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Research paper

Export Potential of the Russian Pharmaceutical Market and its Prospects

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Abstract

Export of medicines is one of the most profitable businesses, which attracts the attention of an increasing number of producers. The international medicines' trade largely depends on national or regional regulatory mechanisms. In addition, the export terms and conditions differ for various categories of medicines. Innovative drugs account for the main share of the global medicines' export. Therefore, export of innovative drugs developed in Russia to advanced countries is the most economically profitable direction. Export of generic drugs can bring considerable revenue to the producer and the state, but import substitution by releasing generic drugs weakens the innovative direction of studies and production. The import substitution policy targets manufacturers of medicines to produce generic drugs, as well as products intended, mainly or exclusively, for sale within the country. One of the ways to improve the efficiency of the entire pharmaceutical sector is international cooperation.

Keywords: *export of medicines, import substitution strategy for drugs, development of pharmaceutical and medical industry, medicines, active pharmaceutical ingredients (APIs).*

1. Introduction

According to official resources [1], the volume of export of pharmaceutical products manufactured in Russia in 2017 was about EUR 391 million. The relevant figures of some foreign countries look much more impressive (Table 1). This means that foreign countries have accumulated a considerable experience in promoting drugs on the world market.

The resolution adopted by the UNO General Assembly at its 70th session that took place on September 25, 2015 shows the determination of the world community to provide all people with an opportunity to live in prosperity and welfare [2]. However, there is not enough money to finance such activities.

Table 1: Volumes of Medicines' Export and Import by Certain Countries and the EU as a whole in 2016 [3]

Country	**Export** (bln. EUR)	**Import** (bln. EUR)
Lithuania	0.250	0.063
Slovenia	1,100	0.350
Japan	4,100	23,000
Canada	7,600	11,300
China	12,300	19,900
India	13,000	2,900
Ireland	14,000	11,000
France	14,300	5,300
United Kingdom	15,800	8,000
Germany	36,600	12,100
USA	46,700	86,700

Some industrial countries, for example, the United States, Japan, and Canada have negative balance of international trade of this type of goods. This means that such countries are not only far from being self-sufficient in terms of medicinal supply, but they do not always manufacture enough medicines to meet their internal needs.

This situation is related to the fact that large pharmaceutical manufacturers form the product line and the range of export based on their technological capabilities and the forecasted needs of markets, both local and targeted foreign ones. The negative trade balance in industrial countries is considered to be undesirable, but it is not a reason to take measures on import substitution.

When making a more detailed analysis of the situation in this area, it is necessary to take into account peculiarities of pharmaceutical products. As it has been repeatedly noted in the industry publications, medicines can be considered to be the most "international" commodity, because they cross national borders almost as easily as diseases they treat or prevent. At the same time, the medicines' turnover is probably the most regulated sector of the economy. For these reasons, the international medicines' trade largely depends on national or regional regulatory mechanisms. In addition, the terms and conditions of export are different for various categories of medicines.

The main share of the global medicines' export includes innovative drugs developed and manufactured in countries with strict industry regulatory requirements. These are member states of the EU, as well as the United States of America, Canada, Switzerland, and Japan. In total this group includes more than 30 countries, i.e. approximately half of the list of industrially developed countries. Their high export is due to monopoly prices associated with the exclusive order of sale of this category of drugs, as well as considerable volumes of supplies in physical units: tons, millions of packages, etc.

It is necessary to note that the basic volume of exported innovative drugs is exported to countries with a high level of economic de-

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velopment, because states of other categories are not able to purchase them in considerable amounts. For this reason, countries that are the largest exporters of medicines are also their leading importers (Table 1).

It is known that the export of innovative drugs is not merely a profitable business, but also a necessary factor for closing the cycle of refinancing research activities (Figure 1).

