

ВЛИЯНИЕ МИКРОБИАЛЬНЫХ ПРЕПАРАТОВ ВЕТОМ 1 И ВЕТОМ 20.76 НА ИНТЕНСИВНОСТЬ РОСТА ГУСЕЙ

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Представлены результаты исследования влияния новых микробиальных препаратов на динамику абсолютной массы и среднесуточного пророста гусей. В научном эксперименте применяли пробиотики Ветом 20.76 на основе хищного гриба *Arthrobotrys oligospora* и Ветом 1 на основе живых спорообразующих бактерий штамма *Bacillus subtilis* DSM 32424, обладающих противогельминтным, противовирусным и противогрибковым действием. По принципу пар-аналогов сформировали одну контрольную и четыре опытных групп по 10 гусят в каждой в возрасте 1 мес. Гусят опытных групп применяли препарат Ветом 20.76 в различной дозировке: молодняку 1-й опытной группы – 0,5 мкл/кг живой массы тела, 2-й – 1 мкл/кг, 3-й – 2 мкл/кг. Гусят 4-й опытной группы давали Ветом 1 в дозе 50 мг/кг живой массы тела. Оба препарата применяли в утренние часы с водой ежедневно один раз в сутки в течение 30 сут. Гусям контрольной группы указанные препараты не назначали. Установлено, что препараты Ветом 20.76 в дозах 0,5; 1 и 2 мкл/кг массы тела и Ветом 1 в дозе 50 мг/кг массы тела обладают ростостимулирующим действием при применении его гусят в течение 30 сут. Интенсивность роста опытной птицы зависела от дозы применяемых препаратов. Оптимальные результаты получены при применении Ветома 20.76 в дозе 2 мкл/кг массы тела и Ветома 1 в дозе 50 мг/кг массы тела один раз в сутки на протяжении 30 сут. Среднесуточный прирост живой массы опытных гусей повышался в 3-й, 4-й опытных группах на 5,24 и 20,60% в первые 15 сут эксперимента и на 24,8 и 44,64% в период последействия препарата.

Ключевые слова: пробиотик, Ветом, гуси, масса тела, среднесуточный прирост

EFFECT OF MICROBIAL PREPARATIONS VETOM 1 AND VETOM 20.76 ON GROWTH INTENSITY OF GEES

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The results of the study on the effect of new microbial preparations on the dynamics of the absolute weight and average daily gain of geese are presented. In the scientific experiment, probiotics Vetom 20.76 based on the predatory fungus *Arthrobotrys oligospora* and Vetom 1 on the basis of live spore-forming bacteria of the *Bacillus subtilis* DSM 32424 strain, which have anthelmintic, antiviral and antifungal effects, were used. One control and four experimental groups of 10 goslings each at the age of 1 month were formed according to the principle of analog pairs. The goslings of the experimental groups received Vetom 20.76 in various dosages: young birds of the 1st experimental group – 0.5 µl/kg of live body weight, the 2nd – 1 µl/kg, the 3rd – 2 µl/kg. Goslings of the 4th experimental group were given Vetom 1 at a dose of 50 mg/kg of live body weight. Both drugs were given in the morning with water, once a day for 30 days. These drugs were not prescribed to geese of the control group. It was established that Preparations Vetom 20.76 in doses of 0.5; 1 and 2 µl/kg

of body weight and Vetom 1 at a dose of 50 mg/kg of body weight have a growth-stimulating effect when given to goslings for 30 days. The growth rate of the experimental birds depended on the dose of the drugs used. Optimal results were obtained with the use of Vetom 20.76 at a dose of 2 µl/kg of body weight and Vetom 1 at a dose of 50 mg/kg of body weight once a day for 30 days. The average daily gain in live weight of the experimental geese increased in the 3d and 4th experimental groups by 5.24 and 20.60% in the first 15 days of the experiment and by 24.8 and 44.64% during the aftereffect of the drug.

Keywords: probiotic, Vetom, geese, body weight, average daily gain

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Конфликт интересов

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Conflict of interest

The authors declare no conflict of interest.

INTRODUCTION

Poultry farming is one of the most intensive and dynamically developing branches of the agro-industrial complex. Goose breeding is a highly profitable poultry industry. Increasing productivity and producing environmentally friendly products is a priority in goose breeding. This goal can be achieved by reducing the use of antibiotics, reducing their negative impact on the quality of feed, as well as reducing the impact of harmful environmental factors on the body of the bird [1, 2].

