



## Supplements-based Poultry Productivity Enhancement

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### Abstract

This article presents the results of the conducted scientific experiment obtained in the production environment of a poultry farm, proving the effectiveness of using a feed vitamin supplement applicable to young poultry. In the experimental group, the obtained weight indicators of chicks with feed additive were higher than in the control group, in which it was not used. The experiment conducted in the production environment on a poultry farm showed the expediency of using the feed additive "Introvit A+BC", which promotes the active growth of developing young poultry and contributes to an increase in the meat productivity of broiler chickens.

**Disciplinary:** Poultry Science.

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## 1 Introduction

The use of biologically active substances and ensuring full-fledged animal feeding is a potential way to solve one of the problems of the agro-industrial complex, namely, providing the population with high-quality food products, such as eggs and meat of various types of farm animals, including those with specified properties [1,2,11].

Dry compound feeds are most often used in farms; those are nutritionally balanced and aimed at obtaining high productivity while using the optimal expenditure of funds. Hybrid meat young poultry (broilers) is capable of producing the highest quality meat [3,4].

Successful crossbreeding using different chicken breeds led to the creation of the ROSS-308 hybrid, which turned out to be the most highly productive and became in demand both at poultry farms and personal farmsteads.

The preservation of the natural poultry body protection mechanisms with which the poultry is less exposed to diseases of various kinds, there is no loss of productivity but adequate resistance to stress factors is the most promising direction. In this regard, various feed additives increase the body's resistance to various stresses and contribute to an active increase in live weight in poultry [5-8].

This work studied the effectiveness of the feed additive "Introvit A+BC" in the diets of meat young poultry to increase muscle mass.

The following tasks were distinguished within the framework of this goal:

- to identify the effect of the vitamin supplement "Introvit A+BC" in the diets of poultry chicks raised for meat;
- to characterize the features of the growth and development of broiler chickens when using "Introvit A+BC" supplements in their diets.

## 2 Materials and Methods

The objects of the study were broiler chickens of the Ross- 308 breeds kept at the poultry farm of LLC "Agroptitsa", which is the leader in poultry production in Primorskiy Krai. LLC "Agroptitsa". During the experiment on broiler chickens, two groups of the poultry of 50 heads each were formed; those were selected according to the principle of analogs: experimental and control (Table 1).

The conditions of keeping and feeding were similar in all groups, the chickens were placed on the ground throughout the entire growing period.

Broiler chickens had unhindered access to water. In addition to the main diet, the experimental young poultry group received the water-soluble vitamin supplement "Introvit A+BC" in doses in accordance with its instructions.

During the research, the following methods were used: clinical examination, palpation, thermometry., and biometrics.

**Table 1:** The scheme of conducting the production experiment in a poultry farm.

No.	Group of broiler chickens (n=50)	Feeding and feed additive	Dose per injection, ml	Method of injection
1	Control group	Feed ration Water	daily	orally
2	Experimental group	Feed ration Water and Vitamin supplement "Introvit A+BC" in the first 3-5 days of life.	daily 500/700 g/1t of water	orally

To determine the weight indicators, chickens were weighed daily in the control and experimental groups. The control figures of the results obtained are given on the 7th, 14th, 21st, 28th, 35th, and 45th growing days.

### 3 Results and Discussion

At the beginning of the experiment, the average live weight of these groups' day-old chickens was 48-50 g. On the 7th day, the muscle mass of chickens in the control group receiving a normal feeding diet was  $162.30 \pm 0.066$  g, which significantly increased in comparison with the initial indicators. Indicators of increasing chickens' weight on the 14th-day increase more than twice ( $486.40 \pm 1.167$  g) and look the most effective. By the 21st day of observations, the weighted arithmetic mean values of body weight gain doubled and amounted to  $974.60 \pm 0.201$  g. Weight gain on the 28th day was already significantly different from previous indicators, which increased especially actively by the age of 35 and 45 days, amounting to  $1954.60 \pm 0.202$  and  $2336.90 \pm 0.201$  g, respectively (Table 1).

**Table 2:** Average weight indicators of young poultry live weight in the control group

Number of young poultry	No.	Age of chickens	M±m
(n=50) broiler chickens Ross-308	1	7 days	$162.30 \pm 0.066$
	2	14 days	$486.40 \pm 1.167$
	3	21 days	$974.60 \pm 0.201$
	4	28 days	$1439.80 \pm 0.267$
	5	35 days	$1954.6 \pm 0.202$
	6	45 days	$2336.9 \pm 0.201$

To study the effect of the vitamin supplement "Introvit A+BC" on the production weight indicators of broiler chickens, this preparation was given with water throughout the entire growing period. At the beginning of the experiment, the average live weight of day-old chickens in the experimental group did not differ from the control group (48-50 g).

On the 7th day, the weight of the experimental group chickens was 8.1 g higher compared to the control group and amounted to  $170.40 \pm 0.071$  g. At the age of 14 days, the highest live weight is also observed in chickens of the experimental group, where its average values were  $504.50 \pm 0.238$  g, whereas in the first 486.4 g.

