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## CURRENT STATE OF THE PHARMACEUTICAL MARKET OF MEDICINES FOR VETERINARY USE IN THE EEU COUNTRIES

**A.A. Deltsov**, *K.I. Skryabin Moscow State Academy of Veterinary Medicine and Biotechnology, Moscow, Deltsov-81@mail.ru*

**I.V. Kosova**, *People's Friendship University of Russia, Moscow, kosovaira@mail.ru*

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*The paper presents a statistical analysis of the pharmaceutical market of medicines for veterinary use in the EEU countries (the Russian Federation, the Republic of Belarus, the Republic of Kazakhstan, the Republic of Armenia). Based on the state registers of medicines for veterinary use in these countries, the dynamics of registration of medicines, the number and ratio of pharmacotherapeutic groups of veterinary medicines are shown. The shares of groups of medicines intended for different types of animals in the registers of medicinal products are specified.*

**Keywords:** pharmacy, veterinary medicine, pharmaceuticals, pharmaceutical market

In recent years, there has been development of the domestic market of medicines for veterinary use, increase in the market capacity, the number of registered medicines, development of medicine manufacturers both at the expense of domestic organizations and due to the arrival of foreign companies. Thus, according to the Russian Veterinary Association, the market capacity of veterinary medicines in 2018 amounted to about 39.0 billion rubles, and in 2016–36.5 billion rubles [6,7].

The Russian Federation, as a member state of the Eurasian Economic Union (EEU), in accordance with the Treaty on the Eurasian Economic Union (signed in Astana on 29.05.2014), forms a common market for medicines with other member states of the Union

**The purpose** of our work was to study the state of the pharmaceutical market of medicines for veterinary use in the EEU countries – the Russian Federation (RF), the Republic of Belarus (RB), the Republic of Kazakhstan (RK), the Republic of Armenia (RA).

### MATERIALS AND METHODS

In the course of the study, the statistical analysis and content analysis methods were used. Based on data from the state registers of medicines for veterinary use in Russia [URL: <https://galen.vetrif.ru>], Belarus [URL: <http://www.dvnp.gov.by>], Kazakhstan [URL: <https://moa.gov.kz>] and Armenia [URL: <http://www.pharm.am>] we have analyzed the types, quantity, pharmacotherapeutic groups, groups of medicines depending on the type of animals represented on the pharmaceutical market of medicines for veterinary use in the EEU countries.

### RESULTS AND DISCUSSION

It is established that as of 01.09.2019 in the Russian Federation for veterinary use in accordance with the established procedure, 2196 medicines for veterinary use were registered and entered into the State register, including 630 immunobiological drugs (Fig. 1).

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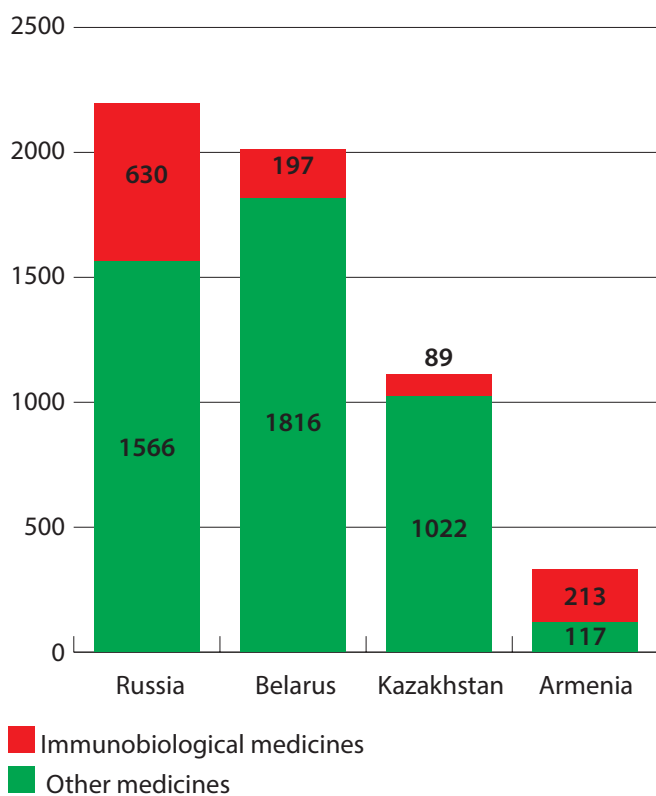
In the Republic of Belarus, 2013 medicines for veterinary use were registered and entered into the State register, including 197 immunobiological drugs.

