**МІНІСТЕРСТВО ОХОРОНИ ЗДОРОВ'Я**

**ЗАПОРІЗЬКИЙ ДЕРЖАВНИЙ МЕДИЧНИЙ УНІВЕРСИТЕТ**

# МАТЕРІАЛИ

## ВСЕУКРАЇНСЬКОЇ НАУКОВО-ПРАКТИЧНОЇ КОНФЕРЕНЦІЇ З МІЖНАРОДНОЮ УЧАСТЮ

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the indicated group, drugs of the B05 subgroup – blood substitutes and perfusion solutions (43.75%) were most often prescribed, while B03 – anti-anemic agents (6.25%) were the least frequently prescribed.

According to the results of the study, the TOP-5 drugs that were most often used in patients with breast cancer were determined. Among them, in decreasing order, the following are represented: sodium chloride solution 0.9% (25.36%), dexamethasone (10.58%), ondasterone (4.83%), barboval (4.86%) and osetron (4. 83%).

**Conclusions.** It was established that the average stay of patients with breast cancer in the hospital is 9 bed-days. The frequency analysis of drug prescriptions revealed that the largest number of prescriptions, namely 1055 (or 28.32% of the total number of prescriptions) belong to the group of drugs affecting the blood system and hematopoiesis. Among this group, drugs from the subgroup of blood substitutes and perfusion solutions were most often prescribed (43.75%).

Literature

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## DRUG DELIVERY SYSTEMS USING MICRO- AND NANOPARTICLES

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The development and implementation of innovative dosage forms is a priority for the pharmaceutical industry. Currently, about 25% of the world drug sales volume are occupied by drugs with an improved delivery system. The drugs available on the market tend to prolong the action and increase the bioavailability of the drug, as well as reduce possible side effects. The delivery systems currently being developed and implemented not only have the above useful properties, but also provide targeted transport of drugs to the focus of the pathological process.

Applied approaches to the introduction of drugs into the human body, based on the use of traditional dosage forms, have a number of significant limitations, such as:

– non-directional drug action, i.e. interaction with non-target biological objects, often leads to side effects caused by its metabolites, and to non-target, irrational drug consumption;

– increased drug consumption, caused by the fact that the drug does not reach all the necessary biological targets or does, but at a concentration much lower than the required therapeutic one. Therefore, it is necessary to use doses that are 1-2 orders of magnitude higher than theoretically necessary;

– the impossibility of maintaining the optimal therapeutic concentration of the drug for the required time and, as a result, the need for frequent administration of the drug;

– insufficient biocompatibility and undesirable physiological effects in the area of drug administration. The need to use special methods of drug administration;

– significant difficulties in the use of drugs with non-optimal transport properties (for example, high lipophilicity).

One of the most important tasks is to optimize the lipophilicity of transport particles, which is associated with penetration through biological barriers. The route of drug administration is often a determining factor in the process of creating new dosage forms, taking into account the possibility of choosing a treatment. The chemical and physicochemical properties of the medicinal product also impose certain requirements and restrictions on the composition and design of transport particles and dosage forms in general.

The permeability of biological barriers problem can be solved by selecting the size and surface properties of the transport particles. Experiments have shown that the optimal particle size is in the range of 10–300 nm. Nanoparticles with sizes from 50 to 200 nm have specificity for most tumor tissues. Particle sizes affect not only their transport function and specificity, but also the rate of drug release, all other things being equal. Tissue and cell specificity can be achieved by the use of more complex modifications of the transport particle, for example, by changing its charge or integrating specialized transport proteins (monoclonal antibodies, peptide hormones, oncofetal proteins, “Trojan” peptides, etc.) onto its surface. The capture of a particle by a cell, endocytosis, can be carried out by a nonspecific or receptor-mediated mechanism.

**Conclusion.** The intensive development of drug delivery systems based on micro- and nanotechnologies leads not only to an extension of the lifetime of known drugs on the international pharmaceutical market, but also to the emergence of drugs with improved pharmacological and pharmacokinetic properties, which significantly expands the boundaries of their use. The development of innovative dosage forms does not require large investments, and the achieved effects are very significant for healthcare and the economy. In this regard, the support of developers and manufacturers of improved dosage forms is an extremely promising resource for the development of the pharmaceutical industry and technology, science, medicine and the innovative economy of Ukraine as a whole. The development of new effective dosage forms using advanced micro- and nanotechnologies has every chance of becoming one of the priority areas in the field of state scientific, technical and economic policy.

## DIRECTED SEARCH OF A NEW BIOLOGICALLY ACTIVE COMPOUND AMONG 5-SUBSTITUTED 1,2,4-TRIAZOLE-3-THIOL DERIVATIVES

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The variety of substances in the universe is very large. There are many organic and inorganic compounds. But only a small percentage of these substances are used in medicine. Such compounds include substances of natural origin or synthetic compounds.

The development of synthetic chemistry leads to the appearance of new and new substances. Some of them even become medicines in the future. But scientists know that the path from a formula drawn on a paper to an already recommended medicinal product is very long.

The simplest way to choose a molecule is to search among already known bases that have proven themselves as pharmacologically and biologically active substances. Such a basis is the 1,2,4-triazole system. Both domestic and foreign scientists are engaged in the development of this system, as evidenced by a large number of literary sources.

Our study is no exception. It is well known that 5-R-1,2,4-triazole-3-thioderivatives recommended themselves as active substances.

The aim of the work is the synthesis of new substances among 1,2,4-triazole derivatives that contain a 2-bromophenyl and thiophen-2-ylmethyl substituent at the 5th position of the 1,2,4-triazole cycle and further pharmacological research and the search for promising compounds among of this series of substances.

To obtain an arsenal of new compounds, alkylation and arylation reactions were carried out, starting acids and corresponding ethers and salts were obtained. The reactions were carried out according to standard methods. In this way, new 3-(alkyl/arylthio)-5-thiophen-2-ylmethyl-1,2,4-triazol-4-amines and 3-(alkyl/arylthio)-4-alkyl-5-(2-bromophenyl)-4H-1,2,4-triazoles, and 2-((4-amino-5-(thiophen-2-ylmethyl)-4H-1,2,4-triazol-3-yl)thio)acetic acid and 2-((4-alkyl-5-(2-bromophenyl)-4H-1,2,4-triazol-3-yl)thio)acetic acids, their salts and ethers were obtained.