

**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
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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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significant share of the production of these products belongs to the domestic manufacturer, which is 59.2%, while the share of imported manufacturers is 40.8%.

Conclusion. Inulin-containing preparations are represented by a considerable assortment. Today insulin is used in medical practice in the complex treatment of diabetes and deserves a positive assessment as it contributes to the reduction of glucose.

Shchudrova T.S.

PARACETAMOL-INDUCED KIDNEY DAMAGE: THE PROTECTIVE ROLE OF MELATONIN

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Introduction. Paracetamol (acetaminophen) is one of the most commonly used over-the-counter analgesic and antipyretic drugs worldwide. Paracetamol overdose can result in severe liver and kidney damage or even death and, therefore, is a frequent reason for emergency room visits and the most common way of committing a suicide. According to literature and results of our previous research, the nephroprotective effect of pineal hormone melatonin has been shown in various experimental models of acute renal injury (AKI). Numerous studies established the antioxidant, anti-inflammatory, anti-apoptotic, immunomodulatory, and cytoprotective effects of melatonin, and showed its ability to restore the function and structure of the kidneys.

The aim of the study was to evaluate the effects of exogenous melatonin on the animal model of paracetamol-induced AKI.

Material and methods. The experiments were conducted on mature white rats weighing 150-200 g, and randomly distributed into three groups (n=7). Group I – control; group II – paracetamol-induced AKI (administration of paracetamol at a dose of 750 mg/kg); group III – administration of melatonin at a dose of 5 mg/kg against the background of AKI development. Animals were withdrawn from the experiment 24 h later, while blood, urine and kidneys were sampled for biochemical and histopathological assessments. Statistical processing of the obtained data was performed using the SPSS Statistics 17.0 software.

Results. In the experiment, a single administration of the toxic paracetamol dose to rats (group II) resulted in drug excessive accumulation and damage to the proximal tubular cells. It is known, that cellular toxicity of paracetamol is associated with translocation and dysfunction of Na⁺-K⁺-ATPase, which ensures effective sodium reabsorption. In rats with paracetamol-induced AKI a decrease in sodium reabsorption and, accordingly, an increase in fractional sodium excretion was found. An increase in the sodium concentration in the tubular fluid led to the activation of tubuloglomerular feedback with a 2-fold decrease in GFR, reduced urine output, and development of retention azotemia. Significant proteinuria compared to the control confirms the severe toxic damage to renal tubular cells. In animals that received melatonin, treatment (group III) renal dysfunction was less pronounced. Melatonin counteracted the nephrotoxic effect of paracetamol, as evidenced by the prevention of significant sodium loss due to maintenance of the reabsorption capacity of tubular cells, restoration of urine output due to maintenance of GFR, and prevention of retention azotemia and significant proteinuria. Paracetamol overdose induced the oxidative stress from the intensification of ROS production, lipid and protein peroxidation processes and the simultaneous decline of the enzymatic antioxidant capacity. In animals from group II, a significant increase in the level of lipid peroxidation end-product malondialdehyde and protein oxidative modification products was found in kidney tissue. Paracetamol also compromised local antioxidant system, manifested in a decrease in glutathione peroxidase and catalase activity. Melatonin showed a significant antioxidant effect manifested in attenuation of both lipid and protein peroxidation in the kidney tissue, along with an increase in the glutathione peroxidase and catalase activity.

Conclusions. The obtained results show the ability of melatonin to reduce the severity of damage and prevent kidney dysfunction associated with paracetamol overdose. Treatment with melatonin inhibited the progression of oxidative stress in kidney tissue through the limitation of lipid and protein peroxidation and activation of the key antioxidant enzymes. Results of research

complement to existing data on the nephroprotective activity of melatonin and substantiate the high therapeutic potential and prospects of melatonin use for paracetamol-induced nephropathy.

Skrynchuk O.Y.

STUDY OF THE FLAVONOID CONTENT IN SOME CRAMBE PLANTS

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Introduction. A lot of attention has been recently paid to the study of the chemical composition of cultivated plants, which can serve as a potential source of medicinal products. Such plants are *Crambe cordifolia* (Stev.) and *Crambe koktebelica* (Junge) N. Busch of the genus *Crambe* L. of the Brassicaceae family. The genus *Crambe* L. has several dozen species, eight of which grow in Ukraine. They have a fairly wide range of applications: as vegetable or fodder plants, fat-oil crops, a source of biofuel, or they are used in the food industry. The representatives of this genus are perennial and annual herbaceous plants that originate from the subtropics (Mediterranean, North and East Africa, Central and Central Asia).

The aim of the study. It was found that the biological activity of medicines from raw materials of the *Crambe* genus is associated with the presence of phenolic compounds in plants, some of which are flavonoids. They play an important role in the vital activity of the human body, which is characterised by high and diverse biological activity: antioxidant, antitoxic, antispasmodic, antiviral, diuretic, antitumor, anti-inflammatory, vasodilator, hypoglycemic, choleric, hepatoprotective, antibacterial, antifungal, reparative, antisclerotic, P-vitamin (capillary strengthening), neuroprotective, and radioprotective.

Material and methods. The leaves and roots of two species of the *Crambe cordifolia* and the *Crambe koktebelica* were the material for research. They were harvested at the research plots of the cultural flora department of the Hryshko National Botanical Garden of the National Academy of Sciences of Ukraine in Kyiv. The leaves were collected during the mass flowering of plants in 2018-2020. The storage organs were collected in autumn, after the end of the vegetation period (in October).

Results. Generally accepted qualitative reactions are used to identify flavonoids in ethanol-water extracts (cyanidin test; 10% ethanol-water solution of potassium hydroxide; 10% solution of ferric (III) chloride; 10% solution of lead acetate). The quantitative content of individual compounds of flavonoid nature was detected and determined by the HPLC method in the studied raw materials. The results of the HPLC analysis showed mainly neohesperidin, with the content of 1,676.71 $\mu\text{g/g}$ and 1,809.44 $\mu\text{g/g}$ in the leaves of *Crambe cordifolia* and the *Crambe koktebelica*. Rutin (42.69 $\mu\text{g/g}$), naringin (50.96 $\mu\text{g/g}$), kaempferol (64.46 $\mu\text{g/g}$), and quercetin (135.91 $\mu\text{g/g}$) were found in the roots of the leaves of *Crambe cordifolia*. Isoquercitrin (68.95 $\mu\text{g/g}$) and naringin (56.11 $\mu\text{g/g}$) were found in the roots of the *Crambe koktebelica*. The quantitative content of individual flavonoids in the roots of the studied *Crambe* species was significantly lower than in the leaves.

Conclusions. The quantitative content of the total flavonoid amount was determined by the spectrophotometric method in raw materials of both species of the *Crambe* genus, which showed almost the same amount.

Sydor V.V.

PHARMACOECONOMIC ANALYSIS OF THE USE OF THE MOST POPULAR IN UKRAINE ANTIVIRAL DRUGS FOR THE TREATMENT OF ACUTE RESPIRATORY VIRAL DISEASES

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Introduction. Acute respiratory infections are the most frequent infectious diseases in people. According to the WHO, every third inhabitant of the planet gets sick from them every year. They account for 75% of all infectious diseases, and in years of epidemics - up to 90%. Influenza