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**МОНОФИТОБИОТИК НА ОСНОВЕ ЭКСТРАКТА ГОРЧИЦЫ
САРЕПТСКОЙ КАК АЛЬТЕРНАТИВА КОРМОВЫМ АНТИБИОТИКАМ
ПРИ ВЫРАЩИВАНИИ ЦЫПЛЯТ-БРОЙЛЕРОВ**

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**MONOPHYTOBIOTIC BASED ON SAREPTA MUSTARD EXTRACT AS AN
ALTERNATIVE TO FODDER ANTIBIOTICS IN BROILER CHICKEN
GROWING**

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Ужесточение правил, касающихся использования стимуляторов роста в животноводстве и повышение потребительского спроса на продукты данной отрасли, выращенные без антибиотиков, поспособствовали поиску альтернатив антибиотикам. Исследование показало, что использование монофитобиотика на основе экстракта из семян горчицы сарептской в дозе 70 мг/кг корма является эффективным для замены кормового антибиотика при выращивании цыплят-бройлеров.

The use of feed antibiotics has been a common and well-established practice in animal husbandry, which has contributed to the intensification of this branch of agriculture since the discovery of antibiotics in the 1920s. The search for alternatives to antibiotics in animal production has intensified in recent years due to tightening regulations regarding the use of growth promoters and increased consumer demand for animal products grown without antibiotics. Ideal alternatives to antibiotics should have the same positive effects as antibiotics. They should ensure optimal performance of the animals and increase the availability of nutrients, have a positive effect on feed conversion and growth [3].

In recent years, many scientists and practitioners working in the field of animal nutrition have turned their attention to phytobiotics, natural bioactive compounds derived from plants and included in animal feed to increase productivity [4, 7, 8].

Experimental studies to determine the effectiveness of the use of a monophytobiotic based on an extract of mustard seeds (*Brassica juncea*) in growing

broiler chickens were carried out in an experimental poultry house of an industrial poultry farm in the Kemerovo region-Kuzbass on broiler chickens of the ISA F15 cross.

To test the extract using a cage system for growing poultry using the method of similar groups, one control and five experimental groups of broiler chickens at a day old were formed, taking into account sex and body weight. The number of birds in each group was 35. When forming groups, the provisions of generally accepted methods were taken into account (Fisinin V.I. et al., 2013; Lukashenko V.S., Kavtarashvili A.Sh. et al., 2015).

During the scientific and economic experiment, the chickens of the control group were fed a complete mixed feed in the phases of growing poultry with a feed antibiotic. Broilers of the 1st-5th experimental groups, in addition to feed that did not contain feed antibiotics, were given an extract of Sarepta mustard in doses of 10, 30, 50, 70, 90 mg/kg of feed.

The extract is produced by water-ethanol extraction using vacuum drying at low temperatures.

The amount of biologically active compounds in the extract meets the requirements of regulatory documents (TU 930000 - 1899178 - 002 - 2018).

The doses of the extract introduction into the composition of complete feed for broiler chickens were calculated according to the main biologically active compounds in accordance with the provisions of the methodology of V.A. Tutelyan, B.P., Sukhanova (2008).

Observations on broiler chickens and accounting of experimental data were carried out for 42 days. The extracts were excluded from feed for broiler chickens 7 days before slaughter.

The growth rates of broiler chickens in the course of the research were studied by determining the body weight of the entire number of chickens by individual weighing at the beginning and end of the experiment, as well as the absolute and average daily body weight gains according to generally accepted methods. Daily feed consumption by poultry was taken into account to determine the cost of feed per 1 kg of body weight gain and the death of chickens to calculate the safety of poultry from the initial population for the entire period as a whole, guided by generally accepted methods.

The resulting digital material was processed by standard statistical methods using the IBM program "SPSS Statistics Version 22".

The results of using the extract from the seeds of Sarepta mustard in the studied doses in feeding broiler chickens are presented in Table 1.

At the end of the experiment (at 42 days of age), an increase in the average body weight was noted in chickens of the 4th experimental group by 3.0%, a slight decrease in broilers of the 1st, 2nd, 3rd and 5th experimental groups – by 0.4, 2.0, 0.7 and 1.0%, respectively, compared with the control. The absolute and average daily weight gain of broiler chickens when using Sarepta mustard extract in their feeding was greater in the 4th experimental group compared to the control group by 3.0%, less in broiler chickens of the 1st experimental group – by 0.4%, 2nd experimental group – by 2.0%, 3rd experimental group – by 0.7%, 5th experimental group – by 1.0% (table 2). Accounting for the consumption of compound feed by broiler chickens (table 2)

showed that broilers of the 1st-4th experimental groups consumed less feed per head by 0.2, 0.9, 2.2 and 2.4% during the experiment period, 5th experimental group – more by 0.7% compared with analogues from the control group.

