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МАТЕРІАЛИ

ВСЕУКРАЇНСЬКОЇ НАУКОВО- ПРАКТИЧНОЇ КОНФЕРЕНЦІЇ З МІЖНАРОДНОЮ УЧАСТЮ

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Results and Discussion. Treatment with red raspberry leaves extract at significantly reduced paw edema in 38.8% compared with the saline group from the first hour of test ($p < 0.05$). Thereafter, these treatments reduced edema by 41.8%, 48.8%, 20.2% and 17.8% at 2, 3, 8 and 24 h, respectively ($p < 0.05$ at all times) compared to saline. Treatment with the 0.5 ml/kg dose of red raspberry leaves extract showed lower results compared to treatment with dose 1ml/kg, at the first hour mice paw edema was reduced in 25.6%, thereafter it was able to reduce edema by 27.2%, 36.1%, 14.1% and 5.1% at 2, 3, 8 and 24 h, respectively ($p < 0.05$ at all times) compared to saline. Treatment with red raspberry leaves extract 1 ml/kg showed a significant edema reduction at 1, 2 and 3 h after induction compared with diclofenac sodium ($p < 0.05$), but at 8 and 24 h it provided lower reduction of edema than diclofenac sodium. The treatment with 0.5 ml/kg of red raspberry leaves extract, was significant worse than diclofenac sodium.

Conclusion. The present work shows that 60% ethanolic extract of red raspberry leaves possess remarkable anti-inflammatory activity. Therefore, the red raspberry leaves are a promising source of bioactive substances that can be used as replacements for synthetic antioxidant, antibacterial and anti-inflammatory medicines in the treatment and prevention of lifestyle diseases. They may also be used as valuable food additives and cosmetologically products, thus increasing the functional qualities of food.

SEARCH FOR PROMISING DIURETICS AMONG DERIVATIVES OF 7-(2-HYDROXY-3-P-METHOXYPHENOXYPROPYL-1)-3-METHYLXANTHINE

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Introduction. Combination therapy is used for the treatment of arterial hypertension, including β-blockers, angiotensin II receptor blockers (such as valsartan, irbesartan), and thiazide diuretics (such as hydrochlorothiazide), which promote reduced sodium reabsorption in the proximal renal tubules and enhance the excretion of sodium, magnesium, calcium, and uric acid ions. In cases of water-electrolyte imbalance, pharmacological correction of renal excretory function is performed using diuretic agents. However, along with a potent diuretic effect, these agents can cause undesirable side effects, including hypokalemia, hypochloremic alkalosis, metabolic acidosis, hyperlipidemia, hyperglycemia, azotemia, and disruptions in protein metabolism, limiting their use in clinical practice.

The search for biologically active compounds capable of improving renal excretory function is ongoing across various groups of organic compounds. Our attention is specifically drawn to xanthine derivatives, which play an important role in regulating bodily functions. An essential goal is to develop new, effective agents to improve renal function and increase diuresis under pathological conditions. Thus, the search for new diuretic agents for the pharmacological correction of kidney function remains a critical issue in modern pharmacology.

The aim of this work is to develop simple laboratory methods for synthesizing previously undescribed 8-substituted 7-(hydroxy-3-p-methoxyphenoxypropyl-1)-3-methylxanthines and to study their physicochemical and biological properties.

Materials and Methods. The melting point was determined using the open capillary method. Elemental analysis was conducted on an Elementar Vario L cube device, and ^{1}H NMR spectra were recorded on a Bruker SF-400 spectrometer (operating frequency 400 MHz, solvent DMSO, internal standard TMS). The elemental analysis data correspond to the calculated values. Molecular descriptors were calculated using the SwissADME online service. The acute toxicity of the synthesized compounds was studied by the Kerber method in experiments on white mice. The diuretic activity of these compounds was studied using the method of E. B. Berkhin, with hydrochlorothiazide used as the reference drug.

Results and their Discussion. The reaction of 8-bromo-3-methylxanthine with p-methoxyphenoxymethyloxirane in a butanol-1 environment results in the formation of 8-bromo-7-(2-hydroxy-3-p-methoxyphenoxypropyl-1)-3-methylxanthine, whose boiling with N-containing nucleophiles in an aqueous dioxane environment leads to the formation of the corresponding 8-amino xanthines.

The structure of the obtained compounds was confirmed by elemental analysis and ^{1}H NMR spectroscopy data. Virtual screening results indicate that all synthesized compounds meet the requirements of Lipinski's «rule of five». Additionally, Weber and Egan filters were applied, supporting the feasibility of further in vivo studies. Acute toxicity studies in vivo showed that the synthesized compounds belong to toxicity class IV. Investigation of the diuretic activity of the synthesized aminoxanthines demonstrated that some compounds are as effective as or more active than reference standards in terms of this activity. Certain structure–activity relationships were established.

Conclusions. Synthesis methods were developed for previously undescribed 8-aminoderivatives 7-(hydroxy-3-p-methoxyphenoxypropyl-1)-3-methylxanthine. The structure of the obtained substances was confirmed by elemental analysis and ^{1}H NMR spectroscopy data. Virtual screening showed the feasibility of further in vitro and in vivo experiments. The study of diuretic activity helped establish priorities for further research.

STUDYING THE FEASIBILITY OF EXPANDING THE RANGE OF MEDICINES FOR THE TREATMENT OF NASAL CAVITY DISEASES

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Inflammatory processes of the nasopharynx occur quite often during the development of acute respiratory and respiratory viral diseases, especially during their exacerbation.

Despite the wide range of off-the-shelf medicinal products in this pharmacological group used to correct the symptoms of inflammatory diseases of the nasopharynx, the search for new effective and safe drugs and their import substitution is an urgent issue in modern pharmacy.

According to scientific sources and information on the Internet, medicines of both synthetic and natural origin are used for pharmacotherapy of this group of diseases. Most of the drugs in this pharmacological group on the Ukrainian pharmaceutical market are industrially produced. The majority of them are imported from different countries. Foreign-made drugs are quite expensive. But not all segments of the population can afford expensive imported medicines. Given the current situation in our country, there is a social problem of import substitution of medicines that needs to be addressed.

In order to study the possibilities of expanding the range of drugs for the treatment of nasopharyngeal inflammation and developing new medicines, the causes and symptoms of their occurrence were analysed. Inflammatory processes in the nasopharynx occur in a number of diseases. The most common causes of their development are acute respiratory diseases, influenza rhinitis, pharyngitis, sore throat, and sinusitis. To analyse the pharmacotherapy of nasopharyngeal inflammation, we used the information from national clinical protocols in Ukraine, the State Register of Medicines of Ukraine, the European Guidelines for the Treatment of Rhinosinusitis EPOS 2020 and other sources that provide recommendations for the treatment of ENT diseases. There are many methods of treating nasopharyngeal inflammation. They depend on the type, form, severity and duration of the disease. According to the literature, doctors use anti-inflammatory drugs, antibiotics and other antibacterial drugs, as well as hormonal and anti-allergic drugs, depending on the severity of the disease, to eliminate inflammatory processes of the nasopharynx and prevent complications.