



Effects of the Natural Adaptogen “Blackfeed Plus” on the Broiler Chickens of the Industrial Cross “Ross 308”

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Abstract

The presence of mycotoxins in feed is one of the main feed stresses. The aim of the study was to evaluate the effect of the natural adaptogen "Blackfeed Plus" in the diets of broiler chickens of the industrial cross "Ross 308". The use of the Blackfeed Plus® complementary nutrition complex had a positive effect on the state of natural resistance of broiler chickens against the background of the weak genetic potential of chickens after incubation. The inclusion of the Blackfeed Plus® supplementary nutrition complex in feed for broiler chickens reduced the feed conversion compared to the control. As a result of the research, a positive effect of the Blackfeed Plus feed additive (at a dosage of 1.0 kg/t of compound feed) on the productivity of broiler chickens of the Ross 308 cross was established. According to the test results, it is possible to recommend the use of the Blackfeed Plus supplementary nutrition complex in broiler poultry farms.

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1 Introduction

The problem of mycotoxicosis is relevant for most poultry farms. Worldwide, annual losses from reduced productivity amount to hundreds of millions of dollars. At present, the real danger of mycotoxins for humans and animals has been indisputably proven. The economic damage from exposure to mycotoxins is determined by high mortality and forced slaughter of animals, a significant decrease in productivity, disruption of reproduction, the cost of medical and preventive measures, the culling of affected grain and other feed, as well as livestock products (Diaz D.E. et al, 2013; Krska R. et al, 2012; Jang, I.S. et al, 2007). With the advent of molecular biological methods for studying microflora, it has been proven that mycotoxins suppress beneficial representatives of the biocenosis, such as cellulolytics, which break down feed fiber, and bacteria that synthesize volatile fatty acids. This causes intestinal colonization by pathogenic forms (Krska R. et al, 2012; Lan, Y. et al, 2005; Liu M., et al, 2019; Ren L. Q et al, 2012).

The problem of mycotoxicoses is so important today that it undoubtedly requires the development of justification for a strategy for the prevention and elimination of toxins along the entire chain - from the field to the person (Skladanka J. et al, 2013; Stanley D, 2014; Truong A.D et al, 2015). A common feature of all mycotoxins is their toxicity mostly to animals (Valchev I. et al, 2013; Woncheoul P. et al, 2017; Xue C.Y. et al, 2010). At the same time, the consumption of even a small amount of fungal toxins can lead to disorders of the immune system, a decrease in resistance, and infectious diseases (Ivanov, A.V. et al., 2012).

Scientists from different countries are working to monitor mycotoxins, to develop methods for detecting mycotoxins and their metabolites, as well as their biomarkers.

A study of the toxicokinetics, the bioavailability of T-2 toxin and the effect on nutrient absorption in broiler chickens are presented in the works of scientists from Asia, Europe and America (Valchev I. et al, 2013; Woncheoul P. et al, 2017; Xue C.Y. et al, 2010).

Thus, the actual direction is the search for new feed components (adsorbents, toxin neutralizers) with a high potential for binding and destruction of mycotoxins in the digestive tract of poultry.

The purpose of the research was to assess the effect of the supplementary nutrition complex "Blackfeed Plus®" on the productive performance of broiler chickens.

2 Method

To conduct the experiment, control and experimental groups of broiler chickens of the Ross-308 cross were formed (Figure 1).



Figure 1: Experimental group of broiler chickens of the cross "Ross-308"

The experimental group was given a supplementary nutrition complex "Blackfeed Plus®" as part of the main diet (OR) in the amount of 1.0 g. per 1 kg. feed (0.1%), the control group received a diet in accordance with the recommendations for cross-country.

Both groups were in the same conditions of keeping (outdoor), feeding and watering, at the same temperature and air humidity (Fisinin et al, 2000, Egorov et al., 2019). The experience scheme is in Table 1

The content of normalized mycotoxins (fumonisin, T-2 toxin, aflatoxin, zearalenone, deoxynivalenol and ochratoxin) in compound feeds was not determined at the laboratory level; however, it is impossible to exclude their presence in the feed, because in its preparation, grain from the previous year's harvest was used. The content of mycotoxins was determined organoleptically within the MRL.

The Blackfeed Plus supplementary nutrition complex used in the feeding experiment is a thermally modified shungite mineral in the form of grains, a fraction of 0.3-0.7 mm (Figure 2).

