Journal of Advanced Zoology

*ISSN: 0253-7214*

*Volume **44** Issue **S-2 Year 2023** Page **2475:2479***

# DETERMINATION OF NORMAL MORPHOMETRIC DIMENSIONS OF THE STOMACH OF WHITE-BREEDLESS RATS

**Shirinov Mustafo Muminovich, Teshaev Shukhrat Jumayevich, Eshpulatov Elbek Yarashevich.**

Ministry of Health of the Republic of Uzbekistan

Bukhara State Medical Institute, 200100, Bukhara, Uzbekistan

***Article History***

Received: 12 July 2023

Revised: 10 September 2023

Accepted:27 October 2023



## ABSTRACT

Information about the anatomy of the stomach of white-breedless rats is very rare in the scientific literature. The shape, structure, and topography of rat stomachs are significantly different from those of vertebrates, but the same sections as shark stomachs can be found in them. This structure of white rat stomach sections characterizes the sac-like formation of the digestive tract. In the anterior part of the abdominal cavity of rats, on the left side of the midline, in the middle of the line of the lesser curvature of the stomach between the esophagus and the cardiac orifice. The liver is located in the small curvature of the stomach and partially covers it. The large curvature of the stomach touches the caecum and cecum.

**Key words:** white-breedless, stomach, digestive tract, esophagus, mucous membrane, duodenum.

## INTRODUCTION

The digestive system plays an important role in the body's relationship with the external environment. Various substances included in food affect the mucous membrane of the digestive organs. In the process of immunogenesis, it is clear that the mucosa and submucosa have special lymphoid development [1,2]. Due to its proximity to the microbiota and direct contact with food, it is constantly exposed to "normal" and potentially dangerous antigens. The human stomach usually consists of a cardiac, pyloric part and the body between them, as well as fundal or basal parts[1, 3, 4, 8]. The stomach of the white rat is often located under the liver. A large curvature of the stomach emerges from under its sharp caudal edge. It is located on the left side, in the caudal part of the lesser curvature, on the dorsal side

of the gastric fundus and on the cranial side of the pyloric part. The rat's stomach lies almost transversely [5, 11, 12].

The pyloric part of the stomach and the cranial part of the duodenum merge to the right of the midline, under an open ventrocaudal angle. Below it (caudal) are loops of the jejunum (ventral loops), the sharp corner of the ileum (terminal) and the cecum [2, 4, 9, 12]. The dorsocaudal (behind) region contains the pyloric part, the body of the stomach, the transverse colon, the body and tail of the pancreas. On the left, dorsal side, the fundus of the stomach and the spleen are identified in the area of great curvature. The width of the hook-shaped rat stomach gradually decreases in the distal direction [5, 11, 12].

**The purpose of the study:** to study the morphometric parameters of the stomach of white-breedless rats.

## MATERIALS AND METHODS

150 of both sexes, aged 3-12 months, weight 230 g, grown in standard vivarium conditions for experimental scientific research. from - 480 g. white rats up to Laboratory animals were kept in the vivarium of the Bukhara State Medical Institute. Rats were kept in special rooms (room temperature 20-24 $^{0}$ C, humidity 60%, light 12 hours) according to the requirements for the rooms where experimental animals are kept.

Animals were provided with adequate water and fed a balanced diet. Proper care and feeding of laboratory animals was considered to be of great importance in the preparation and conduct of experimental studies. Violation of the regime and diet, non-observance of hygienic measures during feeding lead to weakening of the animal's body. It increases their susceptibility to various infectious and somatic diseases. The appearance of these diseases during the experiment can lead to a violation of the research results and, as a result, incorrect conclusions.

They were subjected to a mandatory veterinary examination to determine the age and presence of other diseases. In order to prevent infectious diseases from entering the vivarium, the adopted animals were quarantined for 21 days. Laboratory animals were kept in special cages mounted on shelves. The total number of white outbred rats per cage, the date the experiment began, and the name of the researcher responsible for conducting it are indicated on the cage of the experimental animals.

