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О.В. Горелик[1, 2] ✉,
С.Ю. Харлап[1],
А.А. Струин[3],
А.А. Белооков[4],
О.В. Белоокова[4],
Е.В. Чухутин[4]

[1] Уральский государственный аграрный университет, Екатеринбург, Российская Федерация

[2] Уральский федеральный аграрный научно-исследовательский центр Уральского отделения Российской академии наук, Екатеринбург, Российская Федерация

[3] ПК «УРАЛБИОСИНТЕЗ», Екатеринбург, Российская Федерация

[4] Южно-Уральский государственный аграрный университет, Троицк, Российская Федерация

✉ *olgao205en@yandex.ru*

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Особенности весового роста цыплят-бройлеров при использовании биотехнологической добавки «Арес»

РЕЗЮМЕ

Основные затраты при производстве продукции животноводства, в том числе в птицеводства, приходится на корма, поэтому повышение их переваримости, применение комбикормов из дешевого отечественного сырья без снижения питательной ценности при полном обеспечении птицы необходимыми для нормальной жизнедеятельности веществами актуально. Возможно это за счет применения новых кормовых добавок, включающих биологически активные вещества. В результате исследований установлено, что все цыплята-бройлеры показали высокие результаты при их выращивании. Наибольшей живой массы достигли цыплята из II опытной группы, которые получали препарат «Арес» в количестве 0,6 г/кг комбикорма. Более низкие показатели оказались у цыплят из I и III опытных групп, однако они по живой массе в возрасте 36 дней превосходили нормативные показатели по кроссу и результаты, полученные в контрольной группе. Прослеживается повышение среднесуточных приростов в первой и третьей группах в течение всего периода выращивания, и видно некоторое их снижение во второй группе в период с 24-го до 31-го дня с резким повышением в последний период с 31-го до 36-го дня.

Ключевые слова: птицеводство, цыплята, комбикорм, живая масса, пищевая ценность, «Арес»

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Olga V. Gorelik[1, 2] ✉
Svetlana Yu. Harlap[1],
Anatoly A. Struin[3],
Alexey A. Belookov[4],
Oksana V. Belookova[4],
Evgeny V. Chuhutin[4]

[1] Ural State Agrarian University, Yekaterinburg, Russian Federation

[2] Ural Federal Agrarian Research Center of the Ural Branch of the Russian Academy of Sciences, Yekaterinburg, Russian Federation

[3] Production center «Uralbiosintez», Yekaterinburg, Russian Federation

[4] South Ural State Agrarian University, Troitsk, Russian Federation

✉ *olgao205en@yandex.ru*

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Features of broilers live weight gain in case of using the biotechnological additive “Ares”

ABSTRACT

The main costs of livestock production, including poultry farming, are related with the feed. Therefore it is very relevant to increase digestibility of feed, apply compound feeds from cheap raw materials produced domestically without reducing of nutritional value, and fully provide the poultry with substances necessary for their normal life. It is possible to achieve with the application of new feed additives, including biologically active substances. As a result of the research it was found that all broiler chickens showed high parameters of body condition during the boilers growing. The chickens from the II experimental group, which received the additive “Ares” in amount of 0.6 g/kg of feed, showed the highest live weight gain. Lower values were observed among the chickens of I and III experimental groups. However, in terms of live weight gain at the age of 36 days, these chickens exceeded the normal value parameters of the cross and the results obtained in the control group. The increase in the average daily weight gains in the first and third groups was observed throughout the entire period of fattening, and a slight decrease was observed in the second group in the period from 24th to 31th day with a sharp surge of weight gain in the last period from 31th to 36th day.

Key words: poultry farming, chickens, feed, live weight, nutritional value, “Ares”

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Введение / Introduction

The food security in any country poses big challenges for farmers to increase production volumes and improve the quality of agricultural products, including the products of animal origin [1, 2].

