

RESEARCH ON SWINE STOMACH HISTOLOGICAL STRUCTURE

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Abstract

Following research we noticed that swine stomach lining presents numerous longitudinal folds with many cuts bounded by deep ditches. With 4x objective there is an overview of the stomach wall consisting of four tunics: mucosa, submucosa, muscular and serous. Lamia propria composed of loose connective tissue infiltrated by lymphocytes and mucosal muscle is composed of smooth muscle fibres. In histological examination we noticed that submucosa is composed of loose connective tissue with large blood vessels and contains nerves, Meissner submucosal plexus. Simple prismatic epithelium consists of two types of cells: high prismatic, located in the third round with core basal cells that are grouped in the bottom of the crypts. We observed high prismatic cells with apical microvilli and basal cells from pole to pole dilated basal and apical pole tapered, narrower allowing their location at the base of the crypts. Fundic glands are most numerous, straight appear in the upper and lower third bifurcated and these appears sectioned obliquely. Composed glands enter several types of cells: main basophils, parietal cells, oxintic, delomorfe and undifferentiated cells. With 40x objective is noted that the principal cells are located at the base of the gland appear grouped into nests and are the most numerous cells. These cells are cubic, small has basophil cytoplasm, nucleus euchromatic, small and round. Predominated gland parietal cells in the body are round or oval, large that protrudes outside the gland. Muscle lining is made of two layers of smooth muscle, organized on two levels: internal circular and external longitudinal. In histological examination we noticed that submucosa is composed of loose connective tissue with large blood vessels and contains nerves, plexus submucosal Meissner.

Key words: *simple prismatic epithelium, gastric glands, gastric parietal cells, the main cells.*

Material and methods

The research was performed on clinically healthy swine stomach. The tissues have been histologically prepared, sectioned, stained and examined. Large sections were stained on slides after staining following methods: hematoxylin eosin, staining and Mallory (Bancroft, J.D. and A. Stevens, 1986).

The examination of the microscopic preparates was performed using: the laboratory's Nikon optic microscope; Olympus microscope equipped with a photographic device, later the computerized integration

Results and discussion

Following research we noticed that swine stomach has a lining with numerous pleats having longitudinal folds bounded by deep ditches. 4x objective there is an overview of the stomach wall consisting of four tunics : mucosa, submucosa, muscular and serous. We examined the lining and noticed that consists of epithelium and lamina propria of mucous glands and musclaris mucosae (Figure 1, 2, 3).

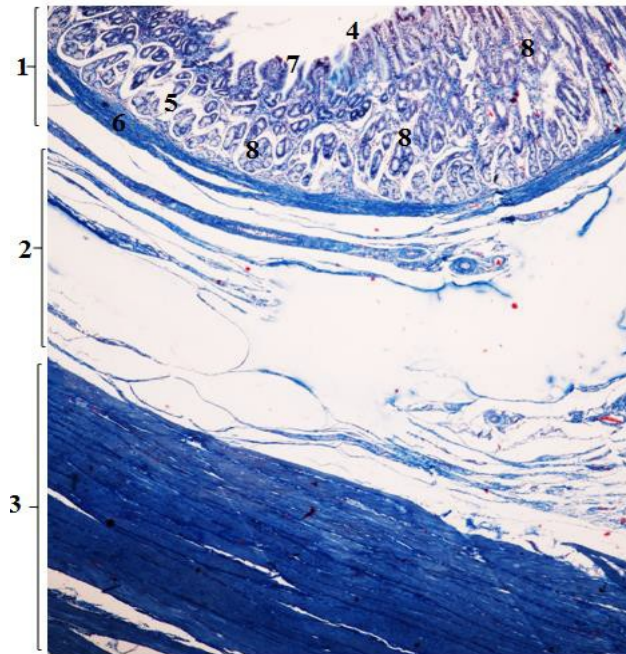


Fig. 1 Overall image of swine stomach, Mallory stain, 4x objective; 1-mucosa; 2-submucosa; 3-muscularis; 4-simple prismatic epithelium; 5 –lamina propria; 6-muscularis mucosae; 7-gastric crypts; 8-gastric glands.

