

EFFECTIVENESS OF "RESCUE KIT" PROBIOTIC SUBSTANCE USED FOR WHITE GIANT RABBITS BREED FATTENING

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Annotation

Probiotic preparations belongs to the feed additives which stimulate the growth and productivity of animals. They are positively influencing on immunity strengthening, health promotion and increase of productivity of different farm animals species. Probiotic products have not been tested in the conditions of Kazakhstan, namely in rabbits.

The aim of this study was to establish the influence of addition the probiotic preparation called "Rescue Kit" on young White Giant rabbits fattening results. 2 groups of 14 animals each were formed: experimental group (EG, n=14) and control group (CG, n=14). The level of 10 g of preparation contains $800 \cdot 10^9$ cfu *Bacillus subtilis* and $800 \cdot 10^9$ cfu *Bacillus licheniformis*. The EG received probiotic preparation starting at weaning in 70th day up to slaughter age of 120th day. The EG received no probiotic. The following data were collected: body weight at weaning; body weight every 10 days up to 120 days of age; average daily gain; slaughter weight; dressing percentage (yield).

Based on the results it can be concluded that the use of probiotic preparation in the diet of young rabbits during fattening has a positive impact on the fattening results.

Keywords: probiotic, rabbits fattening results, white giant rabbit

Introduction

In last years the attention to small and medium enterprises production was paid from the state authorities in Kazakhstan, especially in agro-industrial area. Regarding this, rabbits breeding have a good development perspectives in Kazakhstan. From other side, this branch demands attention from scientists and experts of agrarian sector, as it is generally a lack of scientific studies on rabbits in the

country (Islamov E.I., Burshakbaeva L.M., Kalashinova A., 2014) [1].

Rabbits are a typical herbivorous, with active intestinal microbial population. Young rabbits after weaning are susceptible to stress factors (new cages, new accompanies, new feeding etc), which can result in multiplication of undesirable germs: probiotic addition should avoid it (Mc Nitt et al., 2000) [2].

Probiotics are the usual bacterian that all animals need for their digestive well being. The function of probiotics is to improve the growth and development of the normal, desirable microbial population in the gut, allowing them to maintain domination over the undesirable organisms. There are studies showing positive effect of probiotics addition as a supplement in poultry and swine feeding (Barrow, 1992, Jin et al., 1997, Jadamus et al., 2000, Jadamus et al., 2002) [3,4,5,6]. There are also studies showing positive effect of probiotics using in rabbits (Brzozowski et al., 2007a, 2007b, Gippert et al., 1992, Kamra et al., 1996, Kermauner and Struklec, 2005) [7,8,9,10,11].

MATERIALS AND METHOD

Materials

Research was carried out on an experimental farm "Astana - MIAKRO", on thoroughbred rabbits of White Giant breed. They are the large animals with a strong, elongated torso, long straight back, well-developed chest, small head with a straight set ears of average size.

They have strong constitution of mesosome type, but often with narrow body – leptosome type. Hair colors is pure white – albino, with high thickness. Average live body weight of an adult is 4-5 kg, maximum – 6 kg. Body length is 55-60 cm, chest girth behind scapulas – 36-38 cm. Fertility 7-8 rabbits in litter. Precocity is average. The average daily flow of doe-rabbit milk is 170-220g. They have good maternal gualities. Animals are unpretentious, well adapted to local

In Kazakhstan, the most effective and common on the market for animal feed additives are probiotics based on bacterial strains *B. subtilis* and *B. Licheniformis*. The spores of these bacteria are resistant to antibiotics, chemicals, high and low temperatures, and they also retain their activity in the acidic environment of the gastrointestinal tract (Islamov E.I., Burshakbaeva L.M., 2015) [12]

The aim of the studies was to check the effect of probiotics based on bacterial strains *B. subtilis* and *B. Licheniformis* on the productive results of White Giant rabbit.

conditions. They are often used in breeding of new breeds. When breeding, their work should be aimed for increasing precocity and fleshiness.