Poultry is a stable and dynamically developing branch of animal husbandry. The importance of poultry farming for the national economy is determined by the fact that this industry is the sphere of the earliest maturing livestock farming, which makes it possible to get a large amount of valuable food products – eggs and meat – in short terms. Meat of broiler chickens is easy to digest; moreover it features a high content of all vitally necessary substances. Therefore, the chicken meat food products are classified as dietary [3, 4].

The main costs in livestock food production, including poultry farming, are related to feed. So, increasing feed digestibility, application of mixed feed made of cheap domestic raw materials without reducing nutritional value, complete provision of chickens with substances necessary for normal life is one of ways to reduce the costs. It's achievable with the application of new feed additives, including biologically active substances and enzymes that increase the digestibility of feed nutrients. In general these feed additives include prebiotics and probiotics [5–10].

Moreover, in recent years the industry has encountered the urgent issue of reducing the biological load on poultry by reducing and eventually stopping the usage of antibiotics, including feed antibiotics. This also poses the problem of substitution of antibiotics with new substances with the same properties as antibiotics, but without their negative impact on the quality of the obtained food product [11–14]. Biotechnological preparations have similar properties.

The study of effect of the biotechnological additive "Ares" on growth and body development of broiler chickens is relevant and has practical value nowadays.

Материалы и методы / Materials and methods

The «Uralbiosintez» company (Yekaterinburg, Russia) substantiated and developed the combined biotechnological additive «Ares» based on metabolites and specially selected registered own strains, characterized by a high level of production of biologically active substances. As part of the biotechnological additive «Ares»: protein-polysaccharide complex, proteins, free amino acids, vitamins, interferon, proteolytic and amylolytic compounds and other components.

The cross Koob 500 of broiler chickens were taken as the objects of research. The scientific and production experiment was held in the conditions of the poultry house of the educational and experimental farm of the Federal State Budgetary Educational Institution of Higher Education "Ural State Agrarian University".

The poultry was divided into 4 groups, 250 chickens in each group.

The livestock was divided according to the principle of analogues, taking into account the origin of the poultry, age, health status and live weight. The poultry of the control group (group 4) received a general mixed farm ration (GR) in the form of ready-mixed feed in amount recommended by the manufacturer.

Chickens of the I experimental group were given the additive "Ares", added into the feed in addition to the general ration (GR + 0.3 g of the additive per 1 kg of feed), the chickens of II experimental group got the additive "Ares", added to the feed (GR + 0.6 g of the additive per 1 kg of feed), the III experimental group was given the additive "Ares", added into the water in amount of 0.3 g of the additive per 1 liter per day. The experiment lasted for 36 days. The experimental poultry was raised on the floor mode. The water supply and feed were provided to the poultry manually, and the microclimate parameters were automatically controlled.

The productivity of broiler chickens was studied in terms of live weight gain parameters – the dynamics of live weight gain (as absolute value), average daily and relative gains in live weight by periods.

The values were compared with the technical requirements of the cross poultry standard. Live weight gain was determined by weighing of 10 random chickens in each group.

Результаты и обсуждение / Results and discussion

Feed additive "Ares" is a complex of endometabolites and exometabolites of bacterial cells and purified food zeolite.

The farming of broiler chickens confers great importance to their weight gain. Compared to other breeds, broilers of the Koob 500 cross are larger in their body sizes. They feature rapid growth rate, and they are able to achieve marketable weight from 2 to 2, 7 kg closer to one and a half month of their life, provided with proper feeding and due care.

As a result of the study it was found that during growing of the poultry all broiler chickens showed good results (table 1).

It was found that the highest live weight gain was observed among the chickens from the II experimental group, which received the feed additive "Ares" in amount of 0.6 g/kg of mixed feed. Lower values were found among the chickens from I and III experimental groups; however, in terms of live weight gain at the age of 36 days, they exceeded the normal values for the poultry cross and results obtained in the control group.