Table 1: Scheme of experience

Indicators	Control	Experienced
Withdrawal percentage	79.5%	70.7%
Number of heads, pieces	25 265	25 315
Date of boarding	08/14/2022	08/15/2022
Date of slaughter	09/23/2022	09/24/2022
Features of feeding	Basic ration (BR)	OP + 1.0 g Blackfeed Plus® per 1 kg. compound feed (0.1%)



Figure 2: Supplementary nutrition complex "Blackfeed Plus®"

The absolute increase in the live weight of broiler chickens was taken into account weekly. The safety of broiler chickens - by accounting for the fallen young and counting the number of heads. Feed consumption per 1 head for growing periods was determined by weighing the feed given. The supplementary nutrition complex "Blackfeed Plus®" was introduced into the mixed fodder by the method of stepwise mixing.

When analyzing the test results, we took into account a significant difference in the percentage of chickens hatched during incubation: from the value of this indicator when setting up the tests, it follows that the chickens of the control group were incubated from eggs of laying hens of the age of 290-310 days, the chickens of the experimental group - of the age of 340 days and older, therefore Initially, the degree of viability of chickens (genetic potential) of the experimental group was lower compared to the control group.

3 Result and Discussion

The productivity of broiler chickens for the period of research is presented in Table. 2. The data in the table indicate that the average weight of one head of broiler chickens at slaughter in the experimental group (2436 gr.) was higher by 12.3% compared to the control (2047 gr.). The average daily gain in the control group was 50 grams, in the experimental group - 60 grams. or by 12.9%. Safety in the control (95.7%) was higher than in the experiment (93.6%); a possible reason for the lower survival may be the low initial genetic potential of the chickens of the experimental group compared to the control group. Nevertheless, the use of the Blackfeed Plus® supplementary nutrition complex provided a greater increase in the average weight of one head and, accordingly, the overall yield from the experimental poultry house against the background of lower livestock safety. It can be assumed that without the use of a mycotoxin adsorbent, the safety of the livestock of the experimental group would be below the level of 90-92%.

Table 2: Productivity of broiler chickens of the Ross-308 cross
P<0,05

Indicators	Control	Experienced
Landing weight, gr.	44	45
Starting weight of everything, kg.	1111.7	1238.2
Number of feeding days	40	40
Preservation	95.7%	93.6%
Total live weight at slaughter, kg	49460.0	62610.0
Total output, kg.	40794.1	52009.3
Product yield, %	82.5%	83.1%
Average daily gain, gr.	50.0	60.0
Live weight at slaughter, kg.	2047.0	2436.0

Feed conversion ratio, feed conversion ratio and the European Productivity Index are some of the producers in broiler chicken production. These factors are widely used to describe and evaluate the economic efficiency of factory theft. The above factors caused in the Table. 3.

Table 3: Feed conversion rates and European productivity index

Indicators	Control	Experienced
Total feed consumption, kg.	44	45
Feed per head per day, gr.	1111.7	1238.2
Feed for the period per 1 head, kg.	40	40
Feed conversion per live weight	965874	1166294
European Productivity Index (EBI)	95.7%	93.6%

Feed intake in broiler chickens of the experimental group during the testing period was higher than in the control group by 11%: 3.92 kg. against 3.35 kg., which indicates a favorable effect on the metabolism of broiler chickens, and, consequently, more efficient use of feed nutrients. Moreover, the significantly higher average daily weight gain of the treatment group chicks resulted in a 1.2% lower feed conversion rate (1.69) compared to the control group chicks (1.71), which in turn led to an increase in the European Productivity Index (EBI).) by 33.5 points.

4 Conclusion

In feeding broiler chickens, in order to reduce the effect of mycotoxins in compound feeds, it is advisable to use the Blackfeed Plus® supplementary nutrition complex at an input rate of 1.0 g. per 1 kg. compound feed (0.1%). Feeding the supplementary nutrition complex "Blackfeed Plus®" provided in the experimental groups of broiler chickens the zootechnical required growth rate at a given age.

The use of the Blackfeed Plus® complementary nutrition complex had a positive effect on the state of natural resistance of broiler chickens against the background of the weak genetic potential of chickens after incubation. The inclusion of the Blackfeed Plus® supplementary nutrition complex in feed for broiler chickens reduced the feed conversion compared to the control.

5 Availability of Data and Material

Data can be made available by contacting the corresponding author.

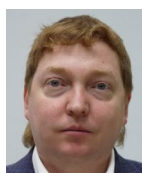
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