Two groups of rabbits were created: control group (CG, n = 14 animals) and experimental group (EG, n = 14 animals). The experiment began at weaning (70 days) and ended in 120 days.

Groups of experimental rabbits were formed by analogues of origin, body weight, age and sex. Animals were kept under identical conditions and fed balanced pelleted feed.

Method

During the study the “Rescue Kit” probiotic preparation was used. 1 kg of preparation contains 800×10^9 cfu *Bacillus subtilis* and 800×10^9 *Bacillus Licheniformis*. The level of 10 g of preparation per 1 kg of feed

was used in EG as a probiotic factor improving fattening results. The EG received probiotic preparation starting at weaning in 70 day up to slaughter age in 120 day. The CG received no probiotic.

The following data were collected:

1. body weight at weaning;
2. body weight every 10 days to 120 days of age;
3. average daily gain;
4. slaughter weight;
5. dressing percentage (yield).

Meat productivity of all animals was estimated by results of their slaughter. At the same time by weighing the lethal mass of carcass and slaughter weight yield were

RESULTS AND DISCUSSION

The body weight changes after weaning are presented in Table 1.

Table 1 - Dynamics body weight increasing after weaning up to 120 days of age

Age	Control group	Experimental group	Statistical significance
	Average body weight, kg	Average body weight, kg	
	M±m	M±m	
70	2,31±0,04	2,31±0,04	NS
80	2,50±0,03	2,60±0,04	*
90	2,74±0,04	2,89±0,04	**
100	3,00±0,05	3,23±0,05	**
110	3,30±0,03	3,60±0,03	**
120	3,60±0,03	3,91±0,03	**

NS P>0,05

*P≤ 0,05

**P<0,01

Live body weight rabbits at age of 120 days presented in literature estimated over 3,5 kg (Mayorova

estimated. Slaughter of all rabbits was carried out according to "The standard of UNECE on meat of rabbits – carcasses and their parts - 2013"

0102 Carcass

The carcass includes all parts of skeletal musculature and bones, also including saltatory (tarus) and knee (caprus) joints, headless.

- Tail: is cut in the place of sacrococcygeal joint.

- Kidneys – kidney fat: removed.

- Tenderloin: removed.

- Diaphragm: removed.

- Heart and lungs: removed.

- Kidneys: removed

(Shynybayev D. S. Kadyken R., 2012) [13].

The results were statistically evaluated (SPSS Statistics 17.0.)

A.S., 2012) [14]. By the end of the experiment, live body weight of rabbits was the experimental group

was significantly higher than at control group.

The results obtained in experiment shows, that body weight of young rabbits in the experimental group was significantly higher to the

time of slaughter (120 days) compare to control group. Higher results of experimental group ($P < 0,01$) were observed from the age of 70 days up to slaughter age (120 days) (Table 2).

Table 2 - The average daily gain of control and experimental groups, (g / day).

Daily gain (g/day)	Control group	Experimental group	Statistical significance
	Average body weight	Average body weight	
	M±m	M±m	
70-80	21,43±0,74	32,54±0,74	**
80-90	26,98±1,76	32,54±0,74	**
90-100	28,57±1,80	37,30±1,38	**
100-110	33,33±1,54	41,27±2,10	**
110-120	33,33±1,09	34,92±1,84	NS
70-120	26,38±1,34	32,80±1,37	**

** $P < 0,01$ NS $P > 0,05$

When studying the average daily gain of rabbits using probiotic "Rescue kit" it has been found that the highest increase was observed at rabbits aged 100 to 120 days and in the test group was 32,80 g, respectively, in the control - 26,38 g (Table 2).

At 120 - days age daily gain in the test groups slows down and becomes equal to the control group. Thus the difference between them was

not significant. That is because the body and the digestive tract of these animals at the 120 days age physiologically were formed and there is no need for any preparations for the growth and restoration of an organism.

And the effect of probiotic "Rescue Kit" on live, slaughter weight and body yield of rabbits at the age of 120 days was also studied (Table 3).

