

Ways to improve poultry productivity

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Abstract. The article draws attention to the fact that the vitamin feed additive Introvit A+WS is an effective complex in its composition, consisting of 12 fat-and water-soluble vitamins, 18 essential and replaceable amino acids and 9 macro-and microelements that affect not only stability to various infectious diseases, but also to increase the meat productivity of young poultry. In recent years, industrially produced vitamins have become increasingly widespread, as well as feed additives used as a means of increasing animal productivity, reducing the cost of protein feed and increasing the efficiency of using feed nutrients. The vitamin feed additive Introvit A+WS in the indicated doses under production conditions had a positive effect on the weight gain of broilers and on the preservation of the poultry population, therefore, it shall be widely used in industrial poultry farming.

1 Introduction

A promising direction in increasing the productivity of poultry is the preservation of natural defense mechanisms inherent in poultry from nature, allowing in industrial conditions to keep adequately without losing productivity to respond to stress factors, to a lesser extent to be exposed to diseases of various etiologies [1-3]. Wherein, various feed additives increase the body's resistance to technological stress. They remove the negative immunosuppressive effect of vaccine drugs [4-8]. So, for example, the food additive Neokolistin – a water-soluble powder containing colistin, neomycin, tylosin and a set of vitamins, is used for therapeutic and therapeutic purposes for colibacillosis, pasteurellosis, salmonellosis, respiratory and other infections, the causative agents of which are sensitive to the components of the drug. The food additive Altisal-tm 1000 is prescribed for the treatment of poultry and pigs with gastrointestinal and respiratory bacterial infections caused by pathogens sensitive to tylosin. Water-soluble powder Ultravit AD₃E is prescribed for the treatment and prevention of a lack of vitamins A, D₃ and E in farm animals, including poultry. The feed additive Intromin Oral is used to balance the diet for missing minerals, to increase the digestibility and assimilation of nutrients.

Vitrocil is an antibacterial drug in the form of a solution for oral administration, intended for the treatment of pigs and poultry with gastrointestinal, respiratory and

The quantity and quality of food products, especially of animal origin, are of paramount importance in formation and maintenance of human health and maintenance of the adaptive

capacity of his/her body to the environment. The quality of such products, namely, is determined by their microelement composition.

The purpose of this paper was to study the feasibility of using feed additives in poultry farming for the growth activity of young poultry.

To achieve this goal, the following tasks were identified:

- to study the high-quality vitamin composition of the feed additive Introvit A+WS;
- to investigate the amino acid composition of the feed mixture offered for poultry farming;
- to identify the presence of mineral elements in the composition of the additive used;
- to substantiate the production result with use of a feed additive, as well as without its use, on the growth activity of broiler chickens.

2 Materials and Study Methods.

The object of the study was broiler chickens of the Ross-308 breed, kept at the poultry farm Agropitsa LLC in the Primorsky Territory. During the experiment on broiler chickens, two groups of birds, 50 heads each, were formed, selected according to the principle of analogues: experimental and control.

The conditions of keeping and feeding in all groups were similar, the chickens were housed on the floor throughout the entire period of rearing.

Access to water for broiler chickens was unimpeded. In addition to the main diet, the experimental group of young birds included a water-soluble vitamin additive Introvit A+WS in doses in accordance with the instructions for its use.

During the study, the following methods were used: clinical examination, palpation, thermometry, biometrics.

To determine the weight indicators, the chickens were weighed daily in the control and experimental groups. The control figures of the results obtained are shown on the 7th, 14th, 21st, 28th, 35th and 45th days of growing.

3 Results and Discussion

The vitamin additive Introvit A+WS used by us in the experimental group is a water-soluble powder containing a complex of vitamins, amino acids and microelements. It is used not only for the treatment and prevention of amino acid deficiency in farm animals, in stressful situations. In the experimental group, where the vitamin feed additive Introvit A+WS was used in young poultry, significant increases in the live weight of broiler chickens were revealed compared to the live weight of chickens in the control group on the 7th, 14th, 21st, 28th, 35th and 45th days of growing. Introvit A+WS contains a complex of vitamins, both fat-soluble and water-soluble (Table 1). In addition, the feed mixture contains a wide range of nonessential and irreplaceable amino acids, as well as micro-macroelements (Table 2, 3).

Vitamins are known to be low molecular weight organic compounds belonging to various classes of organic substances. They are necessary for the vital activity of the body, as they participate in biochemical reactions, physiological processes. Most of the vitamins enter the body from the outside, with food or are added to the diet in addition.