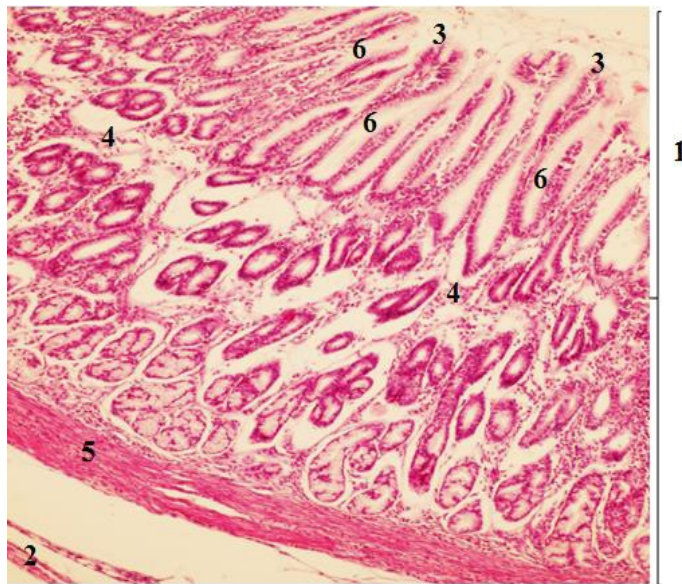


Fig. 2 Histological structure of the mucosa and submucosa in the swine stomach, 10x objective, HE stain; 1-mucosa; 2-submucosa; 3-simple prismatic epithelium; 4-lamina propria; 5-muscularis mucosae; 6-gastric crypts.

With the 20x lens is observed that the lamina propria glands are characteristic. Underlying glands are conjunctive condensed area (Figure 4,5,6) . The bulk of the gastric mucosa was occupied by the gastric glands which opened singly or in groups into the gastric pits. On the distal side of the limiting ridge, the stratified squamous epithelium of the non-glandular stomach transitioned abruptly to the simple columnar epithelium with interspersed surface mucous cells as reported earlier (Suckow et al., 2006).

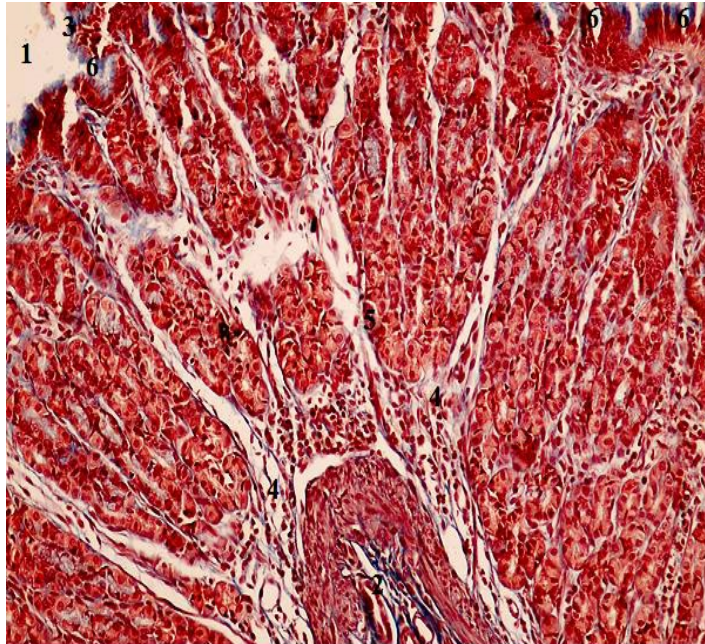


Fig. 3 Histological structure in swines, Mallory stain, 4x objective.
 1-mucosa; 2-submucosa; 3-simple prismatic epithelium;
 4-lamina propria; 5-muscularis mucoase; 6-gastric crypts.

