

UDK: 616.074/078:615.276

**MORPHOLOGICAL AND MORPHOMETRIC CHANGES IN THE SPLEEN
AFTER ADMINISTRATION OF TWO TYPES OF NONSTEROIDAL ANTI-
INFLAMMATORY DRUGS IN 3-MONTH-OLD WHITE INBRED RATS.**

Saidov Akmal Abdullaevich

Assistant of the Department of Forensic Medicine, Bukhara State Medical Institute.

Abstract: In this study, two types of anti-inflammatory drugs were used in 3-month-old white rats. These anti-inflammatory drugs were given for 10 days. After 10 days, the macroscopic structure and microscopic structure of the spleen, which was extracted by decapitation, were stained with hematoxylin eosin and vangison methods, and the results of the spleen data obtained using macromorphometric and micromorphometric methods of shedding are presented. Among the recently emerging toxicants, significant attention has been focused on new objects produced using nanotechnology. These include various materials and preparations containing nanoparticles—isolated solid-phase objects with a clearly defined boundary with the environment, with sizes in all three dimensions ranging from 1 to 100 nm. A number of unique physicochemical properties of nanoparticles, compared to traditional microstructured materials, lead to their widespread use in various industries and biomedicine. However, there is a justified concern that their small size, very high specific surface area (per unit mass), and significant reactivity allow them to easily penetrate biological barriers, increasing the production of reactive oxygen species that damage intracellular biological structures. Among the currently used nanomaterials, titanium dioxide (TiO₂) nanoparticles are the most widely used [1,19,20,21]. They possess a number of consumer advantages related to good photocatalytic activity, high chemical and thermal stability, and relatively low cost, enabling their use in microelectronics, energy, chemical and food industries, perfumes and cosmetics, optics, construction, and environmental monitoring and protection [1, 2,3,4,5,6,7,8,9,10,11]. The rapid growth in the number of publications on the effects of TiO₂ NPs on various organs and tissues demonstrates the high interest of researchers in the biological safety of their use [3,12,13,14,15,16,17,18]. However, the cellular basis for damage to various organs and tissues and the reasons for this vulnerability to the effects of NPs remain virtually unexplored. The adverse effects of TiO₂ NPs on human cells and tissues are manifested both in industrial settings, where exposure to

them is unavoidable, and as a result of their intentional use, such as their inclusion in food, industrial, and pharmaceutical products.

Key words: Spleen morphology, effect on the spleen in nosteroid anti-inflammatory drug, polyprogamy, spleen morphometry

The purpose of the study: Determination of morphological and morphometric changes in 3-month-old white outbred rats after administration of 2 types of nosteride anti-inflammatory drugs.

Research materials and methods: As the materials of the study, 3-month-old white sterile rats were selected at the Bukhara State Medical Institute and divided into 2 groups: 30 rats were selected as a control group and 30 rats were selected as an experimental group. In the experimental group, two types of anti-inflammatory drugs, i.e. parastamol 15mg/kg and aspirin 5mg/kg, were administered on an empty stomach for 10 days using a metal probe. In the control group, white rats in the control group were given 0.5 ml of distilled water in the stomach through a metal probe for 10 days. . On the eleventh day, experimental and control laboratory animals were weighed in the morning, decapitated on an empty stomach with ether anesthesia, and morphological and morphometric tests were performed.

Research results: 3-month-old white sterile rat Group II - 2 types of anti-inflammatory drugs: paracetamol 15 mg/kg, aspirin 5 mg/kg, the following changes occurred after the rats were given (Fig. 1). Macroscopically, the surface was smooth dark-red and three-sided. In the form, it was determined that the orgonometric dimensions are as follows: length 38.21 ± 0.55 , width 7.62 ± 0.24 mm and thickness 2.96 ± 0.13 mm. the weight is 0.64 ± 0.03 g and the size of the member is 861.82 ± 20.13 .