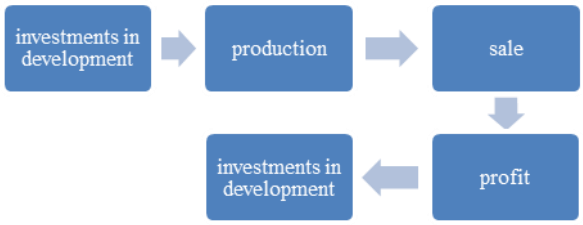


Fig. 1: Life Cycle of Research Activities

According to the estimations, on average $1 billion or more is required to develop and introduce a new drug on the market. According to the economists' calculations, the profit required for this cannot be earned from selling a new product on the market of one country during a reasonable period of time, even if this country is as rich as the United States of America. In order to do this, it is necessary to start selling the drug simultaneously on markets of at least 5 countries with a high level of economic development. It is clear that it is possible only in the context of international harmonization of requirements to ensuring the medicines' safety and efficiency. The most important sections of these requirements include the system of admitting new drugs to the market. These considerations became the basis for establishing the ICH (International Conference on Harmonization of Technical Requirements for Registration of Pharmaceuticals for Human Use) international organization in 1990-91; currently this is the International Council on Harmonization.

Another important condition for the development of the export potential in the pharmaceutical industry is strict production control in the form of licensing and inspections in compliance with the rules of GMP (good manufacturing practices). Particularly, it is proved by the rapid growth of the number of participants in the PIC/S – Pharmaceutical Inspection Cooperation Scheme. At the present time, there is no country that exports innovative drugs that does not have a mature regulatory system and does not actively participate in international cooperation mechanisms.

High cost for innovative drugs with proven clinical efficiency is not an obstacle to promote them for export because the competition is limited by the mechanisms for protecting intellectual property. In this aspect, the most promising ones are the drugs that allow solving certain problems related to treating or preventing diseases that are not "covered" or not completely "covered" by the existing medical technologies. Medical technologies are interpreted as a set of diagnostic methods, drug and nondrug treatment, prevention and rehabilitation, health care and strengthening systems used in the health service to solve medical problems, and improve the quality of life [4].

In contrast, on the world market in the segment of generic drugs there is a strong competition between producers of economically developed and some developing countries. In particular, India supplies generic vaccines to the EU and North American countries. For this reason, the key condition for the successful export of manufactured drugs is their low price. However, in this case it is necessary to comply with international requirements regarding preregistration study of drugs and GMP rules.

China and India export pharmaceutical substances to many countries of the world. It is generally acknowledged that industrial countries cannot compete efficiently in this area by the majority of active pharmaceutical ingredients (APIs).

The export opportunities of countries where the population has low incomes are limited by supplies of some generic drugs and traditional drugs mainly at the regional or subregional level. In the long term they can extend in case the WTO takes the decision on the possibility of exporting drugs manufactured on the basis of compulsory licensing.

2. Export of Russian Medicines

In terms of export development, the national pharmaceutical industry has a considerable advantage as compared to the majority of industrial countries: this is a large national market. At the same time, there is an industry-wide strategy of import substitution. Today, the state pays a lot of attention to local production of pharmaceutical substances and supports manufacturing companies that operate in this segment. It is necessary to welcome the medicines' import reduction due to the localization of foreign producers in Russia. However, this approach has limitations related to the production economy and the logistics of product distribution. The trend of localization is perceived by foreign companies as a number of restrictions aimed only at supporting national business and prohibiting or restricting the promotion of their products to the Russian market.

In case of national enterprises, the import substitution course targets them to produce generic drugs, as well as to manufacture products intended, mainly or exclusively, for selling in the country. As a result, the innovative direction of research and production is weakened, and the opportunity to use economies of scale to reduce costs is lost.

The program documents of the industry aim at producing innovative products. However, at the same time it is necessary to take into account that in order to obtain the maximum economic returns, such drugs should be directed, first of all, to countries with a high level of economic development. Entering medicinal markets of these countries could be facilitated by the national developers' transfer to progressive forms of creating innovative drugs by using molecular and computer modeling.

For the same purposes, it is necessary to forecast the unmet needs of foreign countries in medical technologies. In this regard, it is desirable to use international databases and cooperation mechanisms to establish priorities in looking for new drugs [6, 7]

When discussing the prospects for export of nationally manufactured generic drugs, the most important factor is the economy of scale. Unfortunately, Russian pharmaceutical manufacturers do not sufficiently take into account the concept of lowering overhead costs, and, consequently, the cost of production when increasing production volumes. In some cases, enterprises' managers realize that the cost of production is related to its scale. However, instead of entering foreign markets, they expect the state to increase the volume of purchases for public needs. As producers think, the cost may decrease only after this, which would then allow offering competitive prices for export.

