

APPLICATION OF FEEDS BASED ON HUMIC SUBSTANCES

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The use of humic preparations as a feed additive for farm animals, the theoretical justification and determination of norms for the use of sodium humate in the feeding of farm animals, and the determination of the economic efficiency of the use of different doses of sodium humate in animal feeding are considered. High biological activity, a wide range of action, antitoxic properties, harmlessness and the possibility of using the drug with any type of feed create prerequisites for its wide use.

Key words: *humic acids, trace elements, biological activity, stimulant, metabolism.*

Introduction. Only full-fledged, balanced feeding of farm animals is able to ensure their high productivity with less feed consumption per unit of production. In the light of the latest discoveries, the biological role of potassium and/or sodium humate with silicon in living organisms was studied using nanotechnology, and the biological activity of organic silicon compounds - silatrans - was studied. Humic acids are the main component. 2.5% solution - affects the entire organism of the animal in general, starting from the moment of birth and until biological death [1,2].

Analysis of recent research and publications. Potassium humate with silicon increases the level of plant resistance to diseases and sudden changes. The function of potassium and sodium huminate in combination with silicon is to increase resistance to sudden changes in weather conditions. Thus, huminates of potassium and sodium in combination with silicon can be used as an effective means of soil and living organisms in technological processes of agriculture [1,2].

The purpose of the research is to substantiate the use of potassium and sodium humates as feed additives, to substantiate and determine the effective rate of humates for fattening farm animals.

Research results. Potassium humate with silicon "Sto Ga" is a water-soluble salt of humic acid and when in contact with plants causes a positive reaction, which is manifested in increasing the vitality of the organism and, as a result, in its productivity, especially in extreme environmental conditions. The adaptogenic properties of the drug "Sto Ha" are effectively used in the form of natural, environmentally friendly plant growth stimulators of a wide range of action, which have a multifaceted positive effect on metabolism, growth and development [3,4]. The mechanism of action of the drug "Sto Ha" is simple. Since humates are natural chelators, the assimilation of macro- and microelements in organic form is much higher and more intensive than in the form of simple mineral salts. In addition, the drug "Sto Ha" improves the permeability of the cell membrane at the point of contact with the cell, so the absorption of nutrients is accelerated many times (for potassium,

for example, 100 times). The synthesis of active substances, especially growth hormones, increases in the leaves treated with the drug "Sto Ha".

Sto Ha fodder mixture contributes to:

- conservation of livestock at all stages of the technological cycle;
- poultry productivity from the first days of life;
- general resistance of the body and resistance to stress factors.

For improvement:

- the process of digestion and assimilation of feed;
- development of young animals;
- immune tension after scheduled vaccinations of young animals.

Decrease:

- intoxication in case of diseases, poisoning, use of medicines,
- unfavorable environment, etc.
- reduction of the adaptation period;
- recovery after transferred diseases and antibiotic therapy.

Normalization:

- metabolism of the bird's body.
- liver functions (hepatoprotective effect).

For laying hens (hens, ducks, geese, ostriches, turkeys and guinea fowls) contributes to:

- increase in carrying capacity.
- reduction of culling and death.
- decrease in the yield of defective eggs.

For fattening and growing chickens, ducklings, geese, turkeys, ostriches and other birds, it stimulates:

- intensive growth of young.
- uniform development of internal organs.
- increase in live weight.

The effect of "Sto Ha" potassium \ sodium humate with silicon on the physiological parameters of animals and birds. The important role of sodium humate with silicon in the physiological and biochemical processes of living organisms is now practically proven. Although the relative content of these elements in the body of animals is insignificant, it depends significantly not only on the nature of organs and tissues, but also on the species of the animal, its physiological state, and even geographical region. Effect on mink The influence of potassium / sodium humate "Sto Ha" on the growth, hematological and biochemical blood parameters of young mink was studied. The data of pathohistological and histochemical studies indicated the stimulating effect of the drug "Sto Ga" on protein, fat and carbohydrate metabolism in liver and kidney cells. Normalizes metabolism in the liver, "Sto Ha" simultaneously increases the reparative capacity of this organ. The most favorable effect on the parenchyma of the examined organs was exerted by the drug "Sto Ha" in doses of 5 and 10 mg per 1 kg of live weight. The number of particularly large skins increased with an increase in the dose of the drug "Sto Ha". Effect on sheep. The effect of "Sto Ha" potassium / sodium humate as a source of microelement silicon in

diets on the growth and development of young sheep was studied in comparison with potassium silicate. As an "optimal" dose that compensates for silicon deficiency in the main diet, the drug "Sto Ha" was used in the amount of 100 mg per animal per day in the first half of fattening, in the second - 550 mg. In comparison with the control group, the absolute increase in live weight of walleyes that received "Sto Ha" at the end of fattening amounted to 26.69-27.42 kg (111-114% to the control). On average, during the experience, the average daily gain in the group of animals that received the "optimal" dose of "Sto Ha" was 150 g, which is 13.6% higher than in the control group. The use of "Sto Ha" in the diet of mature Valuches of the "Prekos" breed increased their wool shearing and the yield of pure wool by 10.9 and 0.5% in comparison with these indicators in the control group. Action on pigs. The influence of "Sto Ha" potassium / sodium humate on the growth of young pigs was studied on early weaned piglets with physiological immaturity (live weight 3.9-4.0 kg). In contrast to the control group, the piglets of the experimental groups with combined feed SK-3, SK-4, SK-5, dry milk according to the technological scheme additionally received the drug "Sto Ha" daily at a dose of 15 mg per 1 kg of live weight for 97 days [4, 5].

