

**МІНІСТЕРСТВО ОХОРОНИ ЗДОРОВ'Я УКРАЇНИ  
БУКОВИНСЬКИЙ ДЕРЖАВНИЙ МЕДИЧНИЙ УНІВЕРСИТЕТ»**



## **МАТЕРІАЛИ**

**105-ї підсумкової науково-практичної конференції  
з міжнародною участю  
професорсько-викладацького персоналу  
БУКОВИНСЬКОГО ДЕРЖАВНОГО МЕДИЧНОГО УНІВЕРСИТЕТУ  
присвяченої 80-річчю БДМУ  
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Матеріали підсумкової 105-ї науково-практичної конференції з міжнародною участю професорсько-викладацького персоналу Буковинського державного медичного університету, присвяченої 80-річчю БДМУ (м. Чернівці, 05, 07, 12 лютого 2024 р.) – Чернівці: Медуніверситет, 2024. – 477 с. іл.

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У збірнику представлені матеріали 105-ї підсумкової науково-практичної конференції з міжнародною участю професорсько-викладацького персоналу Буковинського державного медичного університету, присвяченої 80-річчю БДМУ (м. Чернівці, 05, 07, 12 лютого 2024 р.) із стилістикою та орфографією у авторській редакції. Публікації присвячені актуальним проблемам фундаментальної, теоретичної та клінічної медицини.

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closing wounds in the bark and wood and protecting them from moisture; from infection with fungal diseases, as well as to attract pollinating insects.

**The aim of the study.** For humans, essential oils are suppliers of necessary vitamin-like, hormone-like substances, they exhibit antimicrobial, antiviral, and anti-inflammatory activity, and have adaptogenic, antidepressant, disinfectant, antitumor, wound-healing, and other pharmacological effects.

**Materials and methods.** The component composition of volatile compounds (essential oils) and their content in the grass of the studied plant was determined by gas chromatography-mass spectrometry.

**Results.** The percentage of coincidence of the detected compounds with those in the NIST 02 mass spectrum library was 81-99%. As a result of the conducted research, 50 volatile compounds were found in cat's paws, of which 15 were identified, their content was 30.0% of the total amount of all components.

**Conclusions.** Therefore, the main components of the volatile compounds of cat's paws of the dioecious grass are tetradecanoic acid, p-hexadecanoic acid (99% agreement), 9,12-octadecadienoic acid (98% agreement), heneicosan (97% agreement) and tetradecane (98% agreement). coincidence 96%), eicosan (percentage of coincidence 95%).

**Drachuk V.M.**

## **CHANGES IN FIBRINOLYTIC ACTIVITY IN KIDNEYS OF RATS WITH RHABDOMYOLYSIS-INDUCED ACUTE KIDNEY INJURY UNDER ADEMETHIONINE ADMINISTRATION**

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**Introduction.** Rhabdomyolysis is a frequent cause of AKI, and accounts for about 10-30%, while the mortality rate of patients can reach 8%. The main pathogenetic mechanism of the development of rhabdomyolysis is the formation of extensive muscle myolysis, the release of a large amount of heme-containing myoglobin, which leads to myoglobinuria, renal vasoconstriction and vascular dysfunction with the development of obstruction of renal tubules by myoglobin cylinders. In addition, during muscle damage, a large amount of thromboplastin is released, which leads to the activation of intravascular blood coagulation, and, consequently, the formation of microthrombi in the kidney parenchyma with the development of ischemia, as a result of the activation of the coagulation system with the simultaneous inhibition of the fibrinolytic system, which is often accompanied by the development of fibrosis. That is the way the system of regulation of the aggregate state is, on the one hand, an important factor in the development of AKI, and on the other hand, a component that can be controlled and influenced to improve the course of AKI.

**The aim of the study** was to examine the changes in fibrinolytic activity in kidneys of rats with rhabdomyolysis-induced acute kidney injury under Ademethionine administration.

**Material and methods.** Research was conducted on 21 mature non-linear white rats weighting 130-180 g, randomly divided into 3 groups (n = 7): I group – control, II group – animals with rhabdomyolysis-induced AKI (i/m injected with a 50% solution of glycerol at a dose of 8 mg/kg), III group – administration of Ademethionine (Heptral, "Abbott spa", Italy) at a dose of 20 mg/kg. The study materials were kidney homogenates. The state of fibrinolytic activity was determined based on the method of tissue fibrinolytic activity, which happens when azofibrin is incubated with plasminogen in the presence of fibrinolysis activators, which are contained in tissues. Indicators of fibrinolytic activity were expressed in E440/(ml/h).