Table 3 - Yield of slaughter weight of rabbit bodies at the age of 120 days.

Indicators	Control group	Experimental group	Statistical significance
Preslaughter weight, kg	3600±28,83	3914±24,01	***
Mass of a carcass, g	1792±36,89	2057±17,95	***
Average slaughter yield, %	49,55±0,68	52,45±0,38	***
The output of pulp, %	78,32±0,47	81,02±0,35	***
The mass of the pulp, g	1405±33,74	1666±11,41	***
Bone mass, g	387±8,31	391±9,75	NS
Bones output, %	21,68±0,47	18,98±0,35	NS
The ratio of meat content	3,64±0,10	4,26±0,10	***

NS $P > 0,05$ *** $P < 0,001$

Analyzing the data in Table 2, it should be noted that the Yield of slaughter weight of rabbit bodies that received the feed probiotic were significantly higher than in controls ($P < 0,001$).

Based on these results, we can conclude that the use of probiotic preparation "Rescue Kit" in the diet of young rabbits during fattening has a positive impact on the size of growth and enables the production of effective use of its rabbit production cycle.

In the future, rabbit breeding may well become an advanced agricultural sector of the country, despite the fact that these animals were not considered in Kazakhstan as farm animals. The need of solution of the production of clean, safe and tasty products of high demand for the public, holds great promise in the use of probiotics in animal husbandry.

It was established that experimental groups of rabbits in all cases had an advantage in comparison

with peers of control group in weight. The analysis of obtained data demonstrates that rabbits of experimental groups surpassed of peers of control group by 261 g (18,58%) in mass of pulp. Research has established that by absolute mass the bones of experimental and control groups had no significant differences and this indicator was in the range of 387-391 g, which indicates the formation of skeleton sufficient to 120 days of age.

Meat qualities of an animal are defined substantially by the ratio of mass of pulp and bones expressed by fleshing index. The analysis of obtained data confirms rather high value of a fleshing index of experimental groups which made 4,26 pieces. The rabbits receiving "Rescue Kit" probiotic feed additive with a forage had the greatest fleshing index. So, preeminence of experimental groups over peers of control group made 0,62 units (17%).

Table 4 - Content of main nutrients in rabbit meat, %

Indicators	Control group	Experimental group	Statistical significance
	M±m	M±m	
First moisture	64,02±0,40	63,22±0,88	*
Gigro moisture	9,31±0,19	9,02±0,21	NS
Total moisture	65,93±0,43	65,40±0,55	NS
Dry matter	34,07±0,43	34,21±0,50	NS
Ash	1,24±0,05	1,18±0,04	NS
Fat	11,50±0,52	12,12±0,70	NS
Protein	21,32±0,15	21,90±0,78	NS

* $P \leq 0,05$ NS $P > 0,05$

Results of research in content of main nutrients of rabbit meat of experimental and control groups are

presented in table 4. From the materials set forth in Table 4, it should be seen that the accumulation

of nutrients in edible parts of rabbit carcasses of experimental and control groups had no statistical difference.

Analyzing results of a research it is possible to say that the probiotic

doesn't influence nutritional value of meat.

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Аннотация

Пробиотические препараты относятся к пищевым добавкам, которые стимулируют рост и продуктивность животных. Они положительно влияют на укрепление иммунитета, профилактику здоровья и увеличении продуктивности различных видов сельскохозяйственных животных.

Түйін

Пробиотикалық препараттар жануарлардың өсу жылдамдықтары мен өнімділік сапасын арттыруға арналған азықтық қосылыстар қатарына жатады. Олар әртүрлі ауыл шаруашылығы жануарларының иммунитеті, профилактика және өнімділік сапасының жоғарлауына жақсы әсер етеді.

Summary

Probiotic preparations belong to the feed additives which stimulate the growth and productivity of animals. They are positively influencing on immunity strengthening, health promotion and increase of productivity of different farm animals species.