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THE NEED TO IMPROVE PIG FEEDING OPTIONS

Boltianska N.¹, c.t.s.

Dr hab. inż. Izdebski W.², prof.

¹*Dmytro Motorny Tavria state agrotechnological university, Melitopol, Ukraine*

²*Wydział Zarządzania Politechniki Warszawskiej, Warsaw, Poland*

The problem of raising feed use of agricultural animals with the purpose of increase of level and quality of their products is one of the most important problems of agricultural biological science. Therefore, the change of the norms of feeding of agricultural animals and the revision of methods of nutritional assessment of feeds in the world of science is a continuous process. The need for improved feeding parameters and evaluation is primarily due to the development of physiological and biochemical basis of biology-feeding and obtaining scientific information that allows for a fresh look at the known facts, to determine and clarify the needs of animals in nutrients and ways to meet those needs. This also contributes to a significant increase in the productivity of animals, improve the art of feeding and forage harvesting technology. Scientific basis for improving the use of nutrients in feed is the physiology of nutrition of farm animals is based on knowledge of regularities and interrelations of the processes of digestion and metabolism. The initial stage of metabolism in animals is the digestion. It is a complex physiological and biochemical process by which food is received into the digestive tract, undergoes physical and chemical changes, and the contained nutrients are absorbed into the blood and lymph [1-3].

One of the important ways of improving the efficiency of nutrient utilisation of the feed is to increase its digestibility, that can only be achieved based on knowledge of physiological and biochemical processes of digestion of forage and with consideration about the relationship of these processes with the composition of the diet and physiological condition of the animal.

The development of the regulation of nutrients in our country was mainly in the direction of increasing the number of regulated and controlled performance. Up to a point these trends have been justified, but mainly for alive multi-gastric animals. Currently, needs are determined and the normalization is carried out only in digestible crude substances. It is known that animal for life and productivity need not feed, nor chemical components and compounds-metabolites, which are formed in the processes of digestion and intermediate metabolism. It is also known that ruminant animals have fundamental differences in physiology and metabolism that modify the quantitative and qualitative characteristics of almost all components of the feed. Microbiological processes in predzheludkov alter the amount and

composition of amino acids of the feed, the carbohydrate food are transformed into volatile fatty acids, Nelda components synthesized by the fat and high fatty acids. The synthesis of vitamins, the assimilation of mineral substances have their own characteristics. The new nutritional system currently being developed based on the substrate supply of metabolism is designed to solve this problem in many ways. Based on the knowledge about the physiological and biochemical processes of digestion of feeds, the amounts of nutrients absorbed, their distribution, assimilation and further processing, it will allow more efficient use of feeds, reduce metabolic stress, the number of diseases associated with metabolic disorders, which will allow the economic operation of highly productive animals. Unlike nutrition systems based on metabolic energy, this system divides the components of energy into the main substrates used in metabolism [4-6].

It is known that most of the substrates that are directly involved in the metabolism are formed and absorbed in the digestive tract, while the other is formed in the processes of intermediate metabolism in organs and tissues. Therefore, the basis of the new system is the digestion unit, in which the quantitative composition of the absorbed nutrients is calculated. On how exactly these indicators will be calculated, the further operability of the entire system will depend. In this regard, the need for further research on the digestion processes on issues related to the formation of the final digestion products is determined and is still not sufficiently quantified. The ultimate goal of these works was to obtain quantitative characteristics of the main digestive processes in different parts of the gastrointestinal tract, clarification of the key coefficients and their translation on the dependent variables [3,4].

Research domestic and foreign scholars on the study of the characteristics of digestion in ruminants accumulated a large experimental material showing the important role of hypothermia in the transformation and assimilation of feed nutrients. The final hydrolysis of nutrients, capable of absorption and transfer into the internal environment of the body, occurs mainly in the intestine. In this regard, it is important to identify and clarify the relationship between the digestion of food in predzheludkov and their subsequent hydrolysis and absorption in the intestine. Deep knowledge of the processes of digestion of feed in the gastro-intestinal tract will allow us to more reasonably manage the feeding of animals.

In the system of full feeding of farm animals is of great importance to the security of their protein. In recent years in our country and abroad, particularly close attention was paid to protein nutrition of ruminants. This is due to the fact that the shortage of fodder protein is still one of the main problems in feeding of farm animals. Under these conditions, along with increased production of high-quality protein feed is not less important is the development of methods of increase of efficiency of their use.

