

**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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chronic enterocolitis was confirmed morphologically (for qualitative and quantitative analysis of the degree of structural damage to the small intestine).

**Results.** Certain aspects of the course of experimental chronic enterocolitis against the background of streptozotocin diabetes have been clarified, which indicate a violation of biochemical processes in the small intestine in the pathology under study. It has been established that in conditions of chronic enterocolitis on the background of diabetes, oxidative processes in the tissues of the small intestine are activated: the level of neutral and basic aliphatic aldehyde- and ketone-dinitrophenylhydrazones increases with the predominance of protein fragmentation phenomena ( $p<0.05$ ), the content of diene conjugates increases (by 104.84%) and TBC-active products (by 115.02%) ( $p<0.01$ ) and the activity of superoxide dismutase (by 131.09%) and catalase (by 21.65%) decreases, which is also reflected in biochemical indicators of the blood of the studied animals.

In rats with streptozotocin diabetes during the development of chronic enterocolitis, the development of endogenous intoxication was recorded for the first time, as indicated by an increase in the total pool of substances of low and medium molecular weight in the plasma (by 2.4 times,  $p<0.001$ ). The metabolic result of endotoxemia in chronic enterocolitis against the background of streptozotocin diabetes in rats is an increase in cell destruction, which is confirmed by an increase in the level of nucleic acids in the blood of rats by 76.2%, compared to the control ( $p<0.001$ ).

**Conclusions.** In the case of chronic enterocolitis against the background of streptozotocin diabetes, the intensification of oxidative destruction processes is accompanied by changes in the enzymatic activity of energy supply processes, which leads to destructive damage to the cells of the small intestine.

**Semenenko S.B.**

## **FEATURES OF THE INFLUENCE OF NUTRITION ON THE CIRCADIAN RHYTHMS OF THE HUMAN BODY**

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**Introduction.** Based on scientific literary sources the influence of nutrition, energy exchange and biorhythms on body weight control and prevention of metabolic diseases is described. Interference with the sleep-wake cycle, as well as disorders of diet, lead to unfavorable metabolic processes. Maintaining the integrity of the system of biorhythms is an antidote to the development of metabolic disorders.

**The aim of this study.** To investigate the peculiarities of the influence of nutrition on the circadian rhythms of the human body.

**Material and methods.** Literary sources of foreign and domestic authors were used in the work, and their systematic analysis was carried out.

**Results.** Nutrition is one of the constant, most effective external factors affecting the human body in many ways. Scientists have accumulated a lot of information about the interaction of nutrition and the system of biological rhythms. Biorhythms are considered as one of the main mechanisms of human adaptation to environmental conditions — changes in the length of the light period, temperature regime, geomagnetic influences, as well as to the organization of work and nutrition. A powerful motivation for the study of the connection between nutrition and biorhythms, in particular circadian rhythms, was the study of energy metabolism disorders. Scientific studies indicate that eating fatty food leads not only to obesity, but also to disruption of the body's daily biological rhythm. In addition to the influence of light on chronobiorhythms, there is a cause-and-effect relationship between the peculiarities of nutrition and the imbalance of a biological clock. Scientists have investigated that a diet with a high fat content affects, like the biological clock, the process of releasing adiponectin - a protein secreted by adipose tissue cells and associated with the processes of glucose assimilation and lipid metabolism, which leads to inhibition of chronobiorhythms. It has been studied that each meal causes fluctuations in the activity of digestive enzymes, fluctuations in the concentration of hormones in the blood, which go beyond the time of

direct consumption of food, and it has also been evidenced that a change in the diet can modify the circadian rhythm of the acid-forming function of the stomach.

Studies on white laboratory rats have shown that when they were fed a high-fat diet between main meals or during their usual rest hours, the excess calories were stored as fat much more readily than the same amount of calories consumed during the main feeding period, leading to obesity and obesity-related diseases such as type 2 diabetes, hypertension, and partially Alzheimer's disease, which can also be linked to obesity and lack of physical activity.

**Conclusions.** According to scientific research, the consistency of the diet, metabolism and biological rhythms plays an important role in energy exchange. It has been studied that compliance with the diet and the sleep-wake cycle plays an important role in maintaining normal body weight and preventing metabolic diseases, and when the sleep-wake cycle is disturbed. The diet is one of the mediators through which desynchronosis affects the metabolic profile of the body.

**Slobodian K.V.**

**FUNCTIONAL CHANGES IN THE KIDNEYS OF IMMATURE RATS WITH  
SUBLIMATE NEPHROPATHY AT LOADING BY 3% SODIUM CHLORIDE SOLUTION  
AND INDOMETHACIN BLOCKADE OF RENAL PROSTAGLANDINS**

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**Introduction.** As is known from literary sources, under conditions of loading with a 3% sodium chloride solution during sulem nephropathy, a polyuric form of acute renal failure develops in sexually mature rats, which is caused by the maximum mobilization of the compensatory capabilities of prostaglandin E<sub>2</sub> as a vasodilator of the supplying arteriole of the kidneys and a factor with a natriuretic mechanism of action in relation to the mode of water diuresis, for which an oliguric form of acute renal failure is registered.

Blockade of renal prostaglandins by indomethacin under these conditions leads to spasm of renal vessels and the development of oliguria. At the same time, the analysis of the influence of the blockade of renal prostaglandins by indomethacin on indicators of kidney function in sexually immature rats with sulem nephropathy when loaded with a solution of 3% sodium chloride was practically not carried out.

**The aim of the study.** To find out the effect of blockade of renal prostaglandins with indomethacin on indicators of kidney function in sexually immature rats with sulem nephropathy when loaded with 3% sodium chloride solution.

**Materials and methods.** The experiments were conducted on 40 white non-linear sexually immature (1-month-old) male rats weighing 0.06–0.08 kg. The functional state of the kidneys was studied under conditions of loading with a 3% sodium chloride solution after 24 hours of the development of sulema nephropathy (subcutaneous administration of sulema at a dose of 5 mg/kg). For this purpose, the studied solution was injected at a temperature of 37 °C in a volume of 5% of body weight using a metal probe to rats in the stomach with subsequent urine collection for 2 hours.

The glomerular-tubular balance was investigated by conducting a correlation analysis between the processes of glomerular filtration, filtration fraction of sodium ions, absolute reabsorption of sodium ions and relative reabsorption of water. Indomethacin, as a blocker of renal prostaglandin production, was administered intragastrically with a probe at a dose of 5 mg/kg in a 1% gelatin solution for 3 days. Statistical data were processed on a computer using the "Statgraphics", "Excel 7.0" and "Statistica" programs.

**Results.** Changes in the glomerular-tubular balance were found in sexually immature rats with sublimated nephropathy when loaded with a 3% sodium chloride solution in the amount of 5% of body weight under the condition of blocking the production of renal prostaglandins with indomethacin with the loss of positive correlation. The dependence of relative water reabsorption on glomerular filtration, filtration fraction and absolute reabsorption of sodium ions confirm the effect of prostaglandins on the above-mentioned processes in sexually immature rats. A decrease in compensatory capabilities regarding the development of the syndrome of loss of sodium ions in