One of the ways to bring about positive changes in the body of the bird is the use of probiotics. They are used in poultry farming as feed additives and biological regulators of metabolic processes in the poultry body. Probiotics stabilize the digestive system, destroy pathogenic bacteria and secrete special enzymes that enable the bird to better absorb nutrients, increase its safety and productivity, and reduce

feed costs per unit of production [3–8]. The use of probiotics of the Vetom series is very promising for the cultivation of poultry, in particular geese^{1–3} [9, 10].

Among probiotics, much attention has recently been paid to new drugs based on predatory apathogenic fungi (*Duddingtonia flagrans* and *Arthrobotrys oligospora*), which have anthelmintic, antiviral and antifungal effects. The preparations based on the *Duddingtonia flagrans* and *Arthrobotrys oligospora* strains are classified as probiotics [11, 12].

The aim of the study was to study the effect of microbial preparations Vetom 20.76 based on the predatory fungus *Arthrobotrys oligospora* and Vetom 1 based on *Bacillus subtilis* on the growth rate of geese.

MATERIALS AND METHODS

The research and production experience was carried out on the basis of the physiological

¹Shevchenko A.I., Shevchenko S.A. Preservation of poultry at different age periods with the use of heterobiotics, homobiotics and synbiotics // Actual problems of agriculture in mountainous territories: materials of the VI Intern. scientific-practical conf. 2017. Pp. 286–291.

²Utkina R.G., Nozdryn G.A. Preclinical studies to determine the toxicity class of the new probiotic drug Vetoma 20.76 // Actual problems of the agro-industrial complex: collection of articles of the scientific-practical conf. of teachers, graduate students, undergraduates and students of the Novosibirsk State Agrarian University. Novosibirsk, 2018, Pp. 128–132.

³Utkina R.G. Current state and future trends in the creation of pharmacological preparations based on predatory fungi // Agricultural sciences: materials of the 57th Intern. scientific. student conf. Novosibirsk, 2019, p. 58.

yard of the RPC “Research Center” (Koltsovo settlement, Novosibirsk region).

Throughout the experiment, the bird was kept in floor cages on a deep permanent bed under natural conditions and light. When feeding, we used “Delta Feeds” compound feed for poultry from “BioPro”. The keeping and feeding of the poultry corresponded to the sanitary and hygienic standards.

The studies were carried out on goslings at the age of 1 month. Four experimental groups and one control group, 10 goslings in each, were formed according to the principle of analogue pairs. Before the start of the experiment, the goslings were quarantined for 2 weeks.

Goslings of the 1-3rd experimental groups were given Vetom 20.76 daily with water once a day for 30 days at a dose of 0.5; 1 and 2 μ l / kg of live body weight, respectively. Young animals of the 4th experimental group Vetom 1 were given daily once a day for 30 days at a dose of 50 mg / kg of live body weight. The poultry of the control group were not prescribed these drugs.

The determination of the absolute mass was carried out on an electronic balance before the start of the experiment, on the 15th, 30th and 60th days. The average daily gain was calculated as a quotient of the difference in mass and the period between their measurements.

RESULTS AND DISCUSSION

Before the experiment, the absolute weight of geese in the experimental and control groups had no significant differences (see Table 1).

On the 15th day of the experiment, the median of the increase in the absolute weight of the geese of the 1st to 4th experimental groups was higher in relation to the control by 13.09 (p < 0.01); 8.33; 8.96 and 12.94, respectively. On the 30th day of the experiment, the increase in the absolute weight of the geese of the 1st-4th experimental groups was higher than that of the analogs from the control group, by 4.25; 2.87; 4.02; 6.78% respectively. On the 60th day, the median of the absolute weight gain in the geese of the 2nd experimental group was 2.44% lower in relation to the control, in the geese of the 1st, 3rd and 4th experimental groups it was higher by 4.88; 9.76 and 12.2%, respectively.

The growth rate of geese increased with the use of the drug. Mass accumulation was recorded using Vetom 20.76 at a dose of 2 μ l / kg of live weight and Vetom 1 at a dose of 50 mg / kg of live weight (see Fig. 1).

According to the results of the study, the average daily gain in live weight of geese in the experimental groups increased (see Table 2).