In terms of growth periods, the chickens' growth was uneven, and the weight gain values differed significantly among them within the groups. So, in the first 7 days, they showed almost no differences in their process of growth.

Despite the fact that only chickens from I experimental group reached the reference value for growth standard, the difference with the standard (21.3 g) amounted to 7.6 and 30.9 g, or 3.6–14.4%, in the experimental groups and 6.4 g (3.0%) in the control group. The experimental groups II and III showed lower values in comparison with the chickens from the control group by 12.9 and 23.5 g, or by 6.2–11.3% respectively.

Further the chickens of the II experimental group and the chickens of the control group showed higher live weight gain, while the chickens of I and III experimental groups gained less. At the end of growth period the poultry of all experimental groups outnumbered the chickens of the control group by 39.4–294.9 g.

Table 1. **Dynamics of live weight of broiler chickens, g**

Age	Normal value of weight for the poultry cross	I experimental group	II experimental group	III experimental group	Control group
1 day	42–56	49.3	50.1	48.9	49.4
8 days	214	216.2	192.7	183.1	207.6
17 days	646	600.7	668.0	601.3	662.4
24 days	1136	1122.8	1225.6	1071.2	1158.2
31 days	1724	1706.0	1768.4	1645.2	1808.7
36 days	2172	2256.0	2487.7	2232.2	2192.8

The pattern (rhythmicity) of chickens' growth in groups is more visible in changes of absolute weight gain increments among the groups (figure 1).

The growth and live weight gain of the broiler chickens was uneven during the experimental period, which to some extent confirms the existence of the certain weight gain regularity, also called pattern of growth.

The chickens in the I and II experimental groups showed the constant daily increase of absolute weight value from the day 1 till the day 31 (the weight gain was observed in the I and in the III experimental groups until the end of the fattening); in the II experimental group there was a slight decrease in the absolute live weight gain at the age of 24 days till the age of 31 days; after that age the weight gain increased. In the control group in the finishing period from 31st to 36th day the values of absolute growth decreased.

The growth rate of broiler chickens can be estimated by their average daily weight gain. With age the average daily weight gain in live weight fluctuated, increasing and decreasing, according to the changes in absolute weight gain over the periods.

The exception is the control group, where average daily weight gain decreased in the finishing period of their growth from 31st to 36th day.

These changes are clearly shown in the figure (figure 2).

The figure shows an increase in the average daily gains in I and III groups throughout the entire growing period. It also shows a slight decrease in II group within the period from 24th to 31st day with a sharp increase of weight gain in the finishing period from day 31 to day 36. The chickens of the groups I and II showed a gradual increase in the weight gain rate. In contrast to the experimental groups, the control group showed a decrease in average weight daily gains within the period from day 31 to day 36.

Выводы / Conclusion

Based on the foregoing, it is possible to conclude on the following – all chickens showed development and growth in accordance with the general regularities of growth and development, with a gradual decrease in relative weight gains along with their maturing; the highest live weight was found among the chickens from II group, which received the feed additive "Ares" in amount of 0.6 g/kg of feed.

Lower values were found among the chickens of I and II groups, however in terms of live weight at the age of 36 days they exceeded the normal value of weight for the poultry cross as well as the results of the control group.

The application of the feed additive "Ares" allows the following: increasing the intensity of chickens live weight gain and increasing their final live weight while reducing the time of their raising; maintaining a high growth rate for a longer period in the chickens that received the feed additive.

The use of the biologically active feed additive "Ares" allows getting good results when raising broiler chickens amid rejection of feed antibiotics and refusal to use low quality feed that do not fully provide the necessary nutrients to the poultry.