Table 1. Vitamin composition INTROVIT A+WS

No.	List of vitamins	Name	Dose in 1 g of powder
Fat soluble			
1.	Vitamin A	retinol acetate	20,000 IU
2.	Vitamin D ₃	cholecalciferol	6,000 IU
3.	Vitamin E	alpha-tocopherol acetate	60 mg
4.	Vitamin K ₃	menadione	4 mg
Water soluble			
5.	Vitamin B ₁	thiamine hydrochloride	6 mg
6.	Vitamin B ₂	riboflavin	12 mg
7.	Vitamin B ₆	pyridoxine hydrochloride	8 mg
8.	Vitamin B ₁₂	cyanocobalamin	60 mg
9.	Vitamin C	antiscorbutic vitamin	40 mg
10.	Vitamin B ₉	folic acid	2 mg
11.	Vitamin H	biotin	300 mcg
12.	Vitamin remedy	niacin amide	80 mg

Along with proteins, fats and carbohydrates, which are a building, energy material, vitamins constantly, but in small quantities, must enter the body. A sufficient amount of vitamins has a positive effect on all organ systems of poultry, reduces susceptibility to infectious diseases. Hypovitaminosis – functional disorders are the cause of protein, fat, carbohydrate, and mineral metabolism disorders.

Table 2. Amino acid¹ composition of INTROVIT A+WS

No.	List of amino acids	Group, replaceable/irreplaceable	Dose in 1 g of powder
1.	Alanin	Replaceable	2.24 mg
2.	Arginine	Irreplaceable	1.24 mg
3.	Aspartic acid	Replaceable	5.10 mg
4.	Cysteine	Replaceable	1.14 mg
5.	Glutamic acid	Replaceable	8.80 mg
6.	Glycine	Replaceable	21.02 mg
7.	Histidine	Irreplaceable	1.12 mg
8.	Isoleucine	Irreplaceable	2.98 mg
9.	Leucine	Irreplaceable	4.74 mg
10.	Lysine	Irreplaceable	54.24 mg
11.	Methionine	Irreplaceable	50.82 mg
12.	Phenylalanine	Irreplaceable	1.32 mg
13.	Proline	Replaceable	2.68 mg
14.	Serine	Replaceable	2.72 mg
15.	Threonine	Irreplaceable	3.36 mg
16.	Tryptophan	Irreplaceable	0.84 mg
17.	Tyrosine	Replaceable	1.06 mg
18.	Valine	Irreplaceable	2.84 mg

Protein monomers are heterofunctional compounds - amino acids. Amino acids as constituent elements of proteins are involved in all vital processes and enter the body with food. The need for amino acids directly depends on the functional state of the bird and determines the metabolic rate, as well as the level of productivity.

Each protein in the body has its own primary structure, orientation in space. Synthesized from amino acids in the cytoplasm, the required protein chains are formed in sufficient

quantities if amino acids are present in the required amount. Therefore, it is amino acids that are the most important nutrients.

Table 3. Composition of mineral elements INTROVIT A+WS

No.	List of minerals	Macro/microelements	Dose in 1 g of powder
1.	Choline chloride	Macroelement	5 mg
2.	Iron sulfate	Microelement	12 mg
3.	Magnesium sulfate	Macroelement	12 mg
4.	Manganese sulfate	Microelement	12 mg
5.	Zinc sulfate	Microelement	12 mg
6.	Sodium chloride	Macroelement	100 mg
7.	Sodium sulfate	Macroelement	100 mg
8.	Potassium chloride	Macroelement	25 mg
9.	Calcium pantothenate	Macroelement	20 mg
	Total: 9 macro-microelements		

Organization of full-fledged feeding of animals is possible provided that all nutrients, including minerals, are provided in the diets in optimal quantities and ratios.

Mineral substances play an important and varied role in the animal organism. They determine osmotic pressure, affect energy, protein, carbohydrate and lipid metabolism, are a plastic material in formation of tissues and organs.

Mineral substances have no energy value, but their physiological role in the body is great. In the tissues of an animal organism, about 40 mineral elements are constantly found, but the physiological necessity has been proved so far only for 15, possibly necessary include fluorine, bromine, barium, strontium, calcium and phosphorus [9, 10].

Mineral elements, depending on their quantitative content in the body of the animal, are usually divided into two groups; the first includes the so-called macroelements – calcium, phosphorus, potassium, sodium, chlorine, magnesium and sulfur; the second one includes microelements – iron, zinc, copper, manganese, iodine, cobalt, molybdenum and selenium [9, 10].

4 Conclusions

Therefore, the vitamin feed additive Introvit A+WS is an effective complex in its composition, consisting of 12 fat- and water-soluble vitamins, 18 essential and irreplaceable amino acids and 9 macro-and microelements that affect not only resistance to various infectious diseases, but also to increase the meat productivity of young poultry. In recent years, industrially produced vitamins have become increasingly widespread, as well as feed additives used as a means of increasing animal productivity, reducing the cost of protein feed and increasing the efficiency of using feed nutrients. The vitamin feed additive Introvit A+WS in the indicated doses under production conditions had a positive effect on the weight gain of broilers and on the preservation of the poultry population, therefore, it shall be widely used in industrial poultry farming.

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