

SECTION OF MORPHOLOGY СЕКЦІЯ МОРФОЛОГІЇ

MORPHOLOGICAL CHANGES IN THE TOTAL ARTERIOLES DIAMETER OF THE ADRENAL GLANDS MEDULLA UNDER THE ACTION OF A FOOD ADDITIVE COMPLEX

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Relevance: in our time, food additives are extremely popular. The consumer often does not know and does not think about what dangerous substances enter the body with food and how food additives (sodium nitrite, monosodium glutamate, and Ponceau 4R) affect the work of the adrenal glands.

Aim: is to find out the morphological and metric changes in the arterioles total diameter of the adrenal glands medulla of rats under the conditions of long-term action of food additive complex.

Materials and methods: the experimental study was conducted on white outbred rats. The control group of rats used oral drinking water and saline solution. Rats from the experimental group were orally administered a 10% solution of sodium nitrite (E 250), monosodium glutamate (E621) was administered at a dose of 20 mg/kg in 0.5 ml of distilled water, Ponceau 4R was administered at a dose of 5 mg/kg in 0.5 ml of distilled water once a day. Dosages of a complex of food additives were two times lower than the acceptable norm in food products. After 1, 4, 8, 12, and 16 weeks, rats were removed from the experiment using ether anesthesia, followed by euthanasia. Subsequently, fragments of adrenal glands fixed in a neutral formalin solution were sealed in paraffin. Histological sections made from paraffin blocks, stained with hematoxylin and eosin, were studied using a Biorex light microscope with a DSM 900 digital photomicroscope. To obtain semi-thin sections, the studied material was fixed in glutaraldehyde and sealed in EPON-812. Ready sections were stained with toluidine blue. Using the morphometric method, the total diameter of the arterioles of the rats' adrenal glands' medulla was determined. Data processing was carried out using the Excel program.

Results: as a result of the morphometric study of the control group of rats, it was established that the average values of the total diameter of arterioles of the medulla were $(28,86 \pm 0,11) \mu\text{m}$. After 1 week of taking a complex of nutritional supplements, the indicator of the total diameter of arterioles was $(28,38 \pm 0,13) \mu\text{m}$, which decreased by 1,69%. On the 4th week of observation, the indicator was $(29,62 \pm 0,14) \mu\text{m}$, which increased by 2,63%. After the 8th week, the indicator was $(28,52 \pm 0,15) \mu\text{m}$, which decreased by 1,19%. At week 12, the indicator was $(31,48 \pm 0,21) \mu\text{m}$, 9.07% more than the control value. On the 16th week, the indicator of the total diameter of arterioles was $(32,26 \pm 0,23) \mu\text{m}$, which is 11,78% more than the control indicators.

Conclusions: it was established that the effect of the complex of food additives on the arterioles of the medulla of the adrenal glands of rats in the early stages of the study was expressed by the spasm of blood vessels of the hemomicrocirculatory bed due to the effect of the altering effect of the complex of food additives as a result of hemodynamic conditions. At the later stages of the experiment, hypoxia was observed, which led to the development of compensatory and restorative reactions, but complete recovery did not occur.

Keywords: nutritional supplements, adrenal glands, monosodium glutamate, sodium nitrite, Ponceau 4R.

MORPHOFUNCTIONAL CHANGES IN THE STRUCTURAL COMPONENTS OF THE FUNDAL PART OF THE RAT STOMACH DURING ACUTE EXPERIMENTAL INFLAMMATION

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Relevance: pathology of the organs of the gastrointestinal tract occupies one of the first positions in the structure of the morbidity of the population of Ukraine. Undoubtedly, the main pathogenetic factors for the occurrence of these lesions include the influence of various exogenous factors that lead to the appearance of morphological changes in the wall of the organs of the gastrointestinal tract, particularly the stomach. Therefore, studying these changes interests scientists and physicians.

Aim: to assess the morphofunctional changes in the structural components of the mucous membrane of the fundal part of rats' stomachs in the simulation of acute experimental inflammation.