## RESULTS AND DISCUSSION

Morphometric parameters of the stomach of normal white rats: newborn white rats at the transition of the stomach to the esophagus (esophageal section), the total thickness of the stomach wall - from 80.0 μm to 205.0 μm, the average is 135.2±5.2 μm; muscle layer - from 42.3 to 87.1 μm, average 72.5±2.3 μm; circular muscle layer from 16.4 μm to 32.8 μm, average 31.6±1.5 μm; longitudinal muscle layer from 24.6 μm to 49.2 μm, average 40.9±1.8 μm; thickness of the mucous membrane - from 34.6 μm to 41.0 μm, average 40.3±1.2 μm; submucosa base from 12.1 μm to 24.6 μm, average 22.3±1.2 μm; At the transition of the stomach to the duodenum (intestinal section), the total thickness of the stomach wall is from 260.0

to 334.8 μm, the average is 276.6±6.2 μm, the muscle layer is from 60.2 to 172.5 μm, the average is 101.3 ±3.1 μm, circular muscle layer from 24.6 μm to 41.0 μm, average 35.6±1.3 μm, longitudinal muscle layer from 24.5 μm to 114.2 μm, average 65.7±3.6 μm, mucosa thickness from 106.6 μm to 233.7 μm on average 158.5±3.1 μm, submucosa base 12.3-24.6 on average 16.8±1.2 μm; Thirty-day-old white rats at the transition of the stomach to the esophagus (esophageal section), the total thickness of the stomach wall - from 393.3 μm to 522.1 μm, the average is 475.8±5.2 μm, the muscle layer - from 186.4 μm to 258.5 μm, the average is 207,1±2.8μm; circular muscle layer - from 31.0 μm to 103.0 μm, average 73.7±1.5 μm, longitudinal muscle layer - from 45.6 μm to 224.2 μm, average 133.4±1.3 μm; thickness of the mucous membrane - from 206.9 to 243.6 μm, average 215.4±1.2 μm; submucosal base - from 20.5 to 90.2 μm, average 53.3±1.2 μm.

At the transition of the stomach to the duodenum (intestinal section), the total thickness of the stomach wall is from 278.9 to 570.3 μm, with an average of 488.9±6.2 μm; muscle layer - from 95.5 to 180.6 μm, average 134.8±3.2 μm; circular muscle layer from 31.0 μm to 85.8 μm, average 50.3±1.2 μm; longitudinal muscle layer - from 32.8 μm to 128.3 μm, average 84.5±2.8 μm; thickness of the mucous membrane - from 212.9 to 439.7 μm, average 331.6±3.5 μm; the submucosal base ranged from 12.3 μm to 69.7 μm, with a mean of 22.5±1.3 μm (Table ).

**Table**

**Stomach dimensions of white-breedless rats in the control group**

| A member dimensions | 3 monthly | 6 months old | 9 months old | 12 months old |
|---|---|---|---|---|
| **Rat weight (g)** | 236±3,28 | 310±3,51 | 410±3,82 | 480±16 |
| **Stomach weight (g)** | 0.9±0.02 | 1,74±0,06 | 1,83±0,09 | 1,91±0,03 |
| **Stomach length mm** | 35±0,88 | 44±0,76 | 47±0,65 | 48,5±0,26 |
| **Stomach diameter mm** | 27±1,2 | 34±1,4 | 35±1, 2 | 36.3±1, 1 |
| **The volume of the pot is ml** | 2.68±0,12 | 2,92±0,12 | 2,97 | 3,02 ± 0,08 |

At the transition of the stomach to the duodenum (intestinal section), the total thickness of the stomach wall is from 278.9 to 570.3 μm, with an average of 488.9±6.2 μm; muscle layer - from 95.5 to 180.6 μm, average 134.8±3.2 μm; circular muscle layer from 31.0 μm to 85.8 μm, average 50.3±1.2 μm; longitudinal muscle layer - from 32.8 μm to 128.3 μm, average 84.5±2.8 μm; thickness of the

mucous membrane - from 212.9 to 439.7 μm, average 331.6±3.5 μm; submucosal base from 12.3 μm to 69.7 μm, average 22.5±1.3 μm.

