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BLOOD OXYGENATION PROBLEM IN NORMAL AND PATHOLOGICAL CONDITIONS OF THE CARDIOVASCULAR SYSTEM

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Introduction. Ensuring scientific and technological progress in medicine is necessary to improve the quality of medical care for the population and is largely achieved through the activation and use of the intellectual potential of medical workers by developing scientific and technical solutions at the level of world novelty with their protection by patents for inventions.

In the process of studying and analyzing a large array of scientific publications on the research topic [1, 2, 3, 4] no reviews of patent information were identified, which is an important part of scientific and technical information, as it reflects the results of research and development work aimed at developing new or improving known methods, devices or substances with world novelty and protected by patents.

In addition, the high inventive potential of the teaching staff contributes to the formation of the international image of the institution of science and education.

Purpose of the study: to analyze the contribution of inventors from the countries of the world community to the blood oxygenation problem in normal and pathological conditions of the cardiovascular system.

It should be emphasized that blood oxygenation and tissue perfusion are important metrics that may be monitored for a patient in a clinical or surgical setting.

Research methods. To achieve this goal, a patent search was carried out in the PATENTSCOPE search engine created by the World Intellectual Property Organization [5]. This system provides access to international patent documents in accordance with the Patent Cooperation Treaty (PCT), the European Patent Office (EPO), the Eurasian Patent Organization (EAPO), the African Regional Intellectual Property Organization (ARIPO), as well as to patent documents from regional and national funds. The PATENTSCOPE databases contain over 37 million patents, including 2.5 million Published International Applications (PCT) for inventions from more than 180 countries of the world. The depth of the conducted patent search covers the period from November 1954 to April 2022.

Search keywords: blood oxygenation.

Inventions under these keywords relate to medicine, in particular to medical equipment, namely to devices, methods and substances designed to restore blood circulation and oxygenation of blood in intensive care, cardiac surgery, disaster medicine, in acute, cardiorespiratory insufficiency, endangering life or significant harm to the health of the patient., as well as for carrying out extracorporeal perfusion in order to restore and maintain the viability of donor organs after stopping the natural circulation for subsequent transplantation.

Results and its discussion. As a result of the analysis in the databases for the specified period of time, 2036 patents were identified relating to various aspects of the problem of blood oxygenation. Such a significant number of patents on the research topic indicates the relevance of the problem and the interest of inventors from many countries of the world community a list of which is presented in the table below.

Table – List of countries with the largest number of patents on the research topic

Countries	Number of patents	Countries	Number of patents
USA	642	Canada	109
PCT	307	Russian Federation	99
China	249	Japan	52
EPO	221	United Kingdom	51
Australia	127	India	31

As shown in the table the largest number of patents were registered in the US, PCT, China, EPO, Australia and Canada, while the US is significantly ahead of all other countries in terms of the number of inventions on the research topic.

The largest number of patents on the topic of the study have applicants from the United States: Global Blood Therapeutics Inc. – 130, Cas Medical Systems Inc. – 42 and The Regents of The University of California – 36 patents.

Information about the most active applicants and authors of inventions makes it possible to constantly monitor their latest developments in order to timely use the information received when planning research, dissertations, and writing scientific papers.

Quite a large number (26%) of applications for inventions from their total number were filed with international patent offices, which indicates a relatively high

level of demand for patented technical solutions in the international arena and interest in their practical use.

In the process of analyzing (on the research topic. The largest number of patents were issued for devices for the introduction of drugs into the body (821), methods, devices, tools for diagnostics (727), drugs and medicines for therapeutic purposes (313).

Summary. It should be emphasized that scientists from many countries of the world have made a significant contribution to the development and patenting of new methods, devices and substances related to the problem of blood oxygenation in normal and pathological conditions of the cardiovascular system. The most productive period in terms of obtaining patents was the period of 2019-2021 (107, 172 and 177 patents, respectively).

The information presented in this paper can be useful to specialists in the field of studying the cardiovascular system and related disciplines, since patent information is reliable, up-to-date, has world novelty, and is widely used to analyze the inventive activity of scientific organizations and identify trends in the world development of science and technology.

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GENES CAGA AND CAGE HELICOBACTER PYLORI IN PATIENTS WITH GASTROINTESTINAL PATHOLOGY IN PATIENTS IN AL.KUT CITY/IRAQ

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Introduction. Helicobacter pylori, is a Gram-negative bacterium with a spiral shape, where colonize in gastric mucosa of the host. The bacterium is one of the most frequent pathogen infected approximately half of the world population, which can cause chronic gastritis, peptic ulcer and gastric cancer. H. pylori genotypes cagA and