Fig. 1. Dynamics of absolute increase in live weight gain

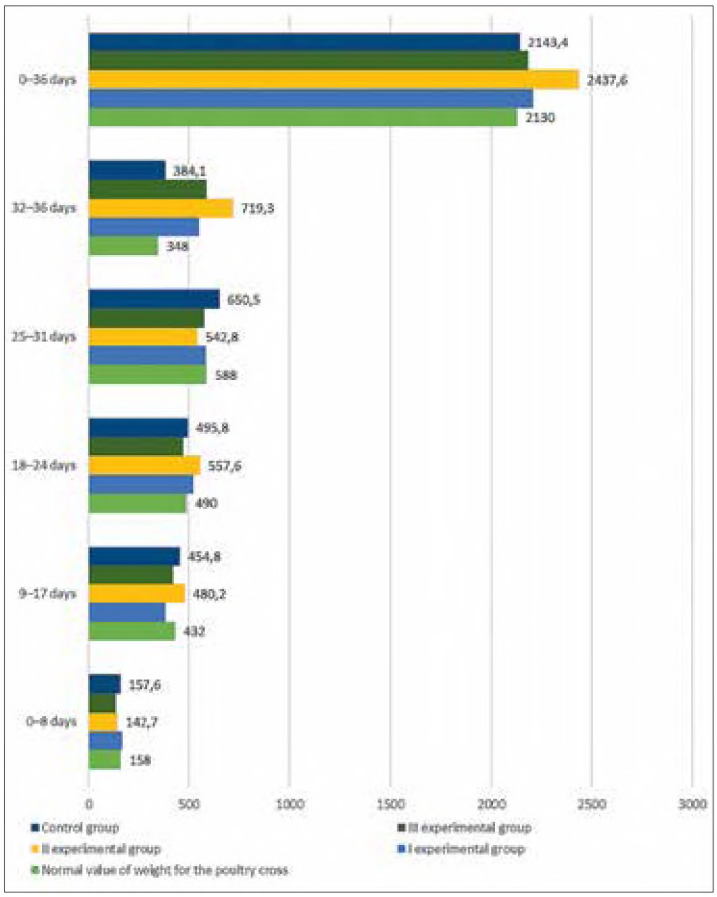
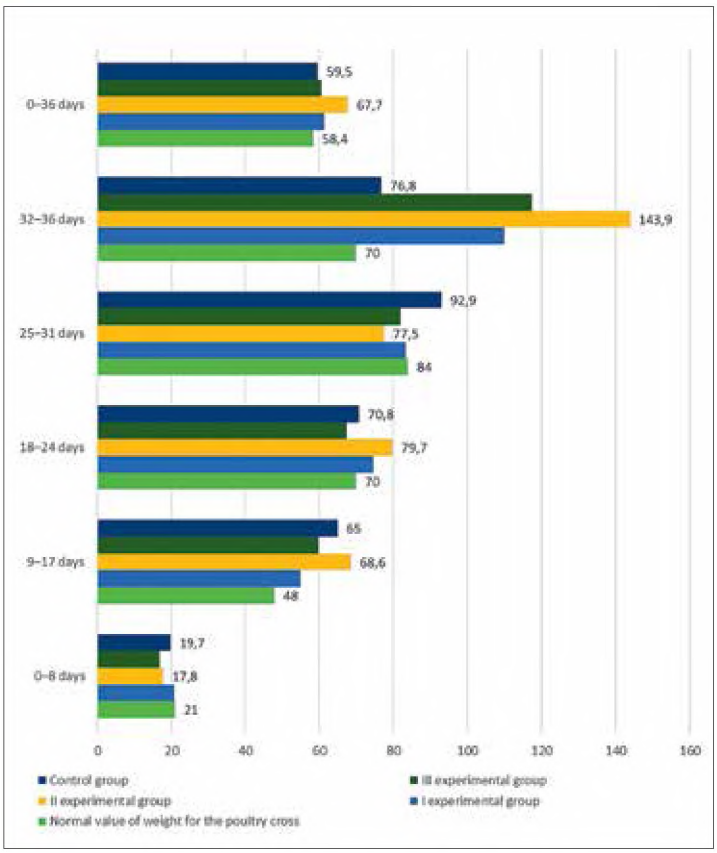