Microscopically, the connective tissue capsule surrounding the spleen is unevenly located and relatively thinned. Interstitial swelling is seen in the organ stroma and red pulp of the subcapsular area, signs of fullness of the sinusoidal veins of the spleen, and signs of hemosiderosis caused by the breakdown of erythrocytes in the vessel and stroma are detected. It was found that the amount of broken erythrocytes in the erythrocyte was relatively increased, as well as the amount of accumulated lymphocytes and macrophages. Small signs of thrombosis and intravascular hemiasiderosis are visible in the vessel with thickened walls of the splenic central artery. When viewing the white pulp, primary and secondary lymph nodes with developed areas are visible. In the periarterial lymph node, the number and surface of lymphocytes are slightly increased, developing lymphocytes are seen in the marginal and mantle areas. The area of proliferation appears to be developing lymphocytes.

When looking at the morphometric indicators, the average surface of the lymph node is $109010.10 \mu\text{m}^2$, the diameter of the lymph node is 428.86 ± 30 , the surface of the PALM area is $11039 \pm 1367 \mu\text{m}^2$, the sperm area is $46654 \pm 10432 \mu\text{m}^2$, the marginal area is $54654 \pm 12987 \mu\text{m}^2$, and the reproduction area is and the diameter of the surface is $7657 \pm 1253 \mu\text{m}^2$ It measures $109.23 \pm 14.11 \mu\text{m}$. When calculating the lymph node surfaces in percentages, it looks like this. PALM is 9.82%, the mantle area is 39.11%, the marginal area is 45.19%, and the reproduction area is 6.5 5

Conclusions: Morphologically, it was found that the surface of the spleen capsule is unevenly thickened when studied in the experiment. The vessels of the red pulp were especially full compared to the veins, the breakdown of erythrocytes (hemosiderosis) was found in the inner and outer vascular tissue, and the increase in the amount of macrophages and lymphocytes was found in the red pulp. Morphometrically, it was found that the surface and diameter of the periarterial lymphatic coupling and marginal area in the white pulp increased.

LIST OF REFERENCES USED

1. Absettarova, A. I., T. P. Makalish, and V. D. Abdullaeva. "The morphology of the red bone marrow and spleen in the post-lunch period during the introduction of xenogeneic cerebrospinal fluid in the experiment." Krymsky journal of experimental and clinical medicine 9.1 (2019): 5-11.
2. Adelheim, E. E., & Khotmirova, O. V. (2019). Dynamics of macrometric indicators of the selection of sypliat in the use of BAD "Kovelos-Sorb" and "Ekostimul-2" rations. Vestnik Bryanskoy gosudarstvennoy selskohozyaystvennoy akademii, (2 (72)), 49-55.
3. Azimova, Sabakhat. "Osobennosti structuro-funktionalnogo formirovaniya thimusa potomstva pri toksicheskom hepatite materi v period molochnogo vskarmlivaniya." Scientific progress 3.2 (2022): 659-664.
4. Aldayarov, Nurbek Saidillaevich, and Lyudmila Yurevna Lykhina. "Histological and immunohistochemical study of the spleen, lessons learned." Innovation v nauke 9 (58) (2016): 81-86.
5. Khamidova Sh.Sh., Khamdamova M.T. Predicting the risk of developing cervical intraepithelial neoplasia associated with human papillomavirus infection//New Day in Medicine 5(91)2026 395-398
https://newdayworldmedicine.com/en/new_day_medicine/5-91-2026

