

Volume 3, Issue 2, February 2025

ISSN (E): 2938-3765

# MORPHOLOGY OF THE GLANDULAR APPARATUS AMPULA OF THE VATERIAN PAPILLA IN SOME LABORATORYANIMALS

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#### Abstract

The morphology of the glandular apparatus in the wall of the ampulla of the Vater's papilla of rabbits, ground squirrels, dogs and cats were studied. It was found that not all laboratory animals have the same amount of glands in the wall of the ampulla of the Vater's papilla. The highest concentration of glands in the proper plate of the ampulla was found in rabbits and ground squirrels, and an insignificant amount in dogs and cats.

Keywords: Ampulla of the Vater's papilla, glandular apparatus.

#### **INTRODUCTION**

It should be noted that some vertebrates do not have a gallbladder. The ampulla of the Vater's papilla is formed in the thick longitudinal fold of the duodenum due to the fusion of the common bile and pancreatic ducts (which have a gallbladder in vertebrates). Depending on the level of fusion of the above ducts, the cavity of the ampulla has a round (with the fusion of the ducts near the mouth of the large papilla) or oval shape (with the fusion of the ducts in the proximal part of the longitudinal fold). The wall of the ampulla is lined from the inside with a single-layer prismatic epithelium, under which is located its own plate, consisting of loose unformed connective tissue. This plate is attached to the muscular layer, consisting of a complex of such layers of the common bile and pancreatic ducts and the duodenum. There are certain works devoted to the glandular apparatus of the duodenum in normal adults and in ontogenesis (1,5), comparative morphology in animals (3,4) and in the experiment (2,6). The nature of the glandular apparatus of the vater's papilla is an insufficiently studied issue.

# **Purpose of the Study**

To study the morphology of the glands of the ampulla of the Vater's papilla and the adjacent zone of the wall of the duodenum of laboratory animals with different types of nutrition.

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# Material and Methods of the Study

The material for our studies was a flap of the wall of the duodenum from the area of its longitudinal fold, where the papilla of Vater and its ampulla are located in 8 rabbits, 6 gophers, 4 cats and 5 dogs. The animals were euthanized under anesthesia, strictly observing the rules of bioethics. The material taken immediately after the animals were euthanized was fixed in 12% neutral formalin. Histological processing of the material and its embedding in paraffin was carried out according to the generally accepted method. Successive histotopographic sections of the ampulla of the Vater's papilla were stained by the hematoxylin-eosin method and according to Van Gieson. The study of successive preparations and the montage reconstruction of their computer printouts allowed us to trace the morphology of the structural components of the ampulla along its entire length - from the place of its formation to the mouth. The glandular apparatus of the ampulla and the duodenal glands of the adjacent zone of the longitudinal fold of the duodenum were studied.

# **Results of Our Own Studies**

In rabbits, the lamina propria of the ampulla of the Vater's papilla contains numerous mucous glands (Fig. 1B). At the same time, the lamina propria of the proximal part of the ampulla is relatively thick and the glands are stained somewhat basophilically.



A

Fig. 1. Cross-section of the ampulla of the Vater's papilla of a cat (A) and a rabbit (B) at the level of the distal parts. Van Gieson staining (A) and hematoxylin and eosin (B). Object 7, object 8. 1-glands of the ampulla wall; 2-duodenal glands

In the distal part of the ampulla, the glands are numerous (Fig. 1B) and occupy the entire proper plate. In terms of tinctorial properties, these glands are more similar to the mucous glands. Where the muscular layer of the ampulla orifice disappears from the intestinal cavity side, this glandular complex merges without a border with the layer of the submucosa of the duodenum with the duodenal glands, which also have a high density of arrangement. The glands of these two layers are almost indistinguishable in tinctorial properties. Moreover, at the level of the ampulla orifice, due to the absence of a muscular plate separating the proper plate of the ampulla and the submucosa of the duodenum, these two layers form a continuous layer of glands. In the preparation, the territory of these two layers of the wall is completely filled with glands of the ampulla and the



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duodenal (Brunner's) glands (Fig. 1B). The same picture of the arrangement of glands is noted in the area of the ampulla of the papilla of Vater in gophers. The properties of the glands' coloration, their localization and distribution density are identical to those of rabbits.

In the wall of the ampulla of the Vater's papilla of cats (Fig. 1A) and dogs, single glands are found, located at different distances from each other. Therefore, transverse sections of the ampulla of these animals do not always contain them. In these animals, in the submucosa of the intestine, the duodenal glands are also located in groups at a certain distance from each other. The glands are stained weakly basophilically.

# Conclusion

Thus, the wall of the ampulla of the Vater's papilla of rabbits and gophers contains glands in the proper plate of the mucous membrane, which are identical in morphological properties to the duodenal glands of the corresponding zone of the longitudinal fold of the duodenum. In the wall of the ampulla of the Vater's papilla of cats and dogs, the glands are single. It can be assumed that these features are associated with the nature of the nutrition of the objects we studied.

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