Among other things, in order to reduce production costs, it is necessary to rationally use the fundamentals of chemistry and chemical technology, and to creatively apply the available technological equipment. When optimizing production processes, it is important to study chemical and physical properties of raw materials and semi-products, as well as to follow modern methods of scaling and technology transfer.

Although the ICH guidelines, including Q8 "Pharmaceutical Development", are intended mainly for innovative drugs' developers, similar studies are extremely important when creating reproduced drugs. Taking this into account, the WHO documents formulated recommendations on the pharmaceutical development of generic drugs [8, 9, 10]. They noted that in order to ensure pharmaceutical quality, data on pharmaceutical development should be an integral part of the registration dossiers.

For successful competition on the global market of generic drugs, it is also necessary to systematically monitor the expiration of innovative drugs' patent protection.

3. Development of the Export Potential of the Russian Pharmaceutical Industry

In 2014 the government discussed measures to support Russian companies that export medicines by providing them with various economic benefits, as well as informing about the specifics of drug market regulation in the countries importing national pharmaceutical products. The abolition of the previous requirement to register in Russia the medicines intended only for export is also a form of supporting enterprises that export pharmaceutical products. Recently, contacts among specialized agencies, the WHO and other international organizations have begun to improve. A package of standards and rules to regulate the medicinal market of the EEU countries harmonized with the EU standards is being quickly developed. This creates prerequisites for the registration of Russian medicinal products in countries with a developed regulatory system and their subsequent export.

Considerable differences with the world practice are observed in administering regulatory functions, which was repeatedly noted by specialists of the industry. While foreign countries widely apply the practice of combining the most important regulatory functions in one structure – the National Regulatory Authority, in Russia these functions are to the maximum extent fragmented not only among departments, but also within them. Meanwhile, the WHO documents emphasize the importance of an integrated regulatory system in countries.

Russian manufacturers almost do not use this form of their products' promotion to the world market as the WHO prequalification program for drugs and suppliers.

4. Achievements of the Russian Export of Medicines

Noting the significant work of the relevant departments performed over recent years on developing the export potential of the industry, it is also necessary to note rather low actual results of this work. As noted above, the volume of Russian medicines' export does not exceed half a billion US dollars per year, which is half the value of Slovenia (Table 1). Regarding the export to advanced countries, the picture is even less encouraging. The volume of the Russian medicines delivered to the EU countries is 120 lower less than the corresponding figure for Israel (Table 2).

Table 2: Export of Medicines from Certain Countries to EU Countries in 2016 [3]

Country exporting to EU countries	**Export of pharmaceutical products** (bln. EUR)
USA	31,600
Switzerland	26,200
China	3,000
Israel	2,900
Singapore	2,700
Japan	1,300
Canada	1,100
Australia	0.326
Brazil	0.277
Russia	0.024

5. On International Cooperation

One of the ways to improve the efficiency of the entire pharmaceutical sector is international cooperation. At its 67th session that took place in May 2014 the World Health Assembly recommended all countries to strengthen drug market regulation systems and to intensify international cooperation for this purpose on the global, regional, and subregional levels. [11] At the same time, a strategic goal of the cooperation is the convergence of norms and rules, and the elimination of unjustified national/regional differences in this area. It is primarily related to organizing export.

International organizations of the industry such as WHO, the European Directorate for the Quality of Medicines, PIC/S, ICH, ICMRA (International Coalition of Medicines Regulatory Authorities), FIP (International Pharmaceutical Federation), EFPIA (European Federation of Pharmaceutical Industries and Associations) could provide the relevant Russian authorities with considerable assistance on achieving this goal. Their assistance can be particularly useful in terms of an objective assessment of the national regulatory system. Without this, it is extremely difficult to answer the question whether the above differences of the system from the world practice can be considered as its negatives or national characteristics that do not reduce its efficiency.

Nowadays such form of cooperation is convenient. As a part of the application for membership in the PIC/S, there is already a process of assessing the Russian procedures related to the state inspection of pharmaceutical manufacturers. Earlier, a project to certify the regulatory system of the entire sector through the WHO was initiated. Unfortunately, according to the available data, this project is suspended due to problems with funding from both parties.

