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Тернопільський національний медичний університет  
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Тернопільське обласне наукове товариство патофізіологів**

## **МАТЕРІАЛИ**

**XIII Всеукраїнської науково-практичної  
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*«Актуальні питання патології  
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glutathione peroxidase (GPx) activities were significantly diminished in studied tissues (GPx activity in liver remains unchanged). We registered the increase in G6PDH activity in all tissues whereas the activity of succinate dehydrogenase under HS was lower than in normal condition. Bloodletting caused an increase in lactate concentration, a decrease in pyruvate level, and an increase in cytosol NADH/NAD<sup>+</sup> ratio in all studied tissues. Our research has shown that among factors that contribute to excessive ROS generation and LPO activation during HS one can attribute following: dysintegration of metabolic processes evoked by circulatory hypoxia, namely a decrease of cytosolic pH, anaerobic fermentation, and excess of NADH in cells, a disruption of electron transport in mitochondrial respiratory chain with subsequent oxidative phosphorylation disconnection, intracellular acidosis, disorders in antioxidant defense system. Our experiments have demonstrated that brain tissues are the most sensitive to oxidative stress evoked by bloodletting.

**Kovaltsova M., Miroshnichenko M.**

### **STRESS EFFECT OF THE STATE OF THE ENDOCRINE PART OF RATS' PANCREAS**

**Kharkiv National Medical University**

An important problem in medicine is the pathology of the pancreas, caused by the influence of prolonged mental and physical stress.

**The aim of the study** was to study the morphofunctional state of the endocrine part of the pancreas in rats due to the action of chronic immobilization stress.

**Materials and methods.** The state of the pancreas of rats under stress conditions (1 gr.) and in standard vivarium conditions (2 gr.) was studied. Morphological and biochemical studies were carried out.

**Results.** In rats of the 1st gr. a decrease in the area of the islets of Langerhans by 9% ( $p < 0.001$ ) from the indicator of the 2nd group was revealed; a decrease in the number of  $\alpha$ - and  $\beta$ -endocrinocytes; degenerative changes in the nuclei and cytoplasm of  $\beta$ -cells; frequent detection of apoptotically altered  $\beta$ - and  $\alpha$ -cells. The results of a biochemical study confirm endocrine dysfunction in animals of the main group. A combination of hyperglycemia (an increase in glucose levels by 18%,  $p < 0.001$ ) with an increased level of both contra-insular hormones: adrenaline by 82.3%,  $p < 0.001$ ; corticosterone by 37.5%,  $p < 0.001$  of the 2nd group indicator was established. Level of insulin is increased by 69%,  $p < 0.001$ . In addition, there are signs of a violation of fat metabolism: an increase in the level of ketone bodies and ketone bodies by 2 times,  $p < 0.001$ .

**Conclusions.** Thus, chronic stress in rats leads to an increase in the level of contra-insulars and associated hyperglycemia, causes compensatory hyperfunction of pancreatic  $\beta$ -cells with hyperproduction of insulin.

The results of the study indicate that chronic stress in rats is a significant risk factor for the development of chronic pancreatic pathology.

**Kozlova Yu.V., Kozlova K.S.**

### **CHANGES IN THE RATIO OF Rb/Zr IN THE CEREBRAL OF RATS IN THE ACUTE PERIOD OF BLAST-INDUCED BRAIN INJURIES**

**Dnipro State Medical University, Dnipro, Ukraine**

**Introduction.** The study of the pathogenesis of brain damage as a result of explosive brain injury is extremely relevant in connection with the widespread use of various explosive

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