The drug "Sto Ha" increased the resistance of piglets, normalized metabolic processes in their bodies. In the blood of piglets, erythropoiesis increased to normal, bactericidal activity, and the content of gamma globulins increased.

The drug "Sto Ha" stimulated regenerative processes in the body of piglets with hypotrophy, accelerated their growth and development. Usually, with hypotrophy of piglets, the general improvement of their health begins on the 7-10th day, body temperature and appetite normalize, health and appearance improve, wool acquires a natural shine. Initially, the reduced body weight is significantly compensated by the 20th day. Compared to the control, the addition of the drug "Sto Ha" to the diet increased the average daily growth of piglets by 15-20 g. During the growing period, this difference increased even more and amounted to 33-39 gr. Action on cattle. Daily feeding of the drug "Sto Ha" in doses of 15 and 20 mg/kg for a month to young cattle increased live weight gain by 5-10% compared to the control [4,5].

The inclusion of the drug "Sto Ha" in soybean grinding proved to be the most effective when studying the influence of these stimulants in the composition of soy-containing feeds on the milk productivity of cows. The drug "Sto Ha" was administered with feed, starting 60 days before calving and during 200 days of lactation. Cows of the control group received a standard diet, which includes heat-treated soybean meal. The animals of the experimental group were additionally injected with the drug "Sto Ha" - 15 mg / kg of live weight. During the observation period, the milk productivity of cows that received the drug "Sto Ha" in the diet was higher by 5.0-7.6% compared to the control. The milk of the cows of the experimental groups had a better component composition.

Table 1. The effect of the drug "Sto Ha" in the composition of feed on dairy productivity of cows

Indicator (on average per head)	Group	
	CONTROL	Experience
Gross content of milk 4% fat, kg	2395	2543
Daily value of milk 4% fat:		
Kg	11,9	12,8
% to control	100	107,6
The main composition of milk 4% fat:		
protein, %	3,30	3,48
milk sugar, %	4,33	4,52
SOMO, %	8,61	8,78
carotene, µg/kg	148	196
calorie content, kcal	736	750

Effect on birds. The effect of the drug "Sto Ga" on the body of chickens of the White Leghorn Cross 288 breed and their productivity was investigated in three series of experiments. The drug "Sto Ha" was administered every morning for 30 days in a mixture with dry feed at the rate of 10 mg/kg of live weight. The drug "Sto Ha" had a positive effect on the hematopoietic function: the number of erythrocytes, leukocytes and hemoglobin was higher in the chickens of the experimental groups. They also had a higher level of alkaline blood reserve, indicators of protein, lipid, carbohydrate phosphorus-calcium metabolism [1,5]. Histological examinations of the liver, kidneys, muscles, reproductive organs, and bone tissue did not reveal inflammatory or degenerative changes. The intensification of metabolic reactions in the body of birds that received the drug "Sto Ga" led to an increase in live weight (by 5.14-15.80%) and laying of experienced groups of chickens with good quality of eggs and meat. During the corresponding periods of observation, the productivity of hens that received the drug "Sto Ha" in the initial period of egg laying was 11.3% higher compared to hens of the control group; during the period of intensive productivity - by 15.9%; in the preparatory period - by 31.2% [1,4]. In addition, humic acids suppress the growth of pathogenic bacteria and molds, reducing the level of mycotoxins, improve protein digestion and assimilation of calcium, trace elements and nutrients. The result is high fatness and immunity to diseases.

Conclusions. At the current stage, in the practice of animal husbandry and poultry farming, in order to increase the non-specific natural resistance of the organism and the productive qualities of animals and poultry, a number of biologically active substances are used, especially of natural origin, among which is the preparation obtained from peat - Sto Ha - sodium humate or potassium. The drug activates the enzymatic systems of protein and carbohydrate complexes, metabolism, redox processes, oxygen consumption, increases non-specific resistance, feed digestibility coefficient, is used not only to increase productivity, but also for the

prevention of treatment of pulmonary and gastrointestinal diseases of animals and poultry.

Humic feed additive increases the resistance of the body of young animals and adult livestock and poultry to various diseases, normalizes metabolism, activates the synthesis of proteins, carbohydrates, and enzymes in the body, which contributes to increasing their productivity and preservation [5,6]. The introduction of sodium humate in the diet at a dose of 300 mg/kg contributed to an increase in live weight, a decrease in feed consumption per 1 kg of animal growth.

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ЗАСТОСУВАННЯ КОРМІВ НА ОСНОВІ ГУМІНОВИХ РЕЧОВИН

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Розглянуто використання гумінових препаратів в якості кормової добавки для сільськогосподарських тварин, теоретичному обґрунтуванні та визначенні норм використання гумату натрію в годівлі сільськогосподарських тварин, визначити економічну ефективність застосування різних доз гумату натрію в годуванні тварин. Висока біологічна активність, широкий спектр дії, антитоксичні властивості, нешкідливість і можливість застосування препарату з будь-яким видом кормів створюють передумови для його широкого застосування.

Ключові слова: гумінові кислоти, мікроелементи, біологічна активність, стимулятор, обмін речовин.