

## SPECIFIC FEATURES OF THE DIGESTION AND THE METABOLISM OF BIRDS

**Petcu I., Balan I., Şumanschi A., Demcenco B., Zestrea N., Roşca F., Gramovici V.**

*Scientific-Practical Institute of Biotechnology in Zootechny and Veterinary Medicine  
Institute of Physiology and Sanocreatology*

*a.sumanschii@gmail.com*

Compared to other species of farm animals, the chicken is characterized by high intensity of exchange processes, high absorption capacity and energy efficiency of feed promoting precocity and high productivity. It has a body temperature higher than that of mammals (40-42 °C), more oxygen consumption per unit of live weight, rapid breathing and pulse. Therefore, in order to maintain life, high metabolism and productivity of the bird needs a sufficient amount of energy and a complex of nutrients. The structure and functioning of the digestive system in birds have their own characteristics throughout its length, from the oral cavity to the cloaca.

Organs of digestion in poultry include: oral cavity, pharynx, upper esophagus, goiter, lower esophagus, glandular and muscular stomachs, small intestine, caeca, rectum and cloaca, as well as the digestive glands pancreas and liver. The peculiarities of the structure and functioning of the digestive system include the absence of teeth; food is grasped by the beak and is swallowed whole, as well as the presence of the oropharynx.

Food enters the relatively long esophagus into the crop, where it is exposed to enzymes and microflora. The volume of crop and its storage capacity depends on the live weight of the bird. With the help of peristaltic crop contractions, the food is mixed and fed in portions to the glandular and then into the muscular stomach as they are released. The acidic environment in the stomachs contributes to the action of pepsin, which breaks down easily digestible proteins to polypeptides. More intensive digestion occurs in the muscular stomach and it is the intensive increase in the muscular stomach that ensures the process of adapting chickens to solid food nutrition. The intestine in the bird is relatively short in comparison with mammals. In chickens, the length of the intestine is 165-230 cm, which is 5-6 times the length of the body.

A significant part of the nutrients – proteins, fats, carbohydrates – is digested in the duodenum with the participation of bile, pancreatic juice and intestinal glands. Bile of birds differs from the bile of other animals by the presence of stearic acid.

In the lower parts of the small intestine, the cleavage of nutrients is completed with the help of enzymes of intestinal juice and the absorption of the bulk of digestion products occurs. However, the cleavage of cellulose is 10-30%, since enzymes that promote the digestion of cellulose – cellulases, hemicellulases, peptidases, are not synthesized in the digestive tract of birds.

According to the norms, the optimal fiber content in broiler chicken rations is 3-4%, and the maximum 5%. Increased nutrient intake will contribute to the fact that indigestible residues will be the basis for excess microbial growth in the intestine. At the same time, a lack of fiber leads to a violation of digestion, and as a consequence, reduced bird productivity, diseases and death are possible.

The digestible nutrients of mixed fodders are used to build organs and tissues, as well as a source of energy, which contributes to the rapid growth of young animals. However, reserves of nutrients in birds are limited and the of fodder, the lack of vitamins and minerals in them negatively affects its productivity and health. Therefore, high productivity can only be achieved from a healthy bird.