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Comparative Assessment of Concentrates from Different Manufacturers for Poultry Egg Crosses.

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ABSTRACT

The article compares the two protein-vitamin-mineral concentrates domestic production based on zootechnical performance and amino acid composition. Studies conducted in the laboratory samples SSAU "Foods and metabolism". Material article aims poultry farmers to focus on the domestic market when choosing the feed protein concentrates for the production of compound feed in the company of their own. A deep study of the protein component of the raw materials and given the physiological rationale for its use.

Keywords: poultry, feeding the birds, productivity, and protein concentrates, livestock analysis, amino acids.

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INTRODUCTION

Each enterprise for the production of chickens determines its feeding program, balancing the financial capacity and the need to select the optimal cost and quality of feed [1, 4].

The best, but most expensive option is to buy a ready-made animal feed from the best manufacturers. In this case, it guaranteed a high level of realization of the genetic potential of laying hens, but at the expense of profitability. Therefore, about 70% of the enterprises of feed produced in their own preparation center with modern dispensers and mixers [2, 3].

Difficulties in the production of animal feed producers worldwide associated with selecting a protein-vitamin and mineral concentrates, which contain the necessary micro and macronutrients, vitamins, synthetic amino acids, enzymes, antioxidants [5, 6]. The decision and responsibility for both the gross production of feed and the cost of their responsibility, as a rule, the chief technologist of the enterprise.

In this situation, the quality of feed ingredients in the domestic market often reveals a discrepancy claimed nutritional and biological value of fodder to their actual performance, up to falsification. The only sure way to purchase quality raw material, is the analysis of the nutritional ingredients purchased in the laboratories at the stage of signing the contract of sale [7, 8].

MATERIAL AND METHODS

Regardless of all the difficulties of the economic situation, both at home and abroad Company "Poultry Grachevsky" is one of the fastest growing agricultural enterprises of Stavropol Territory in which the experiments were conducting comparing the 2-protein-vitamin mineral concentrate with a different culture. Currently LLC "Poultry Grachevsky" is a successful agricultural enterprise of Stavropol Territory, which produced an annual average of 40.3 million. Eggs. The average population of laying hens tend to increase by 12.8% per year. At the same time in 2011, completes the industrial poultry flock own herd replacements. Hybrid chickens cross "Lohmann Brown" grow and develop normally, realizing their genetic potential at a good level. Because of this, the average daily weight gain on average over 3 years was 4.3%, decreased by 3.9% of the cost of feed per 1 kg increase. It was the growth of egg hens on average 7.5 eggs per year per hen or 5.7%. The cost of feed for the production of 10 eggs decreased - by 1.5%.

In poultry farms a large share in the structure of production costs 1000 pieces food eggs accounted for the purchase of feed components - 72, 8%.

Indicative in this respect is the comparison of the nutritional value of the two protein-vitamin concentrates purchased from various manufacturers for feeding hens of industrial herd LLC "Poultry Grachevsky" - conditionally BVMK 1 and BVMK 2, established through classical zootechnical analysis in the scientific laboratory «Feed and Metabolism» Stavropol State Agrarian University.

MAIN PART

We are in the laboratory of the University conducted a study to determine the zootechnical performance and amino acid composition BVMK.

Table 1: Nutritional protein and vitamin concentrates

Indicators	BVMD 1	BVMD 2	BVMD 1 toBVMD 2, %
Moisture, %	9,19	8,29	90,2
Crudeprotein,%	41,52	48,86	117,7
Crudefat,%	7,04	6,35	90,2
Crudefiber,%	3,37	5,60	166,2
Crudeash%	16,81	10,03	59,7
BEV%	22,06	20,88	94,7
MA kcal / 100 g	268,10	283,41	99,1

According to the data, BVMD 2 is better than one BVMD on key dimensions, including it contains more crude protein 17.7% and metabolizable energy by 5.7%, with an acceptable level of crude fiber (Table 1). Thus, 1 kg second concentrate less at 20 rubles at current prices in 2015 it is natural that at this stage of the study chose the BVMD 2.

Note that the amount of nitrogen-containing substances, i.e. Crude protein is not always an objective indicator of the protein value of the feed, especially for poultry (Fig. 1). Taking into account the anatomical structure of the gastrointestinal tract and digestive physiology of the birds, for her most valuable and objective indicator of protein nutrition is its amino acid composition.