From the above data, it can be determined that the total thickness of the stomach wall of newborn and thirty-day-old white rats is 3.5 times that of the esophagus to the stomach (cardiac section), the muscle layer is 2.9 times that, the thickness of the mucous membrane is 5.3 times that, and the submucous base increased by 2.4 times. In its outlet (intestinal section), the total thickness of the stomach wall increased by 1.8 times, the muscle layer increased by 1.3 times, the thickness of the mucous membrane increased by 2.1 times, and the submucous base increased by 1.3 times.

## CONCLUSION

When we compared the micro-morphometric measurements of the gastric layers of non-white-breedless rats, the thickness of the mucosa in the cardiac part was from 707 to 705 μm, the mucosa submucosal layer from 129 to 125 μm, muscular layer from 344 μm to 339 μm, total thickness of all layers changed from 1256 μm to 1278 μm, thickness of mucous layer in the fundal part thinned from 639 μm to 624 μm, submucosa unchanged, muscular layer from 125 μm to 124 μm, all layers the total thickness reached 1008 μm. The thickness of the mucus layer in the body is from 689 to 688 μm, mucus the sublayer has changed from 123 to 119 μm. The results of the analysis show that the organometric parameters of 9- and 12-month-old white rats differ from each other, but the micro-morphometric parameters of the rats' stomachs do not differ.

## REFERENCE

1. Beloborodova E.I., sov. Narusheniya vsasyvatelnoy funktsii tonkoy kishki u bolnyx chronicheskoy obstructive boleznyu legkix // Klinicheskaya meditsina – 2012. - №1. - p. 54-61.
2. V. G. Grin Makrotmikroskopicheskie osobennosti relefa slizistoy obolochki zhudochno-inshechnogo trakta belyx krys. Sweet medicine and biology. - Ukraine. - 2019. – No. 4 (70). - c. 188–193.
3. Vinnik Yu. S i saavt. Osobennosti pathogeneza dlitelno nezazhivayushchix ran // Novosti khirurgii. — Russia. - 2011. - T. 19, No. 3. — p. 80-86
4. Guseynov T.S., Guseynova S.T. Morphology of peyerovykh blyashek pri dehydratatsii: monograph. // Makhachkala: issue. building "Nauka plus" - 2010. - p. 76.
5. Guseynova S.T., Guseynov T.S. Anatomiya limfaticheskogo rusla tonkoy kishki pri dehydratatsii - II Astrakhansky meditsinskiy zurnal - Russia. - 2011. - #1. - p. 51-55.
6. Guseynova S.T., Guseynov T.S. Vliyanie dehydratatsii na morfologiyu immunnykh organov // Vestnik Volgogradskogo meditsinskogo universiteta – 2010. - Vyp. 34. - c. 95-98.

7. Guseynova S.T., Guseynov T.S. Vliyanie dehydratatsii na morfologiyu immunnykh organov // Vestnik Volgogradskogo meditsinskogo universiteta – 2010. - Vyp. 34. - c. 74-82

8. Gushchin Ya.A. The effect of fixation of the liquid on the microscopic structure of the organs of the laboratory rodents // Mejdunarodnyi vestnik veterinarii. No. 3. - Moscow. - 2014. - pp. 88-95

9. Dzhitava I.G. i saavt. Morfofunktsionalnye osobennosti yazvennoy disease and patients of the older age group // Vestnik RGMU. - 2010. - #4. - p. 20–24.

10. Feng T, Elson CO. Adaptive immunity in the host-microbiota dialog. Mucosal Immunol. - 2011. - V. 4 (1). - p. 15-21.

11. Henderson, NC et al. Fibrosis: from mechanisms to medicines. // Nature. – 2020. - p. 587.

12. Henderson, NC et al. Fibrosis: from mechanisms to medicines. // Nature. - 2020. - p. 555-566.