**Results.** With rhabdomyolysis-induced AKI, a significant decrease in enzymatic fibrinolytic activity by 5.7 times was recorded in kidney tissue, which led to a decrease in total fibrinolytic activity by 1.3 times compared to the indicators of intact controls. The same difference was observed when assessing non-enzymatic fibrinolytic activity. Probably, inhibition of the fibrinolysis system was a consequence of damage to the proximal tubules of the nephron by myoglobin, which

led to the development of urothrombosis and a decrease in the filtration capacity of the kidneys. When using ademetionine against the background of Rhabdomyolysis-induced AKI, an increase in the activity of fibrinolysis was noted, where the drug contributed to the recovery of the activity of the total fibrinolytic activity: by 58.8%, probably due to the non-enzymatic fibrinolytic activity by 41.7%, with a significant increase in the enzymatic component. These effects of the drug are probably due to its physiological functions, the ability to promote the restoration of epitheliocytes by stimulating the synthesis of phosphatidylcholine of cell membranes throughout the nephron, due to the anti-inflammatory properties of the drug. In addition, as a result of the transsulfuration reaction, Ademetionine acts as a precursor of taurine and glutathione and provides a redox mechanism of cellular detoxification, increases the energy potential of cells, reduces the content of methionine in the blood plasma and normalizes the metabolic reactions of cells.

**Conclusions.** The obtained results indicate the ability of ademetionine to restore fibrinolytic activity in the kidneys under the conditions of the development of rhabdomyolytic acute renal failure, which reduces the risk of chronicity of the pathological process in all likelihood due to the antioxidant and cytoprotective effects of Ademetionine.

**Filipets N.D.**

## **MORPHOLOGICAL CHANGES IN KIDNEYS UNDER THE INFLUENCE OF ACTIVATION OF ATP-SENSITIVE POTASSIUM CHANNELS IN ACUTE TOXIC NEPHROPATHY**

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**Introduction.** The leading role of ATP-sensitive potassium (KATP) channels in compensatory and adaptive reactions under the conditions of reduced energy supply of cells indicates the expediency of their exogenous activation in many pathological processes. It is known that pharmacological activators of KATP channels reduce the size of the infarct zone, similar to the effect of ischemic preconditioning. However, the place of this class of drugs in the therapy of nephrological diseases has not yet been definitively determined. To a large extent, this is due to insufficient understanding of the role of KATP channels in the pathogenesis of nephropathies.

**The aim of the study** is to examine the structural changes of the kidneys after the activation of ATP-sensitive potassium channels in order to evaluate the participation of channels of this type in the mechanisms of toxic nephropathy and the effectiveness of pharmacological correction of their functional state.

**Material and methods.** Research was conducted on laboratory non-linear white rats weighing 0.160-0.170 kg, observing bioethical norms. Administration of the KATP channel activator flocalin (5 mg/kg intragastrically, 7 days) started 4 hours after simulation of acute sublimite (5 mg/kg subcutaneously) nephropathy. The structural state of the kidneys was studied with the consulting help of Professor I.S. Davydenko.

**Results.** The results of studies of the structural condition of the kidneys 4 hours after the introduction of sublimite were characterized by the presence of separate foci of tubular epithelium necrosis and calcifications. After a single injection of flocalin, the volume of necrosis and calcifications did not change, while groups of newly formed epitheliocytes appeared, which indicated the initial process of regeneration. On the 7<sup>th</sup> day of the development of acute toxic nephropathy, a decrease in the blood supply of the capillaries of the cortex, medulla and papilla of the kidney was noted. In the cortical substance, mainly in the juxtamedullary zone, there were irregular calcifications of different sizes and shapes, similar to those found on the first day of the experiment. There were also multiple cells of regeneration. At the same time, against the background of widespread reversible swelling of the cells, individual tortuous tubules with necrosis of the epithelium and exfoliation of necrotized cells into the lumen of the tubules were noted; there were consequences of cell death - the number of nephrons decreased, as well as the phenomenon of secondary hypoxic damage to nephrocytes. The morphological picture indicated that, in addition to focal necrosis caused by the direct action of sublimite, new diffuse necrosis of the epithelium of