застосовуються при пародонтопатії. Проаналізовано структуру ринку відповідно до груп застосовуваних препаратів (АТС-класифікація) за лікарською формою, складом активних інгредієнтів. Особливу увагу в даному сегменті препаратів приділено казахстанському фармацевтичному ринку. Вивчено структуру країн-виробників (казахські виробники займають всього 13 % ринку), виділені можливості і напрямки для розвитку вітчизняної фармацевтичної промисловості в даному сегменті.

Ключові слова: фармацевтичний ринок; стоматологічні препарати; пародонтопатії; Республіка Казахстан; маркетинговий аналіз

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