From the 1st to the 15th day, the median of the average daily gain in the geese of the 1st and 2nd experimental groups was lower in rela-

Табл. 1. Динамика абсолютной массы гусей, г
Table 1. Dynamics of the absolute mass of geese, g

Group	24-hour period		
	15-th	30-th	60-th
Control	2635,00 $\pm$ 67,85	3480,00 $\pm$ 119,45	4100,00 $\pm$ 210,45
Experimental: 1-st	2980,00 $\pm$ 69,92**	3628,00 $\pm$ 90,01	4300,00 $\pm$ 134,78
2-nd	2854,50 $\pm$ 90,97	3580,00 $\pm$ 107,36	4000,00 $\pm$ 203,27
3-rd	2871,00 $\pm$ 114,38	3620,00 $\pm$ 114,67	4500,00 $\pm$ 240,21
4-th	2976,00 $\pm$ 117,94	3716,00 $\pm$ 124,86	4600,00 $\pm$ 275,05

Here and in table. 2:

*p < 0,05.

**p < 0,01.

***p < 0,001.

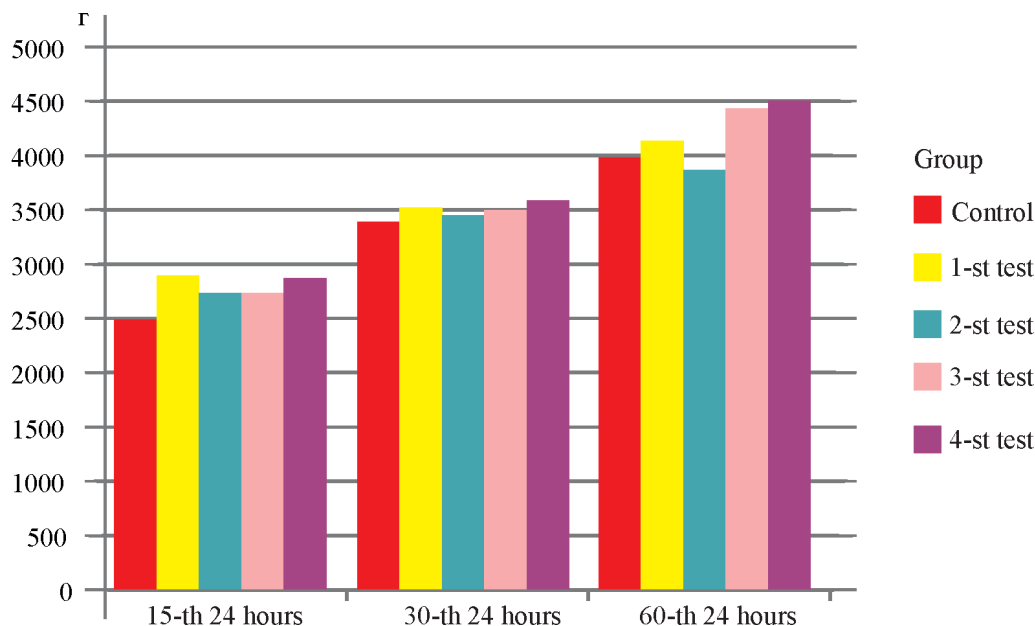


Рис. 1. Динамика абсолютной массы гусей

Fig. 1. Dynamics of the absolute mass of geese

Табл. 2. Среднесуточный прирост живой массы гусей, г

Table 2. Average daily gain in live weight of geese, g

Group	24-hour period			
	1–15-th	15–30-th	30–60-th	1–60-th
Control	99,20 ± 2,36	61,33 ± 2,87	20,83 ± 5,50	50,33 ± 2,93
Experimental: 1-st	98,90 ± 1,87	45,87 ± 2,10***	26,27 ± 2,28	49,20 ± 1,43
2-nd	93,73 ± 2,82	52,83 ± 2,99	14,47 ± 3,60	44,73 ± 2,04
3-rd	104,40 ± 6,85	51,27 ± 4,02 *	26,00 ± 4,75	52,15 ± 3,81
4-th	119,63 ± 4,44**	51,47 ± 2,38*	30,13 ± 4,46	57,25 ± 3,44

tion to the control - 0.3 and 5.51%, respectively, in the geese of the 3rd and 4th experimental groups. groups - higher by 5.24 and 20.60% ($p < 0.01$). From the 15th to the 30th day, the median of the average daily gain in geese from the 1st to 4th experimental groups was lower in relation to the control by 25.22 ($p < 0.001$); 13.86; 16.41 ($p < 0.05$) and 16.09% ($p < 0.05$), respectively. From the 30th to the 60th day, the median of the average daily gain in the geese of the 2nd experimental group was lower in relation to the control by 30.56%, respectively, in the geese of the 1st, 3rd and 4th experimental

groups - higher by 26.08; 24.8 and 44.64% respectively.