The stomach of rat was divided into the proximal nonglandular and the distal glandular parts being separated by a fold of the non-glandular mucosa, the limiting ridge. The wall of the stomach was composed of mucosa, submucosa, muscularis and serosa as reported by (Sujin et al. 2008). With the 10x objective we examined gastric mucosal epithelium and noticed a simple prismatic epithelium that invaginate from place to place and forms the crypts gastrice (Nitovski A, Bisa Radović , Dragana Grčak , Valentina Milanović , Milena Potić , Milenković M , Grčak M, 2015). With the 10x objective we examined lamina propria composed of loose connective tissue infiltrated by lymphocytes and noticed that muscle lining is composed of smooth muscle fibers (Kierszenbaum A., 2011). With the 40x objective the apical pole of the cells are examined and observed that the secreted mucus accumulates in granular form from the apical pole of the cells (Solcan Carmen, 2006). The cardiac gland region was present at the junction of the fore-stomach and glandular stomach as a narrow band on the distal side of the limiting ridge (G. S. S. Chandana, 2013). The simple prismatic epithelium examined consists of two types of cells: high prismatic, located in the third round with core basal and basal cells that are grouped in the bottom of the crypts. We observed high prismatic cells with apical microvilli and basal cells from pole to pole dilated basal and apical

pole tapered, narrower allowing their location at the base of crypts. The fundic gland region was maximum and occupied the entire area between the cardiac and pyloric regions. The proper gastric glands were simple tubular and longer than cardiac glands (G. S. S. Chandana, 2013).

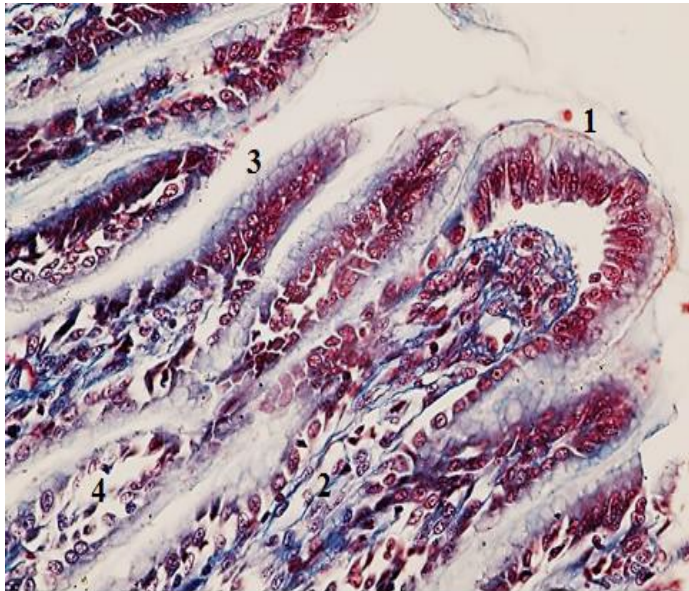


Fig. 4 Histological structure of the piloric mucosae in swines, Mallory stain, 20x objective. 1-simple prismatic epithelium; 2-lamina propria; 3-gastric crypts; 4-gastric glands.