Materials and methods: intraperitoneally administered λ -carrageenan was used to model this inflammation. The collection of material followed by morphological examination was carried out on the

experiment's 1st, 5th, 10th, 14th, 21st, and 30th days. Semi-thin sections were made from paraffin blocks and studied using a light microscope with a digital photomicroscope.

Results: on the first day, dystrophic changes in epitheliocytes of the integumentary pit epithelium, the cytoplasm of individual cells containing vacuoles of different sizes, a decrease in the number of secretory granules, and a characteristic polymorphism of the nuclei were revealed. The walls of the arterioles are spasmodic. On the 5th day, an increase in dystrophic and destructive changes was established in the epithelium of the fundal part of the stomach. The number of secretory granules progressively decreases, and areas of "desolation" are found in the apical part of the cytoplasm. The lumens of arterioles are widened, and there are signs of hyperhydration of the surrounding connective tissue. On the 10th day, karyopyknosis of epitheliocytes is detected. Irregularly shaped nuclei and decondensed chromatin are in the center of the cell. There are no secretory granules. By the 21st day, the integrity of the integumentary pit epithelium is restored. Oval-shaped nuclei, located in the basal parts of cells, contain decondensed chromatin and one nucleolus. Postcapillaries and venules are densely filled with uniform blood elements. On the 30th day of the experiment, there is a complete structural and functional recovery of the layer of superficial pit epitheliocytes with the recovery of the morpho-functional state of exchange hemomicrovessels.

Conclusions: it was established that intraperitoneal administration of λ -carrageenan leads to morpho-functional changes in the structural components of the mucous membrane of the fundal part of a rat's stomach, which have a staged course (alteration, exudation, proliferation). On the 30th day, the structural components of the stomach wall were thoroughly restored.

Keywords: λ -carrageenan, inflammation, dystrophic changes, structural components.

CHANGES IN VENULES OF GUM

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Relevance: It is widely known that food and nutrient industries utilize food additives extensively to enhance the sensory qualities of their products. While food additives can improve the taste, texture, and appearance of food, they can also have negative effects on our health. Unfortunately, there is limited knowledge about the impact of food additives on the morphology of living tissues.

Aim: To address this gap in knowledge, a study was conducted to investigate the effects of a complex of food additives on the morphology and morphometry of the venules and their walls in the gingival epithelium of rats.

Materials and methods: The study was carried out on common white rats, which were subjected to a complex of food additives in an experimental setting. The study utilized relevant morphometric and histological techniques and included statistical analysis to obtain accurate and reliable results.

Results: The results of the experiment revealed that the food additives had significant effects on the venules in the gums, leading to various changes in the general diameter, average diameter of lumen, and wall thickness of the venules. These changes can be attributed to the impact of the food additives on the living tissues. Based on these findings, it can be concluded that food additives have a significant impact on the morphology of living tissues. The study provides important insights into the effects of food additives on the mucous membrane of the gums in rats, highlighting the need for further research to fully understand their impact on human health.

Conclusions: In conclusion, while food additives can enhance the sensory qualities of food, their impact on the morphology of living tissues is a cause for concern. Further research is needed to better understand the effects of food additives on human health and to develop strategies to minimize their negative impact.

Keywords: oral cavity, exogenous factors, sodium nitrite, monosodium glutamate, Ponceau 4R.

НАУКОВИЙ ВНЕСОК С.М.ДЕЛІЦИНА У РОЗВИТОК КЛІНІЧНОЇ АНАТОМІЇ ТА ОПЕРАТИВНОЇ ХІРУРГІЇ

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Актуальність: із 2017-2018 навчального року у освітньо-професійних програмах студентів вітчизняних вишів з'явилася нова дисципліна – клінічна анатомія і оперативна хірургія. Передбачалося, що її введення до навчальних планів оптимізує вивчення матеріалу, який раніше розглядався у курсі оперативної хірургії і топографічної анатомії. Однак недосконалість навчальних планів, різке зменшення кількості годин, відведених для аудиторної роботи, невизначеність та дискусії щодо місця нової дисципліни серед освітніх компонент, призвели до того, що важлива практично