Along with this, nowadays there are alternative or additional opportunities for the interested agencies in Russia to obtain information and/or methodological support from international organizations. In this regard, firstly, it is necessary to mention the recommendations on good regulatory practices developed by the WHO pharmaceutical program, as well as methods for comparing national regulatory practices and identifying the most efficient approaches in this area. Consultative assistance can be also provided by other international organizations mentioned above. However, Russia should initiate it. International organizations do not offer their recommendations to highly developed industrial states without their request.

6. Conclusion

The export of national medicines meets the interests of economic development and the public health system of the country.

Export of the innovative drugs developed in Russia to advanced countries is the most economically profitable direction. It is possible only subject to the availability of drugs that meet the specific needs of the target markets of advanced countries. Along with this, it is necessary to strictly comply with all internationally recognized requirements for ensuring the efficiency and safety of each products' delivery. In case of the most promising innovative drugs, it is reasonable to apply for registration in foreign countries as soon as they are registered in Russia.

Export of generic drugs can also bring considerable revenues to the producer and the state. However, in this case, a prerequisite for success is competitive pricing subject to meeting international quality requirements. An efficient way to reduce selling prices for generic drugs is to increase production volumes taking into account the aggregate demand of the domestic market and a broad program of export supplies.

Due to the competition from such countries as China and India, the export of domestically manufactured APIs does not seem to be a promising direction.

References

[1] Decree of the Government of the Russian Federation of December 28, 2017 No. 1673 "On amendments to the State Program of the Russian Federation Development of pharmaceutical and medical industry for 2013-2020".

[2] United Nations. Resolution adopted by the General Assembly on 25 September 2015. Transforming our world: the 2030 Agenda for Sustainable Development. A/RES/70/1. http://docs.cntd.ru/document/420355765.

[3] International trade in medicinal and pharmaceutical products. Eurostat. Statistics explained. May 2017. http://ec.europa.eu/eurostat/statistics-explained/index.php/International_trade_in_medicinal_and_pharmaceutical_products.

[4] Addressing the global shortage of, and access to, medicines and vaccines. Report by the Director-General. WHO, Executive Board, 142nd session. EB142/13, 12 January 2018. http://apps.who.int/gb/ebwha/pdf_files/EB142/B142_13-en.pdf.
[5] Meshkovsky A. P., Pyatigorskaya N. V., Aladysheva Zh. I., Ivashechkova N. S., Shabalina M. M. (2017) Farmatsevticheskaya promyshlennost' Indii [Pharmaceutical industry of India] // *Remedium*, No. 5. pp. 6-10.
[6] Global Antibiotic Research & Development Partnership (https://www.gardp.org/) EB142/14.
[7] Global Observatory on Health Research and Development. (http://www.who.int/research-observatory/en).
[8] Development of paediatric medicines: points to consider in formulation. In: WHO Expert Committee on Specifications for Pharmaceutical Preparations. Forty-sixth report. Geneva, World Health Organization, 2012, Annex 5. WHO Technical Report Series, No. 970.
[9] Guidelines for registration of fixed-dose combination medicinal products. Appendix 3: Pharmaceutical development (or preformulation) studies. In: WHO Expert Committee on Specifications for Pharmaceutical Preparations. Thirty-ninth report. Geneva, World Health Organization, 2005, Annex 5. WHO Technical Report Series, No. 929.
[10] Guidelines on submission of documentation for a multisource (generic) finished pharmaceutical product: quality part. In: WHO Expert Committee on Specifications for Pharmaceutical Preparations. Thirty-eighth report. Geneva, World Health Organization, 2014, Annex 6. WHO Technical Report Series, No. 986.
[11] 67-aya sessiya Vsemirnoi assamblei zdravookhraneniya. Ukreplenie normativnoi sistemy dlya meditsinskoi produktsii. [67th session of the World Health Assembly. (2014) Regulatory System Strengthening for Medical Products]. WHA67.20. http://apps.who.int/gb/ebwha/pdf_files/WHA67/A67_R20-ru.pdf.