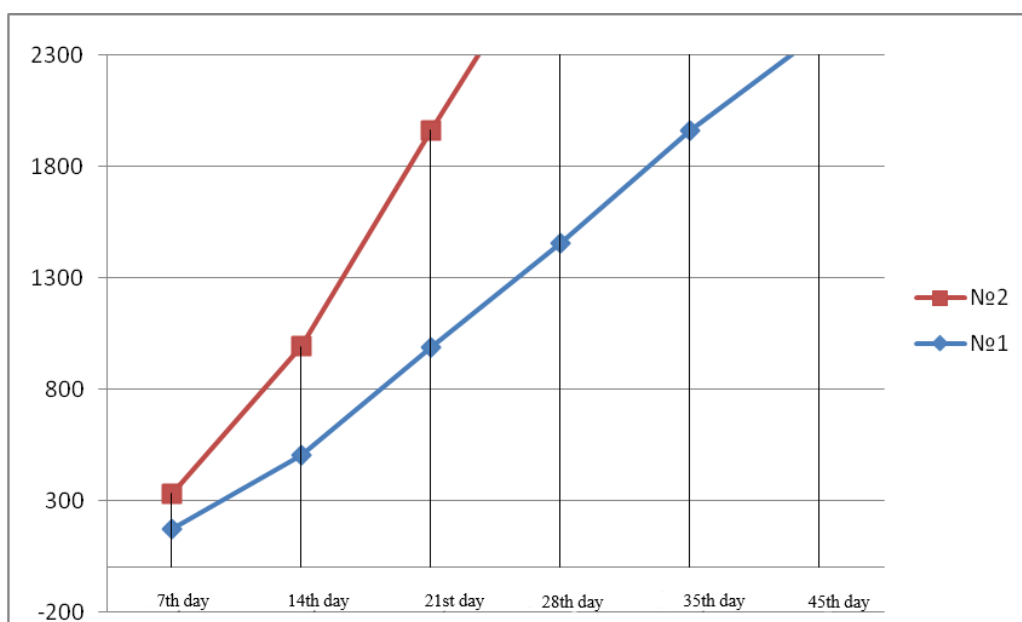
**Table 3:** Average weight indicators of young poultry live weight in the experimental group

Number of young poultry	No.	Age of chickens	M±m
(n=50) broiler chickens Ross-308	1.	7 days	$170,40 \pm 0,071$
	2.	14 days	$504,50 \pm 0,238$
	3.	21 days	$986,80 \pm 0,258$
	4.	28 days	$1457,40 \pm 0,508$
	5.	35 days	$1963,20 \pm 0,051$
	6	45 days	$2396,80 \pm 0,048$

By the age of 21 days, the average weight of chickens was 12.2 g higher in the second (experimental) group than in the first (control) group amounting to  $986.80 \pm 0.258$  g. When analyzing the weighing results on the 28th day of development, it was found that the weight of the experimental group's broilers was  $1457.40 \pm 0.505$  g, which is higher than in the control group by 17.6 g.

An even more noticeable difference in live weight was observed in the 35-day age period when the largest values of weight data were observed in the group of chickens receiving the vitamin supplement. At the age of 45 days, the average live weight in the experimental (second) group was 59.9 g higher than in the control (first) group, where it amounted to  $2336.90 \pm 0.048$  g (Table 2).

Comparing the data of the average arithmetic indices of live body weight gain in broiler chickens in the control and experimental groups, one general pattern is revealed regardless of the use of Introvit A+BC vitamin supplement in feeding diets or without it: average body weight relative to the previous growth period under consideration is most active in the age period from birth to 7-14 days of age. By the 21st day, the increase in muscle mass remains at a high level, further the pace somewhat slows down with a significant increase in total weight indicators, which, in the authors' opinion, is associated with active growth periods of young poultry.



**Figure 1:** Dynamics of the average daily increase in live weight of chickens in the experimental (No. 1) and control (No.2) groups in different age periods

Analyzing the data of average daily muscle mass gains in young chickens in the development dynamics (Fig.1), the positive effect of the vitamin supplement "Introvit A+BC" in the experimental group compared with the control group was clearly demonstrated.

## 4 Conclusion

The results of the conducted scientific experiment obtained in the production conditions of a poultry farm prove the effectiveness of using a vitamin supplement applicable to young poultry. The weight indicators of broiler chickens in the experimental group with the use of the feed additive were higher than in the control group, in which it was not used. The experiment conducted in the production environment on a poultry farm showed the expediency of using the feed additive "Introvit A+BC", which promotes the active growth of developing young poultry and contributes to an increase in the meat productivity of broiler chickens.

## 5 Availability of Data and Material

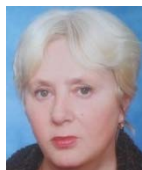
Data can be made available by contacting the corresponding author.

## 6 References

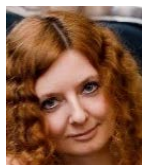
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