Table 1 - Growth indicators of broiler chickens when fed extract of mustard sarepta, g

Indicator	Group					
	Control	1st experimental	2nd experimental	3d experimental	4th experimental	5th experimental
Body weight at the beginning of the experiment	46,31±0,08	46,26 ± 0,09	46,36 ± 0,11	46,19 ± 0,12	46,11 ± 0,13	46,23 ± 0,16
Body weight at the end of the experiment	2765,72 ± 52,90	2754,91 ± 58,07	2710,74 ± 50,55	2746,65 ± 52,52	2847,91 ± 39,92	2738,20 ± 51,39
Absolute growth	2719,38±52,91	2708,68 ± 58,08	2664,40 ± 50,57	2700,46 ± 52,53	2801,76 ± 39,92	2691,97 ± 51,36
Average daily gain	64,75±1,26	64,49±1,38	63,44±1,20	64,30±1,25	66,71±0,95	64,09±1,22

The inclusion of sarepta mustard extract at doses of 50 and 70 mg/kg of feed in feed for broiler chickens led to a decrease in its cost per unit of production (in the 3rd and 4th experimental groups) – by 1.2 and 5.3% , at doses of 30 and 90 mg/kg of feed – to increase (in the 2nd and 5th experimental groups) – by 1.2 and 1.8% compared with the control group.

It should be noted that the safety of broiler chickens of the 3rd experimental group with the introduction of mustard extract at a dose of 50 mg/kg of feed was at a high level and amounted to 100.0%, which is 2.9% more compared to the control. The safety of broilers in the control, 1st, 4th experimental groups was 97.1%, in the 2nd experimental group it was 2.8% less compared to the control (table 2).

Table 2 – Feed costs and safety of experimental broiler chickens when fed with Sarepta mustard extract

Indicator	Group					
	Control	1st experimental	2nd experimental	3d experimental	4th experimental	5th experimental
Feed consumption for the period of experience, kg	160,90	156,00	157,80	157,50	156,81	162,01
Feed consumption per 1 head, kg	4,60	4,59	4,56	4,50	4,49	4,63
Feed costs per 1 kg of growth, kg	1,69	1,69	1,71	1,67	1,60	1,72
Safety, %	97,1	97,1	94,3	100,0	97,1	100,0

The calculation of the main zootechnical indicators showed that the use of a monophytobiotic based on an extract from the seeds of Sarepta mustard at a dose of 70 mg/kg of feed is effective for replacing feed antibiotics when growing broiler chickens.

Список литературы

1. Методика проведения научных и производственных исследований по кормлению сельскохозяйственной птицы. Молекулярно-генетические методы определения микрофлоры кишечника / И. А. Егоров, В. А. Манукян, Т. Н. Ленкова и др. – Сергиев Посад: ВНИТИП, 2013. – 52 с.
2. Методика проведения исследований по технологии производства яиц и мяса птицы / В. С. Лукашенко, А. Ш. Кавтарашвили, И. П. Салеева [и др.].; под общ. ред. В. С. Лукашенко и А.Ш. Кавтарашвили. - Сергиев Посад: ВНИТИП, 2015. - 103 с.
3. Мирошина, Т. А. Альтернативы кормовым антибиотикам в животноводстве / Т. А. Мирошина // Научное обеспечение животноводства Сибири: материалы V международной научно-практической конференции, Красноярск, 13–14 мая 2021 года / Красноярский научно-исследовательский институт животноводства - обособленное подразделение ФГБНУ «Федеральный исследовательский центр «Красноярский научный центр Сибирского отделения Российской академии наук». – Красноярск, 2021. – С. 43-47. – EDN QUXISZ.
4. Рассолов, С. Фитохимические вещества для благополучия поросят-отъемышей / С. Рассолов, Т. Мирошина // Современные тенденции сельскохозяйственного производства в мировой экономике : материалы XIX международной научно-практической конференции, Кемерово, 08–09 декабря 2020 года. – Кемерово: Кузбасская государственная сельскохозяйственная академия, 2020. – С. 59-63. – EDN SOKKHS.
5. Тутельян, В. А. Современные подходы к обеспечению качества и безопасности биологически активных добавок к пище / В. А. Тутельян, Б. П. Суханов // Московские аптеки. – 2008. – № 4. – С. 5-6.
6. Фитобиотические кормовые добавки на основе экстрактов лекарственных растений. Технические условия: ТУ 930000 – 1899178 – 002 – 201. – Кемерово 2018. – 17 с.
7. Gadde U Alternatives to antibiotics for maximizing growth performance and feed efficiency in poultry: a review / Gadde U, Kim WH, Oh ST, Lillehoj HS // Anim Health Res Rev .- 2017.- Vol. 18. – P. 26–45
8. Lillehoj HS Immune modulation of innate immunity as alternatives-to-antibiotics strategies to mitigate the use of drugs in poultry production / Lillehoj HS, Lee KW // Poult Sci. – 2017. – Vol. 91. – P. 1286–1291

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ФИТОБИОТИКИ КАК АЛЬТЕРНАТИВА КОРМОВЫМ АНТИБИОТИКАМ В ЖИВОТНОВОДСТВЕ

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