In Kazakhstan, the pharmaceutical market is represented by a smaller number and includes 1111 medicines for veterinary use, 89 of which are immunobiological drugs.

330 animal medicines have been registered and entered into the State register in Armenia, including 213 immunobiological drugs.

The number of registered medicines for veterinary use in the EEU countries is shown in Fig. 1.

As can be seen from the presented data, the most extensive market of medicines for veterinary use is represented in the Russian Federation, only 8.3% less than veterinary medicines in the Republic of Belarus. In Kazakhstan, the pharmaceutical market of medicines for veterinary use is almost half (49.0%) less than in the Russian Federation. However, the market of veterinary medicines



**FIG. 1.** Number of medicinal products for veterinary use in the EEU countries

is significantly less represented in Armenia (15.0% of the Russian market).

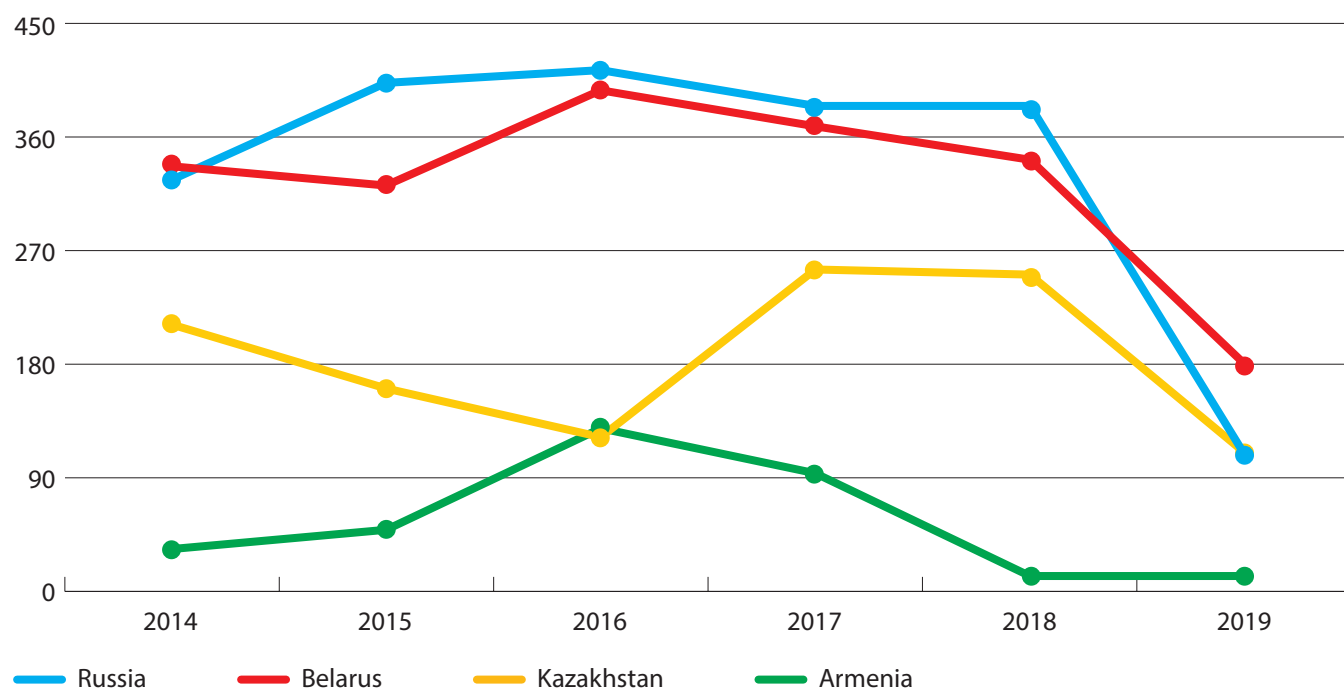
Next, we analyzed the dynamics of state registration of medicinal products for veterinary use. As it can be seen from the presented data (Fig. 2), in the Russian Federation for the past 5 years (2014-2018), at average 352 medicines are registered annually. The largest number of registered medicines is in 2016, and the smallest number is in 2015.