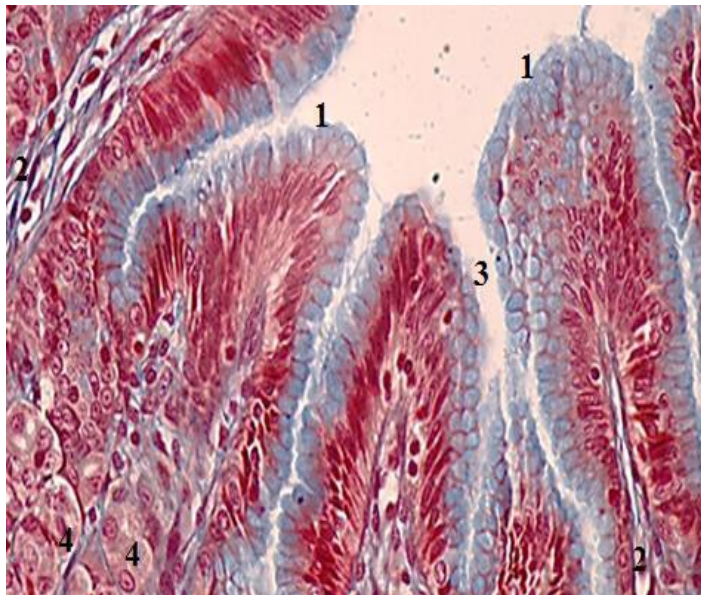


Fig. 5 Histological structure of the mucosa in the swine stomach (fundic region) , Mallory stain, 40x objective; 1-simple prismatic epithelium; 2-lamina propria; 3-gastric crypts; 7-glandular cells.

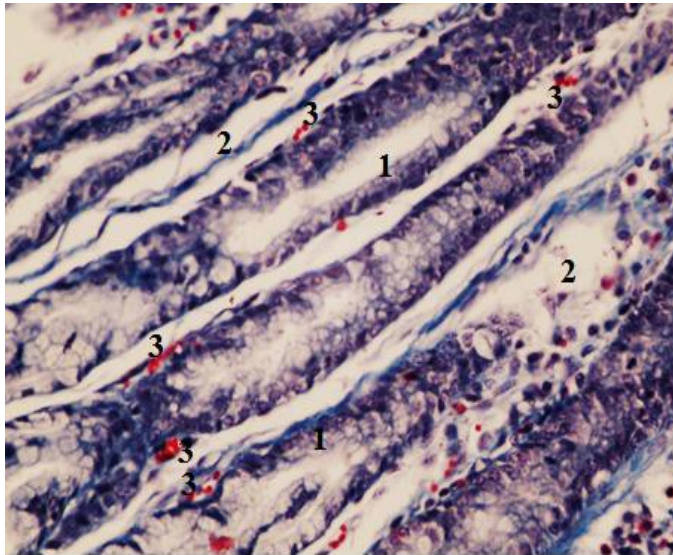


Fig. 6 Histological structure of piloric glands of the swine stomach, Mallory stain, 40x objective;
 1-glandular epithelium; 2-lamina propria; 3-capillaries.

Fundus the mucous membranes of the stomach pigs, horses and dogs is thicker than glandular mucous membranes in other regions of the stomach. It is darkly red, bumpy and educates the folds in the stomach.

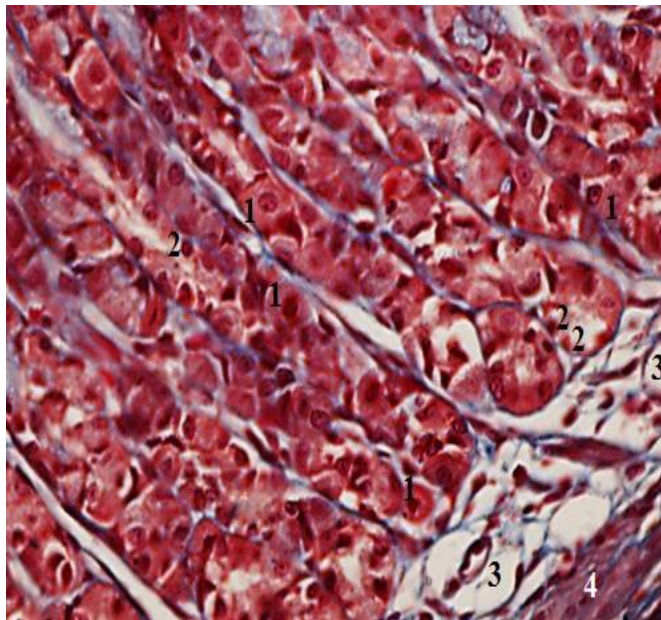


Fig.7 Detailed aspect of the gastric glands, Mallory stain, 40x objective.
 1-parietal cells; 2-principal cells; 3-lamina propria;
 4- muscularis mucosae.

