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MORPHOLOGICAL CHANGES IN THE LARGE INTESTINE UNDER THE INFLUENCE OF 70% CONCENTRATION OF ACETIC ACID WERE DETERMINED

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Acetic acid poisoning is one of the most common types of household poisoning not only in the Republic of Uzbekistan, but also in the CIS countries [1,4]. This is due to its widespread availability and constant use in the household. Acetic acid differs significantly from other caustic poisons, since it has not only a local caustic effect of the coagulative necrosis type, but also has a pronounced resorptive - hemato-nephro- and hepatotoxic effect, which occurs as a result of erythrocyte hemolysis, toxic coagulopathy, and DVT syndrome [3;2].

Research objective: To determine morphometric changes in the colon wall in white outbred rats with chemical burns of the gastrointestinal tract with acetic acid, to study the application of a biological correction method using grape seed oil to reduce the side effects of the chemical, and to study laboratory diagnostic analysis.

Material and methods of the study. 150 3-month-old white crossbred rats of both sexes were used for the experimental study. All laboratory animals were kept in a standard vivarium in plastic cages with wood chips, at room temperature, in accordance with the standards for keeping laboratory animals.
Rats were divided into 4 large main groups (n = 150): I - control group (n = 30); II - group - white crossbred rats in the acute period, which were experimentally burned in the gastrointestinal tract using high (70%) concentration acetic acid (n = 40): III - group - white crossbred rats in the chronic period, which were experimentally burned in the gastrointestinal tract using high (70%) concentration acetic acid (n = 40): IV

- group - rats in the experimentally burned in the gastrointestinal tract and treated with grape seed oil (n = 40):

Results of the study. Since morphological changes in the colon during chemical burns with 70% acetic acid have been poorly studied, chemical burns were induced under experimental conditions, and the resulting morphological characteristics of the colon were studied and analyzed.

I - control group (n=30) Morphological and morphometric examination of the colon, cecum, sigmoid colon, and rectum tissues obtained after autopsy from the control group revealed that the intestine has a normal 4-layered structure. The mucosa is covered with a single-layer prismatic epithelium, and in the field of view, tall columnar epitheliocytes, goblet-shaped cells, and a large number of undifferentiated cells were visible. The mucosa is represented by a special plate, thin connective tissue layers between the crypts, and the thickness of this tissue in the control group of white-bred rats was on average 3.1-5.3 μm. The crypts are deep, slightly expanded in the apical part, and their diameter in the control group of white-bred rats was on average 9.4-9.7 μm. Group II – the following morphological changes were observed in the acute period of inbred white rats (n=40) that were burned in the gastrointestinal tract with 70% acetic acid.

In the control group, there were significant changes in the cellular composition of the colonic mucosa. The death of tall columnar epitheliocytes and goblet cells was observed. The thickness of the wall surrounding the crypts in the lamina propria of the mucosa was 3.1-5.3 μm in the control group, while in the experimental group this indicator increased to 4.2-6.9 μm.

Group III – chronically burned white rats (n=40) in the gastrointestinal tract with 70% acetic acid. Histological samples were taken 14, 21, and 30 days after the burn to determine the changes in all layers of the colon and rectal wall (epithelium, lamina propria, submucosa, muscularis, and serosa). The results were compared with the control group. In the transverse colon (colon transversum), the epithelium was regenerated, but areas of uneven coverage were observed, the number of submucosa fibrous fibers increased, and collagen fibers were denser. Inflammatory lymphocytes and plasma cells were preserved. The glands were hyperplastic or atrophic. Group

IV – experimentally burned rats in the gastrointestinal tract and treated with grape seed oil (n=40). Although the muscular layer of the mucosa had a 2-layer structure, the muscle cells showed signs of degradation. The submucosa showed signs of inflammation and was filled with loose fibrous connective tissue, fat cells, and a large number of fibroblasts. The total thickness of the submucosa and muscularis layers averaged 560.87 μm, which was higher than that of the control group. In the inner muscularis layer, fiber disorganization was observed, including an increase in blood vessels and nerve fibers.

Conclusions. The obtained normative data will serve as the main criterion for the identification of pathological conditions in the future, pharmacological experiments and assessment of the effect of probiotic antibiotics on the intestinal microstructure. With age changes, significant morphological changes occurred in the colon. These changes directly affected the physiological activity of the intestine, motility and immune response. While the morphological system in 1-month-old rats was not yet fully formed, in 3-month-old rats these systems approached the norm.
The administration of high concentrations of acetic acid into the gastrointestinal tract of 3-month-old white outbred rats in the acute period (within the first 72 hours) led to significant morphological disorders of the colon wall. Epithelial necrosis, submucosal edema, hemorrhage and inflammatory processes were manifested as the main pathological signs. This model allows for an in-depth study of the early stages of pathological processes in the field of burn gastroenterology.