Material and Methods: The study was approved by the Institutional Animal Care and Use Committee of Jagiellonian University Medical College in Cracow. Rats were treated with CORM-2, and received 30 min later 75 % ethanol without or with: 1) group (6 rats): NO synthase inhibitor L-NNA 2) group (6 rats): NO synthase inhibitor L-NNA with L-arginine, a substrate for NO synthase activity 3) group (6 rats): 1H-[1,2,4]Oxadiazolo[4,3-a]quinoxalin-1-one (ODQ) - guanylyl cyclase inhibitor, 4) group (6 rats) glibenclamide - K(ATP) channel blocker. These inhibitors were used to prove if CO requires nitric oxide, guanylyl cyclase or K (ATP) channels to its potent gastroprotective action. The area of gastric lesions was measured by planimetry, the gastric blood flow (GBF) was determined by laser Doppler technique.
Results: CORM-2 dose-dependently attenuated gastric lesions and raised GBF. These protective effects of CORM-2 were completely reversed by L-NNA. ODQ and glibenclamide also significantly attenuated the gastroprotective and hyperemic effects of CORM-2.
Conclusion: Inhibition of NO synthase, attenuated guanylyl cyclase activity and blocked K(ATP) channels lead to lose of beneficial effect of CO. Therefore, we can conclude that CO released from CORM-2 exhibits gastroprotective activity against ethanol-induced gastric lesions via mechanism involving an increase in the gastric microcirculation mediated by nitric oxide, guanylyl cyclase signaling cascade and K(ATP) channels.

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Cytometric vibrations of neurocyte parameters in the hypothalamic supraoptic nucleus in stressed rats during different periods of the day and night

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Abstract Keywords: *hypothalamus, supraoptic nuclei, stress, photoperiod*

Introduction: Supraoptic nuclei (SON) of the hypothalamus are of a great importance among the structures, involved in a neuroendocrine response during stress reactions.
Aim: To find out how the immobilization stress affects the cytometric neurocyte parameters of hypothalamic SON at different periods of the day.
Material and Methods: Experimental animals were divided into two groups and in each of them biomaterial sampling was performed at 2 PM and 2 AM respectively. The immobilization stress was simulated by keeping the experimental animals in laboratory cages-cases for 3 hours.
Results: The tendency to increasing nuclear volumes in polygonal neurocytes at 2 AM compared to those at 2 PM was observed under conditions of stress. It was established, by measuring the volumes of SON neurocytes of the hypothalamus, that the average rate at 02.00 AM was significantly higher compared with that at 2.00 PM (948 ± 10,4 and 906 ± 10,0, respectively, $p = 0.016$). A significant increase of the standard deviation of the staining neurocyte nucleus of hypothalamic SON was noted at 2 AM compared to that at 2 PM (8,4 ± 0,13 ai and 8,0 ± 0,11 ai respectively, $p = 0.041$). However, during

the night time period a significant decline of the nuclear-cytoplasmic ratio compared with 2 PM (0,260 ± 0,0021 and 0,272 ± 0,0023, respectively, p = 0.008) was revealed.
Conclusion: Under the influence of immobilization stress an increase in the volume of neurocytes in hypothalamic SON and the standard deviation of the intensity of their nucleus staining at 02.00 AM compared with that at 2 PM was found. However, a dicline of the nuclear and cytoplasmatic index as well as of optical density in the cytoplasm staining of investigated neurocytes was observed.

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Chemical composistion changes of immature rats testis under increased receipts of heavy metals salts

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Introduction: One reason for the prevalence of infertility in men is high sensitivity of the male reproductive system to adverse exogenous and endogenous factors in the prenatal and early postnatal periods. One of the most common and dangerous pollutants for the reproductive system is the heavy metals compounds (HMC), which have both direct and indirect effects on the development of reproductive system.
Aim: To investigate the intensity of accumulation of zinc, copper, lead, manganese, chromium and iron in tissues and structures of immature rat testes under their alimentary intake and under conditions of L-carnitine correction.
Material and Methods: The survey was conducted on 128 white lab immature male rats.The tissue of testes was studied by methods of histology, scanning electron microscopy, atomic absorption spectroscopy (AAS)
Results: Using spectrophotometry in atomic absorption mode, it is found out that the level of zinc is reduced, and the content of other analyzed trace elements increases. Accumulation of copper, iron, manganese, chromium and lead in testes tissue is mostly expressed in the period of 60 days; iron, lead and chromium show the largest organ tropism. The low rate of HMC accumulation in the testes of rats of breast and suckling age period is explained by the limited intake of xenobiotics via maternal milk. Loss of zinc by testis tissue is caused by antagonistic interactions between chemical elements that come into the body of rats in excessive quantities. Interaction of chemical elements at different levels can lead to secondary violations of chemical and structural homeostasis of the organ, causing further inhibition of its function.
Conclusion: The results of chemical analysis of immature animals' testes, obtained by SEM, indicate the dependence of accumulation of microelements of heavy metals from the morphofunctional activity of the histological structure of the studied organ. Heavy metals mainly accumulate in a functionally active spermatogenic epithelium.