5. Khamdamova M.T., Khamidova Sh.Sh. Analysis of the microbiotope of cervicovaginal discharge in women with chronic cervicitis and squamous cell intraepithelial lesions of the cervix//New Day in Medicine 5(91)2026 399-403
https://newdayworldmedicine.com/en/new_day_medicine/5-91-2026
6. Khamdamova M.T., Kuryazova G.K. Sonoelastography in the diagnosis of endometrial cancer//New Day in Medicine 5(91)2026 267-270
https://newdayworldmedicine.com/en/new_day_medicine/5-91-2026
7. Khamdamova M.T., Xalilova M.T. Morphological variants of tissue reaction of the cervical epithelium in human papillomavirus infection in women of reproductive age//New Day in Medicine 4(90)2026 491-494
https://newdayworldmedicine.com/en/new_day_medicine/4-90-2026
8. Khamdamova M.T., Khakimboeva K.A. Ectopic pregnancy – a new look at the problem//New Day in Medicine 11(85)2025 76-80
https://newdayworldmedicine.com/en/new_day_medicine/11-85-2025
9. Khamdamova M. T. and Khamidova Sh. Sh. 2026. Anthropometric Characteristics of Female Patients with HPV-Associated Cervical Squamous Cell Lesions of Low Degree Depending On the Expression of Oncoprotein P16. Int.J.Curr.Microbiol.App.Sci. 15(5):128-133 doi: <https://doi.org/10.20546/ijcmas.2026.1505.017>
10. Khamdamova M. T. and Kuryazova G. K. 2026. Some Morphological and Immunohistochemical Features of Different Histotypes of Uterine Cancer. Int.J.Curr.Microbiol.App.Sci. 15(5): xx-xx. doi: <https://doi.org/10.20546/ijcmas.2026.1505.xx>
11. Khamdamova M. T., Askarova Z. Z. and Xalilova M. T. 2026. Morphological Criteria for HPV-Associated Cervical Ectopy. Int.J.Curr.Microbiol.App.Sci. 15(5): xx-xx. doi: <https://doi.org/10.20546/ijcmas.2026.1505.xx>
12. Khamdamova M. T. and Khamidova Sh. Sh. 2026. Anthropometric Characteristics of Female Patients with HPV Associated Cervical Squamous Cell Lesions of Low Degree Depending On the Expression of Oncoprotein P16. Int.J.Curr.Microbiol.App.Sci. 15(5): xx-xx. doi: <https://doi.org/10.20546/ijcmas.2026.1505.xx>
13. Khamdamova M.T., Khasanova M.T. Genetic mechanisms of development of endometrial hyperplastic processes in women in menopacteric age//New Day in

- Medicine 3(77)2025 207-211
https://newdayworldmedicine.com/en/new_day_medicine/3-77-2025
14. Khamdamova M.T., Akramova D.E. Immediate and long-term results of surgical treatment of genital prolapse in elderly women//New Day in Medicine 3(77)2025 201-206
https://newdayworldmedicine.com/en/new_day_medicine/3-77-2025
15. Khamdamova M.T., Umidova N.N. Genetic factors of genital endometriosis//New Day in Medicine 4(78)2025 82-87
https://newdayworldmedicine.com/en/new_day_medicine/4-78-2025
16. Khamdamova M.T., Akramova D.E. Genetic aspects of genital prolapse in women of reproductive age//New Day in Medicine 2(64)2024 420-426
<https://newdayworldmedicine.com/en/article/3758>
17. Khamdamova M.T., Teshayev Sh.Zh., Khikmatova M.F. Morphological changes in the thymus and spleen in renal failure in rats and correction with pomegranate seed oil//New Day in Medicine 3(65)2024 176-187
<https://newdayworldmedicine.com/en/article/3758>
18. Khamdamova M.T., Rabiev S.N. Omatometric data of constitutional features of the body shape of pregnant women //New Day in Medicine 10(48)2022 26-33
<https://clck.ru/32RGxQ>
19. Khamdamova M.T. — the role of an antiviral drug in the treatment of cytomegalovirus infection during pregnancy //New Day in Medicine 10(48)2022 -31
<https://clck.ru/31RGxQ>
20. Khamdamova M. T., Jaloldinova M.M., Khamdamov I.B. state of nitric oxide in the blood serum of patients with skin leishmaniasis //New Day in Medicine 2023 5(55): 638-643 <https://newdaymedicine.com/index.php/2023/06/19/1-186/>
21. Khamdamova M.T., Jaloldinova M.M., Khamdamov I.B. The significance of ceruloplasmin and copper in the blood serum of women carrying a copper-containing iud //New Day in Medicine 2023 6(56): 2-7
<https://newdaymedicine.com/index.php/2023/06/09/1-85/>