

## Morphofunctional Characteristics of Rodent Intestines

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**Abstract:** General regularities and specific features of the anatomical structure of the intestine in the studied representatives of the order "rodents" are established, reflecting the influence of both the genetic program of morphogenesis of the species and the alimentary factor. It was revealed that the button-shaped thickening is the outlet of the common bile duct, which is also involved in regulating the volume of food masses coming from the stomach. In guinea pigs, the risk of developing acute obstruction in the duodenum is minimized, due to the protrusion of the mucous membrane into the intestinal lumen. The chinchilla intestinal canal is characterized by the following anatomical features: the intestinal wall gradually becomes thinner towards the rectum, and a large number of Peyer's plaques and diffuse accumulations of lymphoid tissue are concentrated throughout the intestinal canal in the submucosal base. It was found that the chinchilla's blind colon valve is endowed with a complex morphology: its flaps are formed by all layers of the intestinal wall with Peyer's plaques in the submucosal base, and clusters of Panet cells are concentrated in the leaves of the roller. In representatives of the order "rodents", the colon has 2 muscular bands (tenii) and a sac of the colon, which takes part in the organization of the digestive process. In representatives of phytophages in the intestine, areas of the highest concentration of lymphoid tissue were identified: the cranial bend of the duodenum, the ileocolic mouth and the sac of the colon. In chinchillas, the ileal-caecal ring of the caecal-colon valve acts as additional sources of lymphoid tissue.

The study of the regularities and features of the intestinal structure in animals is one of the urgent problems of veterinary morphology and gastroenterology [2-4, 6]. However, there is no complete information about the structural organization of the intestine in representatives of the order rodents. The macromorphological and micromorphological characteristics of the intestinal wall are not covered, and the functional significance of individual structures of the intestinal canal and their contribution to the digestive process are not sufficiently disclosed. Areas of the lowest intestinal resistance, which are risk factors for the occurrence and development of its pathologies, were not identified. At the same time, about 65% of representatives of this group die as a result of gastroenteropathy.

In the duodenum, duodenal glands were found throughout its entire length. Their function is to secrete a protective alkaline secretion that neutralizes the acidic pH of the medium coming from the stomach. At the bottom of the hepatic bend in the studied animals, a spherical button-shaped thickening was found - the entrance opening of the common bile duct formed by the confluence of the cystic duct of the liver and the passage of the pancreas. The complexly organized wall of the button thickening consists of the adventitia, a circular muscle layer, and a submucosal base with many deep crypts lined with a single-layer glandular epithelium. In a guinea pig, there are 2 folds of mucosa above the button thickening, represented by a cluster of duodenal glands and loose connective tissue. They can act as a valve, blocking the intestinal lumen, which in turn reduces the risk of acute obstruction in the area of the cranial intestinal bend.

The duodenum of a guinea pig at a distance of 9-15 cm forms the 2nd, or caudal bend, going to the spinal column, then the intestine turns to the left side of the abdominal wall and flows into the jejunum. The duodenal wall is represented by serous, muscular and mucous membranes. The muscular membrane consists of circular and longitudinal layers, while in chinchilla its thickness is significantly

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less than in guinea pig. In the submucosal base lie Brunner's glands, which have a multi-layered structural organization. For example, in chinchilla they are represented by 3-6 layers of cells, and in guinea pig they are represented by 2-8 layers of cells (Fig. Its own mucosa forms villi and crypts lined with edged epithelium, which takes part in the absorption of water from the lumen of the intestinal canal. At the bottom of the crypts, the guinea pig revealed an abundance of Panet cells.

The cecum of a guinea pig bears 2 tenia, while that of a chinchilla bears 1. According to the structural organization, tenia are represented by a thickening of the muscular membrane of the intestinal wall. The mucous membrane of the intestinal wall in guinea pigs is smooth, the folded surface relief is found only in the area of the shadow occurrence. At the bottom of the crypts there is a small number of goblet-shaped enterocytes, their remaining surface is lined with enterocytes filled with basophilic-colored secretions with acidophilic granules (Panet cells), which, as is known, carry out the biosynthesis of lysozyme, cationic peptides, phospholipase, providing antibacterial protection of the cecum. On the cecal mucosa of the rodents studied by us, lymphatic follicles were identified, which have an oval shape with a uniform density in guinea pigs. In chinchilla, they are characterized by a disordered distribution on the surface of the mucous membrane, and their density increases in the area of the ileal-colonic junction. В подслизистой Peyser's plaques were found in the submucosal base of the cecal wall пейеровы, and the muscle membrane was thickened at the site of their occurrence. In addition to the lymph follicles of the guinea pig, there are bundles of lymph nodes in the ileocolic junction and the tip of the cecum. In the studied representatives of rodents, a blind-colon valve was found at the border of the cecum and colon слепобочный. Macromorphologically, it is formed in a guinea pig by 2 valves. According to light microscopy of histological sections, the valve leaves are represented by all layers of the intestinal wall. In the area of their attachment, the circular muscle layer thickens, and the lymphoid tissue is concentrated here. In the chinchilla, the valve has a more complex structural organization than in the guinea pig: in addition to 2 valves, it contains roller-like protrusions of the colon wall, consisting of many folds that macroscopically resemble the leaves of a book.

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