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«БУКОВИНСЬКИЙ ДЕРЖАВНИЙ МЕДИЧНИЙ УНІВЕРСИТЕТ»

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Матеріали 101 – ї підсумкової наукової конференції професорсько-викладацького персоналу вищого державного навчального закладу України «Буковинський державний медичний університет» (м. Чернівці, 10, 12, 17 лютого 2020 р.) – Чернівці: Медуніверситет, 2020. – 488 с. іл.

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У збірнику представлені матеріали 101 – ї підсумкової наукової конференції професорсько-викладацького персоналу вищого державного навчального закладу України «Буковинський державний медичний університет» (м.Чернівці, 10, 12, 17 лютого 2020 р.) із стилістикою та орфографією у авторській редакції. Публікації присвячені актуальним проблемам фундаментальної, теоретичної та клінічної медицини.

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solutions (the double-layer vesicles). The J-type associates are expected in the configuring dimethylformamide solution, inner-zeolite channels and in the Langmuir-Blodgett films.

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GLUCOSE TOLERANCE PROFILES IN RATS WITH ALLOXAN DIABETES

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Alloxan has been used as a diabetogenic agent to induce diabetes. It selectively induces pancreatic β-cell death.

The objective was to determine the influence of alloxan monohydrate on glucose level in the blood plasma of rats.

The research was performed in compliance with the Requirements of work using experimental animals (1977) and the Council of Europe Convention on the Protection of Vertebrate Animals used in experiments and other scientific purposes (18 March 1986). The experiments were carried out on 30 sexually mature male albino rats with the body mass – (0,18 – 0,20) kg. Alloxan diabetes was simulated via injecting the rats with a 5% solution of alloxan monohydrate intraperitoneally in the dose of 170 mg/kg of body weight. After a 12-h fast, a 75-g OGTT (oral glucose tolerance test) was performed with 0, 30, 60, and 120 min sampling for plasma glucose levels measurements. The rats were sacrificed on the 7th day of the experiments in accordance with the ethical treatment of animals. Statistical analysis of results was conducted by Student's test. Sufficient level considered probability differences $p \leq 0,05$.

In accordance with results rats were classified into three groups according to the glucose tolerance status as having normal glucose tolerance (NGT) when fasting plasma glucose (FPG) was <7.0 mmol/L (100 mg/dL) and 2-h post-load <7.8 mmol/L (140 mg/dL) – this group included rats without alloxan injection; impaired glucose tolerance (IGT) when FPG was <5.6 mmol/L (100 mg/dL) and 2-h post-load was 7.8–11.0 mmol/L (140–199 mg/dL) and diabetes when FPG was > 7.0 mmol/L (126 mg/dL) and/or 2-h plasma glucose > 11.1 mmol/L (200 mg/dL) [In accordance to the American Diabetes Association (ADA) criteria]. In group of IGT 2-h post-load plasma glucose level was 28% higher in comparison to the respective index of the control. Rats with diabetes demonstrated FPG higher on 112% as well as 2-h post-load plasma glucose level which was increased on 97% than control indices respectively.

These results demonstrated that alloxan monohydrate has an action with formation of different glucose tolerance profiles in rats with alloxan diabetes.

Lenga E.L.

EFFECTS OF MELATONIN ON THE CONTENT OF REDUCED GLUTATION IN THE BLOOD UNDER TOXIC HEPATITIS

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Every year oxidative load on the body of contemporary humans is constantly increasing. In the fight to maintain oxidant / antioxidant balance, a prominent place belongs to the glutathione system, which is active in all organs and tissues. However, under conditions of intensification of peroxidation processes, in order to enhance and maintain the activity of this system, it is advisable to use drugs with antioxidant properties. One of these is the epiphyseal hormone melatonin.

The objective of the study was to determine the effect of melatonin on the content of reduced glutathione reduced in the blood of rats under toxic tetrachloromethane hepatitis.

The experiments were performed on nonlinear adult male rats weighing 180 ± 10 g. Animals were kept under artificial lighting with periods of 12 h of light: 12 h of darkness (12C: 12T), which corresponds to the normal function of the epiphysis. After a five-day stay under appropriate lighting conditions, the rats were divided into groups: I - control; II - animals with toxic hepatitis

(intragastrically twice (every other day) animals were given a 50% oil solution of tetrachloromethane in the dose of 0.25 ml / 100 g mass); III - against the ground of toxic hepatitis, animals were injected intragastrically with melatonin in the dose of 3 mg / kg. Euthanasia by decapitation under mild ether anesthesia was performed on the 5th and 7th day from the beginning of melatonin administration. The content of reduced glutathione was determined in the blood of rats.

In animals with toxic hepatitis on the 5th and 7th day of the experiment, the content of reduced glutathione in the blood of the animals decreased by 38.4% and 61.2%, respectively, compared with animals of the control group. In animals with seven-day toxic hepatitis, the content of reduced glutathione was 33% lower than in animals with 5-day intoxication. With daily administration of melatonin, the content of reduced glutathione in the blood of rats increased by 55.7% (on day 5) and 2.5-fold (on day 7) compared with animals with toxic hepatitis and recovered to the level of animals in the control group.

Therefore, in tetrachloromethane toxic hepatitis, the content of reduced glutathione in the blood of rats decreases due to its use by the enzymes of the glutathione system. Decrease in the content of reduced glutathione depends on the duration of intoxication of the animals, which is due to the depletion of its reserves in the body.

The introduction of melatonin helps to increase the content of reduced glutathione in the blood of animals by activating its regeneration from the oxidized form (activation of gene expression of glutathione reductase), as well as by the direct scavenger action of melatonin on reactive oxygen species. A more positive effect on the recovery of the pool of reduced glutathione is observed with prolonged use of melatonin.

Luhinich N.M.

EFFECTS OF MELATONIN ON CERULOPLASMIN CONCENTRATION IN THE BLOOD OF ALLOXAN DIABETIC RATS

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The most relevant problems of modern medicine are the search for means to improve the therapy of diabetes, which has become widespread in recent years due to the progress of many amplifications of this disease.

Free radicals formed at oxidative stress are highly toxic to cellular components especially lipids and proteins that are a part of cell membranes. Free radicals destroy lipids and proteins on the membranes and cause modifications and oxidation of lipids and proteins thereby damaging cells. Lipid and protein oxidation products are metabolized by non-enzymatic and enzymatic mechanisms to eliminate oxidative stress.

Melatonin (5-methoxy-N-acetyltriptamine) is one of the strongest antioxidants secreted by the daily rhythm of the pineal gland. Melatonin is believed to be useful for therapy of many diseases, such as depression, insomnia, obesity, cancer, immune and cardiac disorders. This study was aimed to investigate the effect of melatonin on ceruloplasmin concentration in the blood of alloxan diabetic rats.

The experiments were carried out on sexually mature male albino rats with the body weight – 150-180 g. Alloxan diabetes was simulated via single injecting the rats with 5% alloxan monohydrate solution (Sigma Chemicals Company: 150 mg/kg body weight) dissolved in normal saline to the male rats, after an overnight fast (access to only water) of 12 hours to make them more susceptible to developing diabetes. After diabetes induction, melatonin (10 mg/kg daily) was administered intragastrically to the animals in the melatonin-treated group, for 7 or 14 days.

The animals were divided into the following groups: control rats – group I; diabetes (7 days) – group II; diabetes + melatonin (7 days) – group III; diabetes (14 days) – group IV; diabetes + melatonin (14 days) – group V. All the data are expressed as means ± S.E. and represent at least