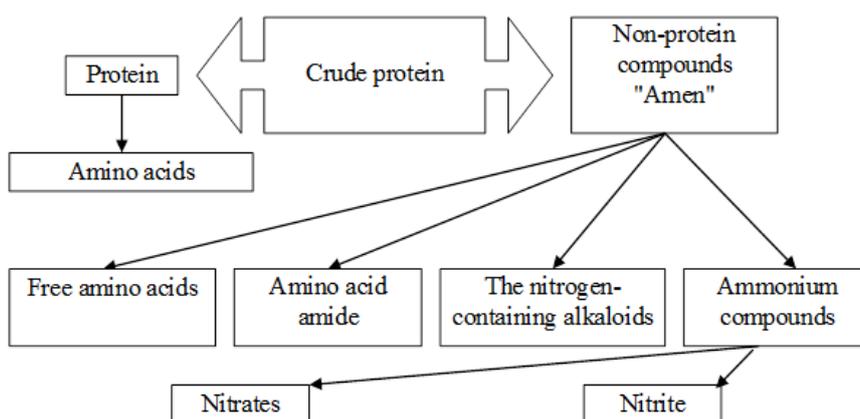


Figure 1: The composition of the crude protein

Therefore, when buying high-protein raw materials should always be carried out to determine its amino acid composition, which will be judged not only on the quality of food, but also about his true biological value in the sense of the formation of bird products (Table 2).

Table 2: Characteristics of the protein component concentrates

Indicators	BVMD 1	BVMD 2	BVMD 1 toBVMD 2, %
Crudeprotein,%	41,52	48,86	117,7
Asp,%	3,74	3,42	91,4
Thr, %	2,86	1,56	54,5
Ser, %	1,85	2,54	137,3
Glu,%	6,17	5,74	93,0
Pro, %	2,30	3,06	133,0
Gly, %	1,83	2,72	148,6
Ala, %	1,68	2,04	121,4
Val, %	1,46	1,93	132,2
Met, %	4,01	2,52	62,8
Ile, %	1,32	1,42	107,6
Leu, %	2,62	2,77	105,7
Tyr, %	1,11	1,17	105,4
Phe, %	1,56	1,68	107,7
His, %	0,88	0,87	98,9
Lys, %	3,82	3,91	102,4
Arg, %	2,80	3,16	112,9
Cys, %	0,57	0,94	164,9
The sum of amino acids,%	40,58	41,45	102,1
Syntheticaminoacids:			
Thr, %	1,83	-	-
Met, %	3,27	1,80	55,0
Lys, %	2,17	2,20	101,4

In this example, first, a significant difference between the two BVMD crude protein content and the amount of amino acids - 7.41%, which may indicate the presence of non-protein nitrogen in the sample. BVMK 1, in contrast, does not contain a non-protein nitrogen, as the difference between the amount of crude protein and amino acids is 0.94%, which is quite acceptable [9, 10].

Comparing the samples for protein must be taken in the nutritional field of view is not only an indicator of crude protein, and a sum of amino acids [11, 12].

Next in priority is the content of the exchange energy and the cost of feedstuff. The advantage of these indicators is BVMK 2. However, if the formula for calculating the exchange energy enter sum of amino acids as an indication of the usefulness of the protein, not the crude protein in the sample number 2, it will be equal to 258.52 kcal / 100 g, and will be less on the 6.42 kcal / 100 g, subject to the same translation BVMK 1. In this case, the level of the exchange energy is already worse it characterizes BVMK 2 compared with BVMK 1.

Difference between the cost of 1 kg of the product in 20 rubles between two specific protein and vitamin concentrates at relatively the same content of protein and metabolizable energy, of course, more reasonably allocates priority BVMK 2.

SPECULATION

If we consider BVMD amino acid composition, excluding the amount of amino acids, synthetic amino acids that are present in both samples, it can be assumed that the basis BVMK 1 are processed soybeans, and in the base 2 to the soy BVMK added a certain amount of waste feather meal. This conclusion was based on comparing the contents of methionine and cystine in test samples. Methionine in the true protein (without synthetics) in both samples has the same number, and cystine BVMK 2 contains more almost 2 times.

As is known, feather meal contains more cystine methionine compared to 4-fold, while soybean cake and meal methionine approximately equal to the amount of cystine. This suggests that BVMK 2 added feather meal. Indicator crude ash (Table 1) indirectly indicates the presence of two BVMK feather meal. We noticed that the less crude protein in the feed ash, the more it feather meal. The digestibility of feather meal is very low (less than 10%), so protein BVMK 2 less valuable. At the same time, it has a low cost. Adding feather flour manufacturer lowers the price of its product, and this attracts the buyer until he will understand the true value of its stern.

CONCLUSION

When feeding poultry BVMD 2 cannot obtain the same efficiency as when feeding BVMK 1 as protein BVMK 2 comprises a number of feather meal that has low digestibility and assimilability, as well as BVMK 2 contains a number of non-protein nitrogen which adversely affects the health and productivity of animals monogastirichnyh.

The addition of synthetic amino acids in BVMK allows both manufacturers claim that their products contain high-quality fishmeal, hoping that in the laboratory cannot determine the synthetic amino acids. In the laboratory, we define as the individual amino acids make up the protein molecule and synthetic amino acids alone. Subtracting the amount of synthetic amino acids from amino acid hydrolysate can draw conclusions about the presence of not only BVMK fishmeal and other impurities high-protein products.

Based on the above cost advantage BVMK 2 is tempting, but not reasonable, since the biological value BVMK 1 is substantially higher, given the amino acid digestibility of ingredients and the whole product.

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