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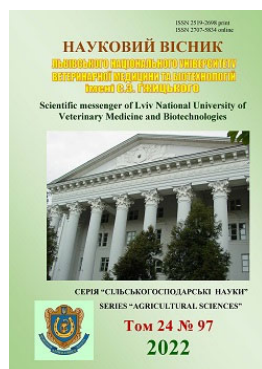
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## Productivity and slaughter rates of rabbits fed by probiotic supplement probiol

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The productivity, slaughter parameters and weight of internal organs of fattening young rabbits of the White Giant breed additionally fed by probiotic supplement Probiol containing three types of lactic acid bacteria (*Streptococcus faecium*, *Lactobacillus plantarum*, *Lactobacillus salivarius*) have been researched. It was found out that additional feeding by probiotic supplement Probiol in the amount of 0.025 % to weight of feed has a positive effect on productivity, survival and slaughter indicators of young rabbits. The second experimental group rabbits have increased live weight by 14.4%, survival by 13%; feed consumption per 1 kg of growth decreased by 12 %. Slaughter rates in experimental group exceeded their counterparts in the control group, which confirms the feasibility of introducing a probiotic supplement to rabbits for fattening.

**Key words:** probiotic, research, live weight, average daily gain, slaughter rates, internal organs.

### Introduction

Rabbit breeding is a very promising branch of animal husbandry. High fertility and rapid growth of rabbits allows you to get a significant amount of meat in a short period of time (Darmohray et al., 2019; Boiko et al., 2020; 2021). Thus, the live weight of one-month rabbit increases by 10–12 times. One female rabbit and its offspring can produce more than 30 young animals with a total live weight of up to 100 kg (Ibatullin et al., 2007; Kaletnyk et al., 2007) for one year.

Rabbit meat is better than other animals' meat in chemical, morphological and technological properties (Lesyk et al., 2020; 2022; Ravis et al., 2022). Thus, rabbit meat protein is absorbed by 90 %, while beef protein is absorbed by 62 %. The slaughter yield of rabbits is 65–70 % with 1:12 ratio of bone to muscle, and a meat yield is 88–92 %. The ratio of protein to fat in fattening young is 1 to 1.2–1.5; acidity (pH) is 6.3–6.6; moisture capacity is 60–80%; the thickness of muscle fibres is 27–32 µm, it is much thinner than beef (45–47 µm), and almost 2 times thinner than pork (61–73 µm) (Ibatullin et al., 2017; Ohorodnichuk, 2019).

High performance in rabbit breeding can be achieved only with compliance with all preventive measures, balanced feeding and reducing the impact of various stressors.

Numerous techniques, approaches and methods are used to solve this problem. Supplements of microbiological origin, in particular, probiotics containing microorganisms safe for animal health and have a wide range of useful properties, they have become especially popular and of practical importance (Klimenko, 2009; Podolian & Chudak, 2014).

In animal husbandry the effectiveness of probiotics is widely associated with their ability to optimize metabolic processes in the body, treat and prevent diseases of the gastrointestinal tract, and restore the normal intestinal microflora (Cherny & Kulak, 2016; Chudak et al., 2016; Tsyhanchuk, 2018; Ohorodnichuk, 2019).

There is evidence that probiotic supplements improve digestion, metabolism; they have the ability to stimulate the body's natural resistance and increase the economic results of production (Kirillov, 2004; Berbenets, 2009; Shtenskaya & Kucheryavyy, 2015).

Modern scientific literature contains a significant amount of information showing that probiotics application in animal husbandry increases the absorption of nutrients and productivity. The application of probiotics as a part of young rabbits diet significantly improves the resistance of animals and increases safety during weaning; it has a positive effect on growth intensity and meat productivity (Podolian & Chudak, 2014; Tsyhanchuk, 2018; Ohorodnichuk, 2019).

### The aim of the study

The aim of our research was to establish the effectiveness of the Probiol probiotic supplement on the productivity and slaughter performance of young rabbits.

### Material and methods

Scientific experiment was performed on two groups of young rabbits of large white breed, each group included 15 heads. The groups were formed according to the principle of analogous groups taking into account live weight, age, sex and health of experimental rabbits (Ibatullin et al., 2017).

Throughout the experiment, the animals were in the same room with the same conditions. The animals had unrestricted access to water. Complete feed TM Gross-Krol was used for feeding experimental animals. The first group was a control one; it was fed only by complete feed; the second group was additionally fed by Probiol at a dose of 0.025 % of feed weight.

Probiol is a homogeneous loose powder from light grey to light brown with a moisture content not more than 12 % and the number of active living cells of lactic acid bacteria (*Streptococcus faecium*, *Lactobacillus plantarum*, *Lactobacillus salivarius*) is 10 billion per 1 g.

The active substance of the probiotic is concentrated dried viable cells of specially selected strains of lactic acid bacteria with high biological activity, which produce amino acids and B vitamins. The action of the supplement is based on inhibition of pathogenic and opportunistic intestinal microflora.

The dynamics of animal growth, physiological condition, feed intake and livestock survival were monitored. Individual weighing of animals was carried out in the morning before feeding. Livestock survival was taken into account during the daily inspection of experimental rabbits.

Control slaughter of 120-day animals was conducted

to study the slaughter performance of rabbits, 4 animals from each group were slaughtered.

The meat productivity of the animals was researched considering the results of a control slaughter. Feed costs per unit of live weight gain were calculated taking into account the actual feed consumption, the obtained absolute live weight gain and survival rate during the rabbit fattening period.

Experimental data were processed biometrically by M. O. Plokhinskyi method (Ploxynskyj, 1969).