In the Republic of Belarus, at average 380 medicines have been registered annually for the past 5 years. The smallest number of medicines was registered in 2014. The largest number was registered for 2016–2015, which in total is 40.3% of the total volume of medicines entered into the register. As you can see on the graph, there have been no strong jumps in the number of registered medicines for the past 4 years. The number of registered medicines in 2018 increased by 1.2 times compared to 2014, which indicates a positive trend in the RB market.

In Kazakhstan, for the past 5 years, about 120 medicines have been registered annually. The smallest number of medicines was registered in 2016–2015. The largest number was registered in 2017–2018, which in total is 45% of the total volume of medicines entered into the register.

In Armenia, at average 55 medicines are registered annually. The smallest number of medicines was registered in 2018. The largest number was registered in 2016–2017, which in total is almost 67.0% of the total volume of medicines entered into the register. As you can see on the graph, until 2016 there was a positive trend in the development of the veterinary pharmaceutical market, after 2016 the number of registered medicines began to decline sharply and reached its minimum last year.

Based on the data on the dynamics of registration of medicines for veterinary use, it can be said that for the past 5 years, the most intensively medicines were registered in the Republic of Belarus (at average, 380 medicines



**FIG. 2.** Dynamics of registration of medicines for veterinary use in the EEU countries

per year), 7.0% lower than the dynamics of registration in the Russian Federation (352 medicines per year). In the third place in terms of registration dynamics is Kazakhstan (120 medicines per year), which is 68.0% lower than in the Republic of Belarus, and 65.0% lower than in the Russian Federation. In the last place there is the Republic of Armenia, which registers at average 55 medicines per year, which is 85.0% lower than in the Republic of Belarus, and 84.0% lower than in the Russian Federation.

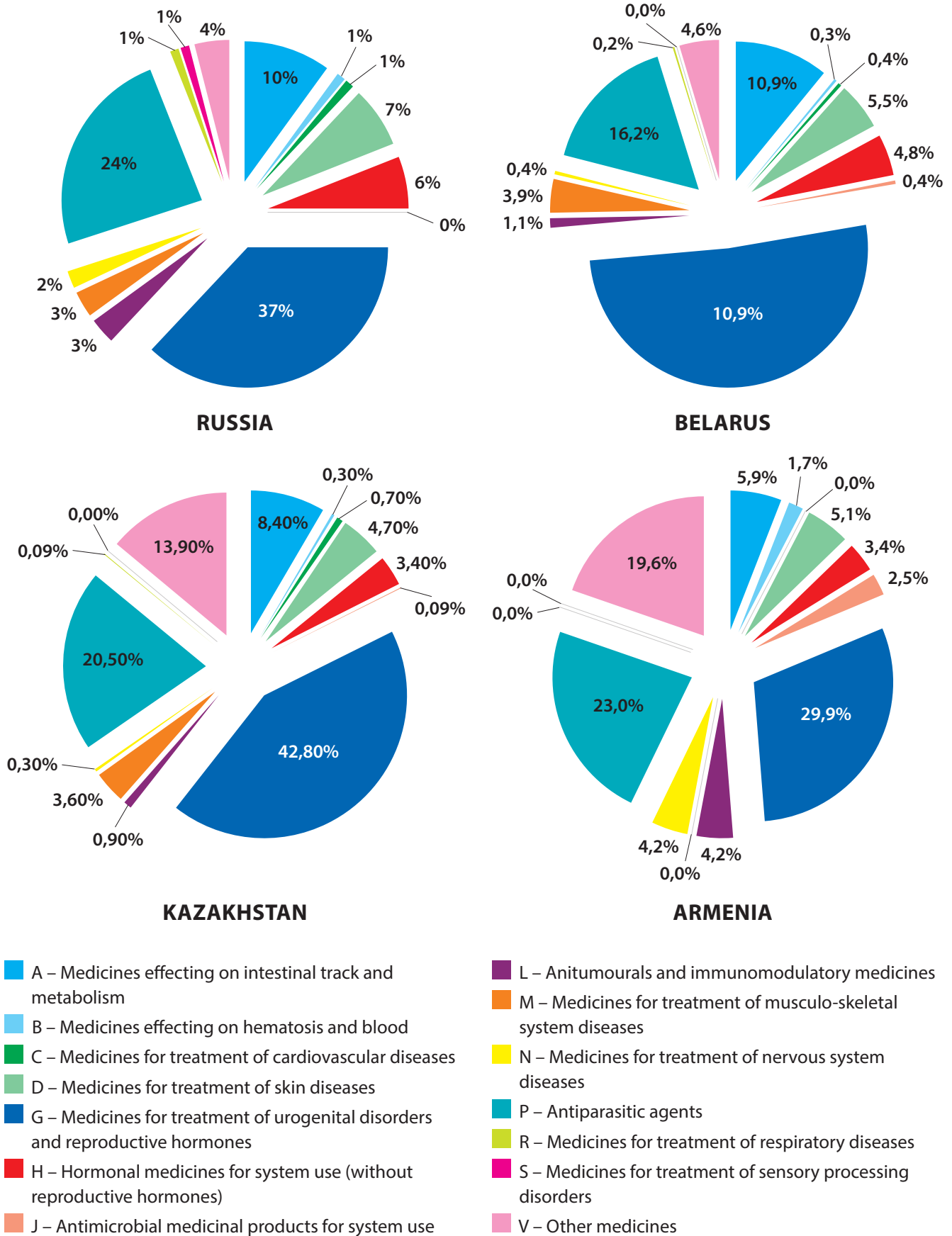
Further, based on the composition and indications for the use of medicinal products available in the registers, we have classified veterinary medicinal products in accordance with the anatomic-therapeutic-chemical classification (Fig. 3).