Over the entire period of the experiment from the 1st to the 60th day, the median of the average daily gain in geese of the 3rd and 4th experimental groups was higher in relation to the control by 3.63 and 13.76%, respectively, in the geese of the 1st and The 2nd experimental group is 2.24 lower; 11.11%.

In the first 15 days of the experiment, an increase in the average daily gain in geese occurred both with the introduction of Vetom 20.76 at a dose of 2 μ l / kg of live weight, and

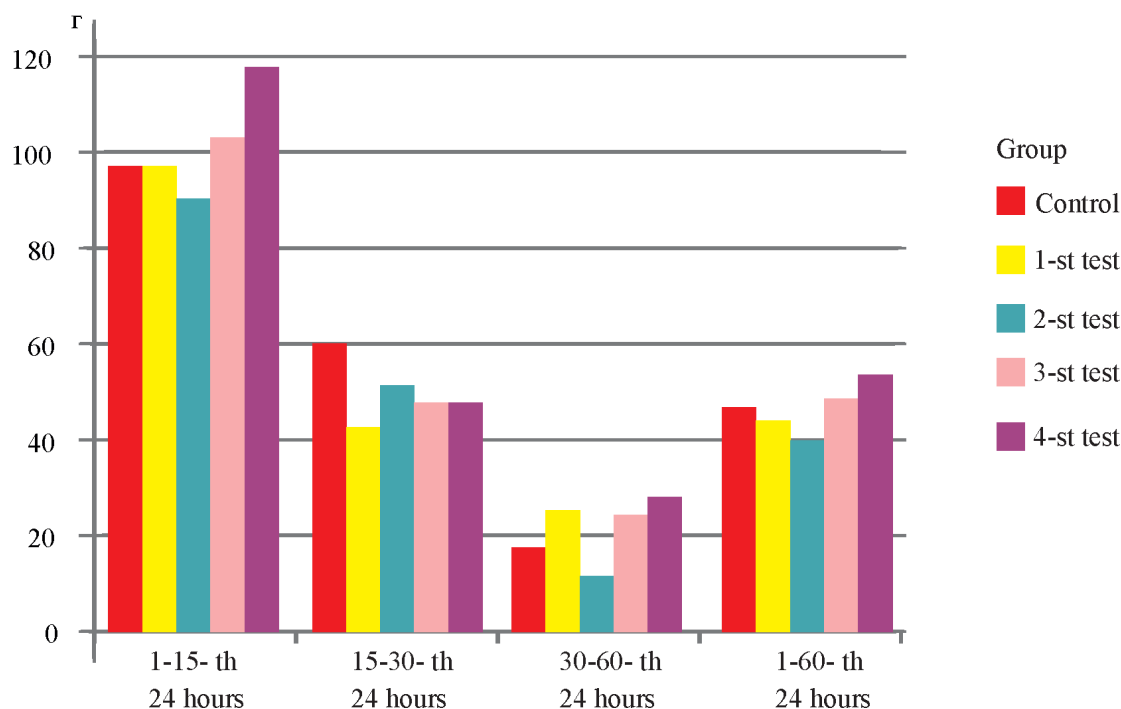


Рис. 2. Динамика среднесуточного прироста гусей, г

Fig. 2. Dynamics of the average daily gain of geese, g

with the use of Vetom 1 at a dose of 50 mg / kg of live weight (see Fig. 2). Throughout the entire experiment and during the aftereffect of the drug (30-60th day), a pronounced average daily increase was noted with the introduction of Vetom 1 at a dose of 50 mg / kg of live body weight.

CONCLUSIONS

1. Preparations Vetom 20.76 in doses of 0.5; 1 and 2 μ l / kg of body weight and Vetom 1 at a dose of 50 mg / kg of body weight have a growth-stimulating effect when applied to goslings for 30 days.

2. The growth rate of the experimental bird depended on the dose of the drugs used. Optimal results were obtained when using Vetom 20.76 at a dose of 2 μ l / kg of body weight and Vetom 1 at a dose of 50 mg / kg of body weight once a day for 30 days.

3. The average daily gain in live weight of the experimental geese increased in the 3rd and 4th experimental groups by 5.24 and 20.60% in the first 15 days of the experiment and by 24.8 and 44.64% during the aftereffect of the drug.

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