### Results and discussion

The experimental data indicate that the researched feed additive does not have a negative effect on the growth intensity and survival of experimental animals.

Additional feeding by Probiol helped to increase the level of experimental rabbits' survival compared with the control group by 13 % (Table 1).

There is also a stimulating effect of probiotics on live weight of rabbits. At the beginning of the experiment, the live weight of animals was the same in both groups, it increased by 6.5 % compared with the control group fed by complete feed in a month.

Thus, the live weight of rabbits of the 2<sup>nd</sup> experimental group was  $3366.7 \pm 20.48$ ; the live weight of rabbits of the control group was  $3020.0 \pm 20.81$ , the live weight of rabbits of the 2<sup>nd</sup> experimental group is by 14.4 % larger than the live weight of rabbits of the control group.

The level of average daily gains for the period 61–120 days was higher in the second experimental group by 18.6 %.

The introduction of probiotic preparation to complete feed helps to reduce feed consumption per 1 kg of growth by 17.3 % compared to control.

The additional feeding by probiotic supplement reduces feed consumption per 1 kg of growth by 17.3 % compared to control.

**Table 1**

Dynamics of experimental rabbits live weight ( $M \pm m$ ,  $n = 15$ )

Indicator	Age, days	1-control	2-experimental
Percentage of experimental animals' survival		87	100
Live weight, g	45	$779.0 \pm 32.1$	$777.0 \pm 40.3$
Live weight, g	60	$1184.2 \pm 63.0$	$1185.0 \pm 79.5$
Live weight, g	90	$2042.5 \pm 21.82$	$2176.2 \pm 27.21^*$
Percentage ratio		100	106.5
Live weight, g	120	$3020.0 \pm 20.81$	$3366.7 \pm 51.20^{**}$
Percentage ratio		100	114.4
Average daily gain, g		$30.6 \pm 0.31$	$36.3 \pm 0.35^{***}$
Percentage ratio		100	118.6
Feed consumption per 1 kg of gain, kg		4.68	4.12
Percentage ratio		100	88.0

Significant at \*P < 0.05; \*\*P < 0.01; \*\*\*P < 0.001

To study the effect of the probiotic supplement on the meat performance of young rabbits a control slaughter was carried out (4 heads from each group) at the end of the fattening period. The weight of the carcass with the kidneys and the slaughter yield were determined. The results of the control slaughter are in Table 2.

According to the obtained data analysis the probiotic supplement has a positive effect on the slaughter productivity of young rabbits. Thus, the carcass weight with kidneys in the second group was  $1945.0 \pm 47.6$ ; the carcass weight with kidneys in the control group was  $1673.0 \pm 18.3$  in the control, the carcass weight with kid-

neys in the second group was by 16.2 % larger than in the control group. Experimental rabbits of the second experimental group had an advantage in slaughter yield of 4.3 %.

According to the results of control slaughter, the weight of internal organs and their percentage to the slaughter weight of fattening young rabbits was determined (Table 3).

**Table 2**

Meat productivity of experimental rabbits (M ± m, n = 4)

Indicators	1-control	2-experimental
Pre-slaughter weight, g	3020.0 ± 20.81	3366.7 ± 51.20**
Carcass weight with kidneys, g	1673.0 ± 18.3	1945.0 ± 47.6**
Percentage ratio to control group, %	100	116.2
Slaughter output, %	55.4	57.8
Percentage ratio to control group, %	100	104.3

Significant at \*\*\* P < 0.01

**Table 3**

Weight of experimental rabbits' internal organs, g (M ± m, n = 4)

Indicators	1-control	2-experimental
Lungs	33.4 ± 0.4	39.8 ± 2.4
Heart	16.7 ± 0.18	19.1 ± 0.89
Liver	134.0 ± 2.34	154.0 ± 6.9
Kidneys	20.1 ± 0.63	24.2 ± 1.4
Total of edible parts	204.2	237.1
Total of edible parts, %	6.76	7.04
Lungs	1.10	1.18
Heart	0.55	0.56
Liver	4.43	4.57
Kidneys	0.63	0.71

According to Table 3 data, additional feeding of rabbits by probiotic supplement Probiol does not have a negative effect on the weight of internal organs. The young stock of the second experimental group rabbits fed by complete diet in combination with probiotic supplement have increased weight of the lungs, heart, liver, and kidneys. Thus, the number of edible parts increased by 32.9 g in the 2<sup>nd</sup> experimental group. Thus, lung weight was higher by 0.085 %, heart weight was higher by 0.01%, liver weight was higher by 0.14 % and kidneys weight was higher by 0.08 %.

### Conclusions

1. The application of probiotic supplement Probiol in the dose of 0.025 % to feed weight during fattening of young rabbits increases the average daily gain by 18.6 %, survival by 13 %, growth intensity by 14.4 % and reduces feed consumption by 12 % per 1 kg of growth.

2. Probiotic supplement Probiol at a dose of 0.025% by weight of feed contributes to an increase in fattening young rabbits of the second experimental group of carcass weight with kidneys, up to 16.2 % and increase the slaughter yield compared to the control by 4.3 %.

3. The additional feeding by probiotic supplement had a positive effect on the weight of the young rabbits' internal organs.

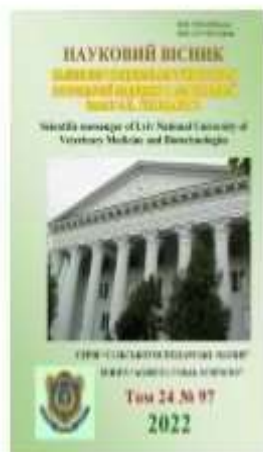
### Conflict of interest

The author state that there is no conflict of interest.

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