These folds extend in different directions. On fundus mucosa perceive the recess (foveoles gastricae) and furrows that share this area of mucous membranes in the lower fields (area gastricae). Landscape holding mucous membrane (pars fundic) in pigs stretches along the ventral part of the large curvature of the stomach. It lines the cranial and caudal wall of the stomach, but does not reach the small curvature of the stomach. Fundus mucous membranes in the stomach of the horse represents about 2/3 to 3/5 of glandular mucosal his stomach (Nitovski A, et al., 2015). With the 40x objective is noted that the composition glands enter several types of cells: main basophils ; parietal cells , oxyntic , delomorfe and undifferentiated cells .

Parietal cell (also called oxyntic cells) contain highly branched intracellular tubules. Hydrochloric acid is produced on tufting outcrops in these ducts, and then sinks to the secretory tubules end cells (Arthur C. Guyton and John E. Hall, 2008).

With the 40x objective is noted that the base gland cells arranged principally they appear grouped into nests and are the most numerous cells (Figure 7).

These cells are cubic, small have basophil cytoplasm, nucleus euchromatic , small and round 40x objective is noted that prevails parietal cells in the body gland , they are round or oval , large that protrudes outside the gland. The glands of the cardiac and pyloric mucosal regions resemble those of the parietal area in structure but contain different cell types. The pyloric glands have no parietal cells but contain the gastrin - producing G cells. According to most reports, the pyloric glands to secrete pepsinogen. (James G. Cunningham and Bradley G. Klein, 2007). Muscle lining is made of two layers of smooth muscle organized on two levels: internal circular and external longitudinal (Cornilă, N., Raita Ștefania Mariana, 2013).

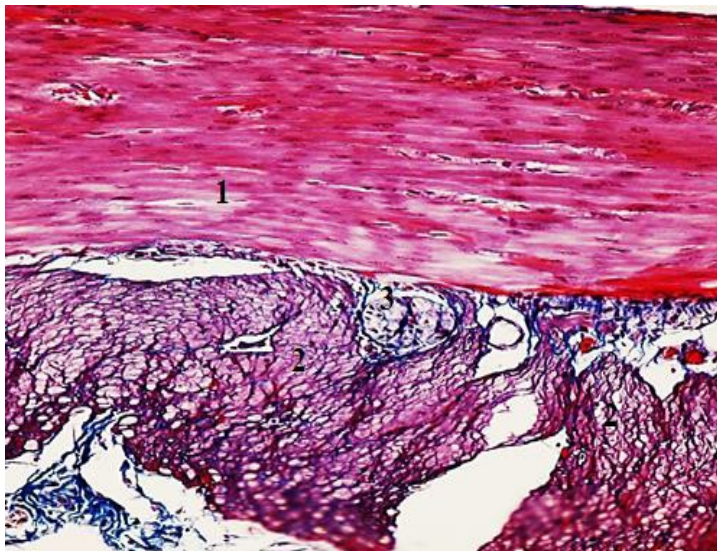


Fig. 8 Histological structure of the muscular tunic, 20x objective, Mallory stain; 1-longitudinal muscular stratum; 2-transversal muscular stratum; 3-Auerbach nervous myenteric plexus.

Conclusions

On histological examination there is an overview of the stomach wall consisting of four tunics: mucosa, submucosa, muscular and serous.

Simple prismatic epithelium consists of two types of cells: high prismatic, located in the third round with core basal and basal cells that are grouped in the bottom of the crypts. We observed high prismatic cells with apical microvilli and basal cells from pole to pole dilated basal and apical pole tapered, narrower allowing their location at the base of crypts. Glands fund, which are the most numerous, straight appear in the upper and lower third bifurcated and these appear sectioned obliquely. The composition glands enter several types of cells: main basophils; parietal cells, oxintice, delomorfe and undifferentiated cells.

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