As it can be seen from the presented data, not all pharmacotherapeutic groups of medicines are currently represented in the State register of the Russian Federation in full, some groups (antimicrobials for systemic use – 37.0%) are represented in excess. Hormones for systemic use (0.54%), medicines for respiratory system (0.68%) and sensory organs (0.82%)

are not represented in sufficient volume. The pharmaceutical market is mainly represented by the three largest groups: antimicrobials for systemic use (37.0%), antiparasitic agents, insecticides and repellents (24.0%), as well as medicines that affect the digestive tract and metabolism (10.0%), which in total is 71.0% of the total number of medicines.

In Belarus the situation was the same: there are no almost completely the medicines for treatment of sensory processing disorders, there are catastrophically small numbers of medicines for treatment of respiratory system (0.2%) and medicines for hematosi treatment (0,3%). Antimicrobials for systemic use (51.0%) are present in excess.

In the pharmaceutical market of Kazakhstan, there are no medicines for treatment of sensory processing disorders; only one name is represented in the group of medicines for treatment of respiratory diseases and one name is among hormonal drugs, excluding reproductive hormones. The largest number of registered medicines also refers to antimicrobial (42.0%) and antiparasitic (20.0%) agents.



**FIG. 3.** Anatomic-therapeutic-chemical classification of medicinal products for veterinary use in the EEU countries

In the Republic of Armenia, there are no medicines for the treatment of sensory processing disorders, respiratory diseases, as well as diseases of musculoskeletal and cardiovascular systems. The largest number of registered medicines are medicines belonging to antimicrobial (29.0%) and antiparasitic (23.0%) groups.

Thus, we can conclude that the overall picture is observed in the pharmaceutical markets in the EEU countries. Namely, there is disparity between the pharmacotherapeutic groups of medicines, the overwhelming predominance of antimicrobial and antiparasitic agents.

The next stage of the study was the analysis of medicines for veterinary use, depending on the species of animals for which they are intended. The results revealed that among all the medicines presented in the State register of the Russian Federation, 17.0% of medicines are used regardless of the animal species; 23,4% of medicines are intended for large cattle and

sheep and goats; 11.3% are used for pigs; 21.4% are used for poultry; 20.1% are for dogs and cats; 2,4% are for horses; and 1.7% are for fur animals; 1,6% are for the bees; 0,5% are for fish and 0.6% – for reptiles (Fig. 3).

In the Republic of Belarus, in the majority the medicines for use for several types of animals are also represented (53.0%) if we consider only the species, the number of medical products for cattle/goats and sheep (21.0%) and pigs (9.0%) prevails.

In Kazakhstan, the medicines has been registered for many animal species, including cattle/goats and sheep (12.0%), farm birds (8.0%) and pigs (7.0%).

In Armenia, the market for medicinal products is also represented for many animal species, with the predominant shares of medicinal products for cattle/goats and sheep (27.0%) and pigs (10.0%).

