MODERN MEDICINE AND PRACTICE
https://www.innovatus.es/index.php/ejmmp
EUROPEAN JOURNAL OF MODERN MEDICINE AND PRACTICE
Vol. 2 No. 4 (2022) EJMMP ISSN: 2795-921X

HISTOSTRUCTURE OF THE GASTRIC MUCOUS MEMBRANE OF RATS WITH A SINGLE PROTEIN DIET

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Abstract: *The aim of the study was to study the morphological features of the fundus of the stomach of rats with long-term consumption of protein food (boiled egg protein). It has been established that in the period from 90 to 180 days of postnatal ontogenesis, some morphological features of the gastric mucosa change. In particular, the length of the glands, the volume of parietal and head exocrinocytes and myocytes of the muscular layer of the mucous membrane decreased.*

Keywords: *homogeneous protein food, mucous membrane, fundus of the eye.*

Purpose of the study. To study the morphological features of the mucous membrane of the fundus of the stomach of white rats under conditions of long-term consumption of monotonous protein (chicken egg) food

Materials and methods. The object was the fundus of the stomach, sections of the wall of which were taken from control and experimental individuals at different periods of the experiment: 1,30,60 and 90 days.

The results of the study. The average thickness of the gastric mucosa (GM) in 90-day-old animals is 498.37 ± 5.2 mkm (the average length of the glands is 430.21 ± 4.6 mkm, the thickness of the muscle plate is 11.36 ± 0.60 mkm).

The issues of structural reorganization of the gastric mucosa of animals have been reflected in the works of many authors, but the dynamics of the process has not been studied enough. At the same time, there are no publications in the literature devoted to the problem of the influence of monotonous (protein) food on the

features of the morphogenesis of the gastrointestinal tract, including its especially specific section, the stomach.

food in the cavity of the digestive canal, the motor-evacuation properties of the latter cannot but affect the structural features and functioning of the secretory and vascular apparatus of the stomach wall in the postnatal period of ontogenesis.

The aim of the study was to study the morphological features of the mucous membrane of the fundus of the stomach of white rats in conditions of long-term consumption of monotonous protein (chicken egg) food. In view of the foregoing, we carried out a special experimental morphological study of the effect of monotonous (protein) food on the developmental features of one of the most labile and rapidly renewing structural components of the stomach, the mucous membrane.

The results of the study. The average thickness of the gastric mucosa (GM) in 90-day-old animals is 498.37 ± 5.2 mkm (the average length of the glands is 430.21 ± 4.6 mkm, the thickness of the muscle plate is 11.36 ± 0.60 mkm). In the period from the 1st to the 30th days of the experiment, the indicator of the average length of the glands of the mucous membrane of the fundus of the stomach increases in the control and experimental groups, respectively, to 432.50±4.8 μm and 438.14±7.90 mkm (differences are not significant, $p>0.05$). In addition, there were no significant differences ($p>0.05$) between the experimental and control animals ($p>0.05$) in terms of the cross-sectional area (and, accordingly, volume) of the nuclei and cytoplasm of parietal, main, pit exocrinocytes and mucocytes, as well as in the average number of epithelial cells of one glands [10]. the difference in the glandular-pit epithelial-cellular index of the main glands was also unreliable ($p>0.05$) (Tables 1 and 2). In connection with the above data, it is noteworthy that in the first month of the experiment in animals of both groups there is a thickening of the muscle plate of the gastric mucosa, and its thickness in the experimental group exceeds that in the control group ($p<0.01$). In turn, the cross-sectional area of the GM nuclei of the muscular plate of experimental animals decreases in relation to the corresponding indicator in animals of the control group (the values in the experimental and control groups were 7.37±0.70 mkm2 and 11.67±0.30 mkm2, $p<0.001$).

In the period from the 30th to the 90th day of the experiment, the length of the glands and the thickness of the muscular plate of the mucous membrane of the fundus of the stomach in experimental animals significantly decrease ($p<0.001$), not significantly changing in the animals of the control group [9]. With the shortening of the glands of the coolant in experimental animals, the cross-sectional area (and, consequently, relative to the volume) of the nuclei and cytoplasm of the parietal, main, pit exocrinocytes and mucocytes decreases ($p<0.001$). It is noteworthy that eating a monotonous protein food did not affect ($p> 0.05$) the indicators of the specific content of cells of various types within the gland and the glandular-pit epithelial cell index of the main glands (see Tables 1 and 2). However, in comparison with the animals of the control group, on the 90th day of the experiment, the density of the glands in the experimental individuals increased, which was determined per 1 mm2 ($p<0.01$) [6]. The observed thinning of the muscular plate of the mucous membrane of the animals of the experimental group is associated with a decrease ($p<0.001$) in the relative volume (cross-sectional area) of the nuclei and cytoplasm of smooth myocytes.

Table 1. The cross-sectional area of the nuclei and cytoplasm of the epithelial cells of the mucous membrane of the fundus of the stomach of white rats in the norm (control) and with the consumption of protein food (experiment), mkm2.

Structural Elements СОЖ	1-day expriment		90-day expriment	
	Control	An experience	control	An experience
Pit Exocrinocyte	11,57±0,47 20,62±1,10	9,59±0,21* 19,21 ±0,43*	11,56±0,60 20,62±0,98	8,16±0,17* 16,78±0,17*
Parietal Exocrinocytes	17,74±0,21 147,72±0,24	16,36±0,18* 143,07±0,44*	15.57±0,03 121,41±0,52	13,97±0,03* 106,59±1,40*
Main Exocrinocytes	10,48±0.16 50.82±0,23	9,60±0,27* 47,96±0,41*	10,05±0,54 39,5± 0,95	8,22±0,50* 35,50±0 40*
Mucocytes	10,02±0,15 17,61 ±0,90	8,57±0.32* 16,83±0,24*	14,02±0,50 23,07±0,06	8,99±0,50* 17,81±0,50*

CONCLUSIONS

The conducted studies indicate that feeding exclusively on protein food causes noticeable deviations in the development of the most important structures of the gastric mucosa by the 90th day of the experiment. First of all, this refers to the thinning of the latter, due to malnutrition, in particular, a significant decrease in the volume of nuclei and cytoplasm, its main structural elements (parietal, main, pit exocrinocytes and mucocytes), noted in animals of the experimental group on the 90th day of the experiment [5]. The weakening of mechanical irritation by monotonous food, as well as other effects of exogenous factors, reduces the secretory activity of the structural components of the coolant.

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