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ВІД ОРГАНІЧНОГО СИНТЕЗУ ТА ПОШУКУ РОСЛИННОЇ СИРОВИНИ – ДО СТВОРЕННЯ НОВИХ ЛІКАРСЬКИХ ПРЕПАРАТІВ

QUANTITATIVE DETERMINATION OF GABAPENTIN BY SPECTROPHOTOMETRIC METHOD

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Gabapentin is an antiepileptic product for oral administration. Epilepsy is considered one of the most common chronic neurological diseases among humans. About 50 million people worldwide live with epilepsy and 2.4 million new cases are reported each year. There are about 100,000 people having epilepsy in Ukraine. Epilepsy is a chronic disorder of brain activity that is characterized by repeated attacks. The structure of gabapentin is similar to the GABA (gamma-aminobutyric acid). That is why the urgent aim for pharmaceutical analysis is developing of high precision, valid, accessible and express methods of quantification.

Due to this, the problem of finding highly sensitive, sufficiently selective and available reagents that form colored compounds with medicinal substances is acute.

The aim of our work was to develop methods of quantification of gabapentin in "Gabapentin" capsules, containing 300 mg of gabapentin (Lekchim (Ukraine) 10220 series) based on the reaction with Diasol red 2G.

Material and methods. We identified experimentally the factors that affect the course of the reaction, namely: the solvent and the amount of added reagent. It was clarified that Diasol red 2G (an 0,042 % acetone solution) reacts with gabapentin at room temperature in water-acetone medium to form a colored product with maximum absorbance at 390 nm.

Results. The Behr's law is obeyed in the range of gabapentin's concentration of 2.10 – 3.64 mg / 100 ml. The sensitivity of the reaction is high: the limit of detection is 1.19 μg / ml, and the molar absorption coefficient is $7.15 \cdot 10^4$.

Conclusions. According to the SPU's requirements, the methods of quantitative estimation that can be included in the ARD (analytical regulatory documentation) must be valid. That is why some validation characteristics, in particular: accuracy, precision, linearity and robustness.

Consequently, the data, which we have got, confirm that the developed method is accurate, precise, highly sensitive, economical and easy-to-use. So, it can be recommended for use in the routine analysis of gabapentin pharmaceutical drugs.

REVIEW OF HEALTH INFORMATION SYSTEMS IN INDIA

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Today when Internet and systems for receiving, accumulating, transmitting, processing and analyzing information cover all countries, it is obvious that medical information systems are of significant interest. This is especially important in countries like India, with a population of 1.21 billion residing in over 3.2 million square km area hindered by varied landscapes.

India has medical information systems for various purposes. There is an information system designed to collect and process general information about the citizens of the country, about their visits to hospitals, about the drugs prescribed to these patients. This is an administrative system. On its basis, the structure of morbidity is analyzed, trends are established, and the need for certain groups of drugs is determined. Such medical information systems allow making operational decisions on events with citizens. In clinics that have diagnostic equipment, world-famous programs for the analysis of medical images, processing of laboratory research results, biological signals such as ECG, EEG, EMG, etc. function. These are usually personal data, they can also be analyzed, summarized, and this gives an idea of the general mechanisms of the course of diseases in different groups of patients. This approach

facilitates the development of general regimens for the treatment of diseases. Part of the routine operations, for the primary analysis of a medical image, or the laboratory diagnostics results and the establishment of a preliminary diagnosis based on these data are assigned to medical information systems. During a pandemic, when people are forced to avoid communication, and at the same time, every resident has a risk of suddenly falling ill, and in this case, everyone will need urgent medical care, personal medical information systems are of particular importance. Considering the widespread use of technical means of communication - smartphones, and the rapid development of wireless Internet, Indian developers have prepared software packages for smartphones that allow you to control the main parameters of a person's condition - pulse, temperature, oxygen saturation of the blood - and immediately transmit information about this to doctors through specialized cloud services. , to provide adequate and timely assistance to patients., and to carry out prevention in regions with an increased incidence rate.

Another group of programs successfully developed in India is artificial intelligence systems. They are found in many types of modern software, such as search engines. Based on the massive analysis of queries that citizens ask in their search engines, it is possible to draw conclusions about changes in the epidemiological situation in individual regions and in the country as a whole.

Conclusions. This is how medical information systems in India are helping to correct the epidemiological situation in the country.

PROSPECTS FOR THE DEVELOPMENT OF LONG-ACTING GLIBENCLAMIDE TABLETS

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Introduction. Diabetes mellitus (DM) is the most acute medical and social problem and is one of the first priorities of national health systems in almost all countries of the world. The number of people suffering from this disease is constantly increasing while the age of patients with diabetes has decreased. In Ukraine, according to the Ministry of Health, as of January 2016, almost 4 million patients with DM were registered. Given the successful fight against infectious diseases and the overall increase in life expectancy, such predictions seem quite realistic.

Aim. The creation of modern, effective and safe antidiabetic drugs is still relevant. Given the large number of oral antidiabetic agents on the pharmaceutical market, it is not always easy to choose the best medicine.

Materials and methods. Glibenclamide is considered worldwide as an essential drug for the treatment of DM. Its relevance and efficiency are quite modern and was confirmed throughout the entire period of its existence. Currently, prolonged-release dosage forms occupy an extensive niche in the tablet drug market and continue to develop. For many drugs, the extended-release form has become a continuation and improvement of the initially developed immediate-release formulation. In particular, for the majority of oral glucose-lowering drugs on the pharmaceutical market, there are prolonged dosage forms: for metformin, glimepiride. And also their combined drugs: metformin and glibenclamide, metformin and glimepiride.

Results and its discussion. The advantages of a prolonged dosage form are: more orderly drug intake, fewer doses per day and, accordingly, less risk of missing the time of admission (in cases where it is important), reduced risk associated with side effects, more uniform and long-lasting drug action. Prolonged dosage forms are mainly represented by matrix tablets, multiparticulate systems, implants and ophthalmic products. Tablets, as the most common dosage form, also prevail in modified release, since they have the same advantages as immediate-release tablets compared to other dosage forms. To obtain sustained-release tablets, the drug components must meet the same requirements as those applied to immediate-release tablets. The initial components should have the necessary flowability, compressibility and should not show a tendency to delamination, that is, close density, size and shape of the crystal. Technological methods available for obtaining prolonged-release tablets make it possible to provide the necessary parameters of the tablet mixture.

Conclusions. Thus, the search for new technological solutions for the creation of prolonged-acting glibenclamide tablets is still relevant for the development of modern medicine and pharmacy.