Recent studies have demonstrated that the issues of the rational feeding of ruminants is not possible without sufficient knowledge of the processes of

decay of feed protein and synthesis of microbial protein in the rumen. Of particular importance here is given to the development of science-based feeding of highly productive animals. If need low animal protein can be satisfied by the synthesis of microbial protein in the rumen and qualitative composition of protein feed does not play a role, the need of highly productive animals is met by microbial protein and high quality protein feed, not disintegrated in the rumen. In this regard, the elucidation of the conditions conducive to rapid synthesis of microbial protein in the rumen due to simple nitrogenous compounds, and also decreasing the breakdown of high-quality protein feeds and the increasing flow of the stomach is an important task in the development of measures to improve feed efficiency and animal productivity.

Experimental data on the characteristics of the metabolism of nitrogenous substances in ruminant precluded, knowledge of the physico-chemical properties of protein, synthesis of microbial protein in the rumen and the contribution of the latter in aminokislotna security animals became the basis for a new approach to the regulation of protein nutrition of ruminants. As a result, many countries have developed and implemented a new protein power system. In ruminants, as in multi-gastric alive, the need for nitrogenous components is met by amino acids absorbed in the small intestine. They enter in the composition of microbial protein, feed protein that is not broke, and endogenous proteins. The need of rumen microorganisms in nitrogen is met through the use of nonprotein nitrogen and protein fractions of the feed that breaks up, speed and the amount of disintegration which are important determinants of the overall nutrient digestibility in the rumen and the efficiency of use of nitrogen feed ruminants. Indicators of the speed and magnitude of the collapse of the feed protein is determined along with physico-chemical properties of the protein, proteolytic and cellulolytic activity of cicatricial environment and the speed of evacuation of hypothermia in the intestines. Currently, the literature provides little data on the effects of the rumen environment on the rate and extent of disintegration of the crude protein of the feed.

As a result of these studies note that the degree of decomposition of protein in the rumen of ruminants is regulated mainly by outflow of scar content. However, in some cases, the researchers did not find influence of rate of outflow of the breakdown of protein. In this regard, is of great importance to clarify the conditions under which such an effect occurs depending on the composition of the fractions of the protein and the diet in General. These same issues are relevant in terms of the impact of diet composition and conditions of the rumen environment on the performance of the decay fractions of fiber, starch, sugars and lipids separate feed.

In formulating rations for ruminant animals to ensure them a sufficient level of protein that does not break, consider the fractional composition of the protein and the rate constant of decay of its insoluble fraction that decays.

The lower the pH, the scar environment is less than 6.3, due to the increased fermentation of non-structural carbohydrates of forages of the diet, decreases the rate constant for decomposition of protein, which leads to a change in the level of decay of SP feed. The new system of feeding the cows allow you to assess the need and carry out the feeding with the accounting for the formation of substrates in the digestive tract in the process of digestion of the feed and intermediate metabolism in the body after absorption. It is believed that it is only on this basis that it is possible to proceed to the prediction of the chemical composition of milk. It is known that the bulk of the substrates that are directly involved in the metabolism are formed and absorbed in the digestive tract, while less is generated in the processes of intermediate metabolism in other organs and tissues.

Therefore, the basis of the new system is the digestion unit, which calculates the quantitative composition of the individual nutrients that are absorbed, rather than digested raw nutrients. On how exactly these indicators will be calculated, the further operability of the entire system will depend. In this regard, there is a need to study the digestive processes on issues related to the development of the final digestion products.

References

1. Boltyanskaya N.I. The system of factors of effective application resurser-Gauci technologies in dairy cattle in the enterprise. *Scientific Bulletin Tauride state agrotechnological University. Electronic scientific specialized edition*. Melitopol. 2016. Vol. 6. 55-64.

2. Boltyanska N. Ways to Improve Structures Gear Pelleting Presses. *TEKA. An International Quarterly Journal on Motorization, Vehicle Operation, Energy Efficiency and Mechanical Engineering*. Lublin-Rzeszow, 2018. Vol. 18. No 2. P. 23-29.

3. Boltyanskaya N.I. Indicators of an estimation of efficiency of application of resourcesbutGauci technologies in animal husbandry. *Bulletin of Sumy national agrarian University. A series of "Mechanization and automation of production processes"*. Amount. 2016. Vol. 10/3 (31). 118-121.

4. Boltyanskaya N.I. The dependence of the competitiveness of the pig industry from it-chnology parameters of productivity of the animals. *Bulletin of Kharkov national University-University of agriculture after Petro Vasilenko*. Kharkov. 2017. Vol. 18. 81-89.

5. Boltyanskaya N.I. The development of the pig industry and the competitiveness of its products. *MOTROL: Motoryzacja i Energetyka Rolnictwa*, 2012. Vol. 14. No3b. 164-175.

6. Boltyanskaya N.I. The creation of optimal microclimate parameters in the conditions of growing shortage of energy in the pig industry. *Scientific Herald of National University of Life and Environmental Science of Ukraine. Series: Technique and energy of APK*. Kiev. 2016. Vol. 254. 284-296.