Thus, the range of medicines for veterinary use in the EEU countries is mainly focused on farm animals (large cattle, goats and sheep, pigs, horses,

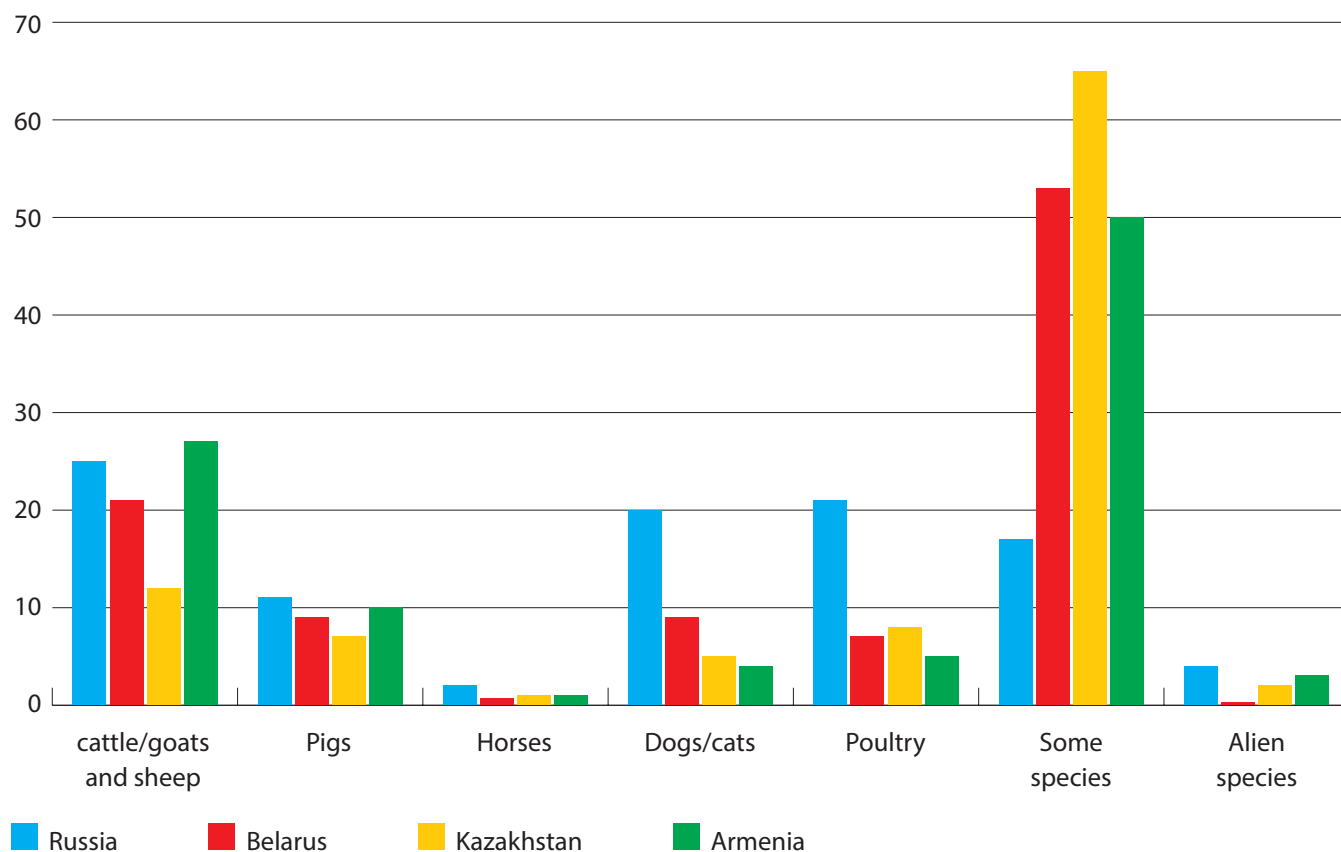


FIG. 4. Shares of medicines for different types of animals in the EEU countries

poultry). The total share of medicinal products for farm animals in the Russian Federation is just over 75.0%, in Belarus, Kazakhstan and Armenia this share is more than 90.0%.

The analysis found that the share of medicines for domestic and exotic animals in the Russian Federation is about 25.0%, and in other countries – members of the Union such share is less than 10.0%, which, from our point of view, is insufficient with increase in the number of small pets in cities.

### CONCLUSION

Thus, the pharmaceutical market of medicines for veterinary use in the EEU countries has been steadily and actively developing in recent years, being attractive to many domestic and foreign companies. The pharmaceutical market is most widely represented in the Russian Federation and the Republic of Belarus, which is confirmed by a significant number of registered medicines and stable annual dynamics of their registration.

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