Fig. 2. Dynamics of average daily live weight gains, g



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БИБЛИОГРАФИЧЕСКИЙ СПИСОК

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ОБ АВТОРАХ:

Ольга Васильевна Горелик,
доктор сельскохозяйственных наук, профессор,
Уральский государственный аграрный университет,
ул. Карла Либкнехта, 42, Екатеринбург, 620075,
Российская Федерация
Уральский федеральный аграрный научно-исследовательский центр Уральского отделения Российской академии наук,
ул. Белинского, 112а, Екатеринбург, 620142,
Российская Федерация
E-mail: olgao205en@yandex.ru
https://orcid.org/0000-0002-9546-2069

Светлана Юрьевна Харлап,
кандидат биологических наук, доцент,
Уральский государственный аграрный университет,
ул. Карла Либкнехта, 42, Екатеринбург, 620075,
Российская Федерация
E-mail: proffuniver@yandex.ru
https://orcid.org/0000-0002-3651-8835

Анатолий Алексеевич Струин,
генеральный директор,
ООО ПК «УРАЛБИОСИНТЕЗ», ул. Шейнкмана, д. 110,
Екатеринбург, 620144, Российская Федерация
E-mail: olgao205en@yandex.ru

Алексей Анатольевич Белооков,
доктор сельскохозяйственных наук, доцент,
Южно-Уральский государственный аграрный университет,
ул. Гагарина, 13, Троицк, 457103, Российская Федерация
E-mail: belookov@yandex.ru
https://orcid.org/0000-0002-1083-5832

Оксана Владимировна Белоокова,
кандидат сельскохозяйственных наук, доцент,
Южно-Уральский государственный аграрный университет,
ул. Гагарина, 13, Троицк, 457103, Российская Федерация
E-mail: belookov@yandex.ru

Евгений Владимирович Чухутин,
Аспирант, Южно-Уральский государственный аграрный университет, ул. Гагарина, 13, Троицк, 457103,
Российская Федерация
E-mail: chukhutin_vet@mail.ru

ABOUT THE AUTHORS:

Olga Vasilyevna Gorelik,
Doctor of Agricultural Sciences, Professor,
Ural State Agrarian University,
42 Karl Liebknecht, str., Yekaterinburg, 620075,
Russian Federation
Ural Federal Agrarian Research Center of the Ural Branch of the Russian Academy of Sciences, 112a Belinsky str.,
Yekaterinburg, 620142, Russian Federation
E-mail: olgao205en@yandex.ru
https://orcid.org/0000-0002-9546-2069

Svetlana Yurievna Kharlap,
Candidate of Biological Sciences, Associate Professor,
Ural State Agrarian University,
42 Karl Liebknecht, str., Yekaterinburg, 620075,
Russian Federation
E-mail: proffuniver@yandex.ru
https://orcid.org/0000-0002-3651-8835

Anatoly Alekseevich Struin,
general director,
LLC Production center "Uralbiosintez", 110 Sheinkman str.,
Ekaterinburg, 620144, Russian Federation
E-mail: olgao205en@yandex.ru

Alexey Anatolyevich Belookov,
Doctor of Agricultural Sciences, Associate Professor,
South Ural State Agrarian University,
13 Gagarin str., Troitsk, 457103, Russian Federation
E-mail: belookov@yandex.ru
https://orcid.org/0000-0002-1083-5832

Oksana Vladimirovna Belookova,
Candidate of Agricultural Sciences, Associate Professor,
South Ural State Agrarian University,
13 Gagarin str., Troitsk, 457103, Russian Federation
E-mail: belookov@yandex.ru

Evgeny Vladimirovich Chukhutin,
Graduate student, South Ural State Agrarian University,
13 Gagarin str., Troitsk, 457103, Russian Federation
E-mail: chukhutin_vet@mail.ru