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HOW TO TURN AN OLD MEDICINE INTO A NEW MEDICINE

-Changing physical and chemical properties as a way to create new drugs

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ABSTRACT

The advantages of the process of search and development of new medicines based on the modernization of old medicines are shown. It shows significant savings in financial, human and time costs for a team of researchers who used screening of old drugs with new physical and chemical properties to develop a group of new drugs called "Bleachers of bruising". We hope that this short message will increase the interest of scientists in finding additional information necessary for the discovery of new drugs.

Key words: new drugs, financial cost, chemical validation, physical and chemical targets, target assessment.

No: of References: 10

Introduction.

Currently, it will take at least of US$ 800 million and at least 12 years to create a new drug and conduct the full range of laboratory and experimental studies necessary to obtain permission for its clinical trials.[1,2] Unfortunately, this does not guarantee success. The facts are that most pharmacological projects are still doomed to failure. In particular, less than 1% of all studied substances will receive the status of a medicinal product.[3] Therefore, it is very important to choose the right way to find and develop new medicines in order to avoid unwanted financial costs, wasted human effort and lost time.

It is assumed that it is possible to reduce the financial costs and risks of pharmacological studies in the search and development of new drugs if take the old drugs as a basis, but then upgrade them so that they turn from general (resorptive) drugs into local drugs. Such a transformation can be done with the help of a radical change in the physicochemical properties of old drugs.[4-6] In this case, when developing new medicines, the main attention will have to be paid not to the traditional participant (that is, not to the main active substance), but to auxiliary, formative substances and substances that change color, taste and smell. The fact is that it is these ingredients that most determine the physicochemical properties of finished drugs most of all determine the physical and chemical properties of ready-made medicines.

The purpose of the study is to study the possibility of upgrading old medicines into a new medicine, namely, a bleach for bruising, with minimal project funding, a minimum number of participants, and in a short time.

Methods. The following sources of information were used: materials from the Institute of Thermology (Russia) on the implementation of a grant from the State Fund for Innovation Support for project N 24398, application N C1-19369 "Development of a tool for whitening facial skin with bruises under the eyes", as well as 16 patents for inventions and 5 articles received by this group of researchers in the development of products that whiten skin in the area of bruises in the period 2016-2019.

Results. We analyzed the financial documents Of the Institute of thermology, compiled during the implementation of a pharmacological project aimed at finding and developing a new drug, namely, a means for discoloring the skin of the face with bruises under the eyes. It was found that 2000000 rubles were spent on the development of this tool (which is equal to 27132 USD).

It is shown that 10 qualified specialists took part in the development, of which only one had a diploma of doctor of medical Sciences and a diploma of Professor in the field of pharmacology. The rest of the participants were doctors, 4 of them had a PhD in medicine. In addition, before and after receiving the grant, 5 students participated in the research on their own initiative. Students performed the function

of laboratory assistants without financial payment.

At the same time, in the period from 2015 to 2019, a team of specialists and students conducted a screening of 25 known drugs and some physical and chemical factors of local interaction that claim to have bleaching activity in relation to blood, hemoglobin and its color metabolites. These studies were conducted under laboratory conditions. The results obtained allowed us to identify 2 "old " drugs (hydrogen peroxide and sodium hydrocarbonate) that exhibit weak bleaching activity, and 3 physical and chemical factors of local interaction (hyperthermia, alkalinity and osmotic activity), which provided potentiation of the bleaching activity of these drugs. Then several series of laboratory tests were performed with animal blood stains and artificial bruises in the isolated skin of pigs. The results obtained allowed to develop a whole group of new cosmetic bleaching agents and new methods of diagnosis, treatment and screening.[7-10]

As a result, after 5 years, this team has successfully developed and patented 6 medicines (RU 2539380, RU 2589682, RU 2573382, RU 2653465, RU 2647371, RU 2639485) and 10 technologies to diagnose and treat bruises, as well as a method for screening bleaches of bruising (RU 2586278, RU 2582215, RU 2577510, RU 2600504, RU 2634268, RU 2631593, RU 2631592, RU 2641386, RU 2639283, RU 2679334).

Therefore, screening of old medicines, which was carried out before and after their modernization and giving them new physical and chemical properties, allowed us to identify potentially active agents and physical and chemical properties. The obtained data provided the development of a new group of drugs, called "Skin bleaching agents in the area of bruises". The work was completed in 5 years, and 10 people took part in it. The budget financing of the work was 27,132 USD.

Conflict of interest: None declared.

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