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THE EFFECT OF THE PROBIOCORM NUTRITIONAL SUPPLEMENT ON MORPHOLOGICAL INDICATORS OF RABBIT BLOOD

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Abstract

ProBioKorm is a feed additive created on the basis of local probiotic bacteria and used in animal nutrition. This universal feed supplement improves feed quality, enhances digestion and absorption of nutrients, prevents and treats various bacterial diseases in animals, and increases the productivity of farm animals.

Keywords: ProBioKorm, probiotic, erythrocytes, leukocytes, Hikol, clinical, hemoglobin, tivit.

Relevance of the Topic

In order to develop rabbit breeding in our country, hybrid offspring obtained by crossing local low-productivity rabbit breeds with high-productivity breeds, as well as imported breeds being adapted to local climatic conditions, are being studied. To address the problem of meat shortages, the inclusion of the feed

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additive ProBioKorm—developed on the basis of local probiotic bacteria—into rabbit diets is aimed at determining its positive effects on physiological processes and productivity.

Purpose of the Study

The purpose of this study was to comparatively evaluate the effect of different doses of the "ProBioKorm" feed additive included in the daily diet of rabbits on their blood morpho-biochemical parameters and productivity.

Research Objectives

To achieve this goal, after introducing different doses of the "ProBioKorm" feed additive into the diet, the following tasks were carried out:

To study the effect of ProBioKorm on daily growth, development, and morpho-biochemical blood parameters of rabbits;

To evaluate the effect of the biologically active feed additive on the activity of protective factors in blood serum;

To study the effect of feeding rabbits with ProBioKorm on clinical parameters and body weight.

Literature Review

The relevance of this study is also supported by the Resolution No. 647 of the Cabinet of Ministers of the Republic of Uzbekistan dated August 2, 2019, "On measures to further improve scientific activity in the field of rabbit breeding," as well as other regulatory documents related to this sector.

Currently, significant attention is being paid to the development of rabbit breeding as a source of dietary, cholesterol-free meat and affordable but high-quality fur and down (tivit) for the population [D.G. Khaitov, 2019].

Rabbits are distinguished by high fertility and rapid growth rates, placing them among the leading livestock species in terms of productivity [N.A. Balkariyev, Yu.A. Kalugin, 2015].

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According to the literature, the most critical period in a rabbit's life is the weaning stage, when young rabbits are separated from their mother's milk [A.M. Puchnin et al., 2011].

In recent years, European researchers have emphasized the use of biologically active substances (probiotics) capable of regulating metabolic processes, preventing gastrointestinal diseases, and maintaining intestinal microflora balance, and these approaches are being actively implemented in practice [N.V. Abramkova, 2015; I.N. Tokarev et al., 2015].

Based on the above, we studied the effect of adding the biologically active feed additive "ProBioKorm," developed by researchers of the Institute of Microbiology of the Academy of Sciences of Uzbekistan and recommended for use in farms, to the diet of weaned rabbits. The study evaluated its influence on feed intake, nutrient digestibility, and natural resistance of the organism.

Materials and Methods

The study was conducted on white Hikol breed rabbits imported from France and raised at the "Tarnov Vegetables" farm. Clinical parameters, as well as hematological and biochemical blood indicators, provide valuable information about the physiological state of animals.

Blood samples were taken from the vein of the left ear of the rabbits in the morning on an empty stomach, before feeding, both before and after the experimental period.

The following methods were used to analyze rabbit blood:

The following indicators were assessed: erythrocyte and leukocyte counts, hemoglobin concentration. Erythrocytes and leukocytes were counted using a Goryaev chamber, and hemoglobin was determined using a Sahli hemometer;

Formed blood elements and hemoglobin levels were determined using a Medonic CA 620 hematology analyzer;

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Bilirubin levels were determined using the method of L. Jendrassik et al. (1938), modified by N.U. Titsa (1997).

Results and Discussion

The vital activity of animal organisms, including rabbits, is largely ensured by blood and its components. Blood plays a crucial role in biological processes occurring in the body. Studying blood composition allows for the assessment of the general physiological condition of animals and enables timely responses to changes caused by nutrition, management, and external or internal factors.

Clinical indicators, as well as hematological and biochemical blood parameters, reflect the physiological status of rabbits. Blood samples were collected from the left ear vein in the morning on an empty stomach before feeding, both before and after the experiment.

During the analysis of the obtained results, it was found that the inclusion of ProBioKorm probiotics in the rabbit diet led to changes in the morphological parameters of blood. Table 1

Table 1 Morphological parameters of rabbit blood (M±m, n=5)

Formed elements	Physiological normal values of rabbit blood	Groups		
		Experiment 1	Experiment -2	Experiment-3
Leukocytes 10^9/l	7-8	7,86±0,37	8,2±0,2	6,74±0,2
Erythrocytes, 10^{12}/l	5.36-8,13	6,87±0,35	7,82±0,3	5,9±0,5
Thrombocytes, 10^9/l	193-725	521,4±40,4	533,6±26,77	449,4±34,2
Gemoglobin, g/l	113-171	136,6±3,9	143,4±6,07	120,8±3,9
Gemotokrit, %	30-44	34,2	36,6	39,8

Reliability: $p<0,05$

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It was found that the quantitative indicators of erythrocytes, leukocytes, thrombocytes, and hemoglobin in both the control and experimental groups of animals changed only slightly. It should be noted that at the beginning of the experiment, the studied parameters in all experimental groups of rabbits did not differ significantly and were within physiological norms. No negative effects of morpho-physiological changes in the blood on the rabbit organism were observed.

Leukocytes are divided into several types. Depending on the presence or absence of granules in their cytoplasm, they are classified as granular leukocytes (granulocytes) and non-granular leukocytes (agranulocytes)..

Table-2 Percentage of different leukocyte types in rabbit blood, % (M±m, n=5)

Types of leukocytes	Groups		
	Experiment-1	Experiment-2	Control
Parameters at the beginning of the experiment			
Basophils	1,3±0,04	1,32±0,08	1,1±0,03
Eosinophils	1,7±0,07	1,8±0,07	2,08 ±0,24
Band neutrophils	6,24±0,25	6,16±0,38	6,26±0,24
Segmented neutrophils	35,8±3,5	35,8±3,1	37±3,4
Lymphocytes	52,4±5,6	53,4±5,3	53,6±3,5
Monocytes	1,38±0,12	1,42±0,12	1,8±0,07
At the end of experiment			
Basophils	1,52±0,04	1,61±0,05	1,18±0,04
Eosinophils	1,6±0,03	1,7±0,07	1,58±0,25
Band neutrophils	5,5±0,4	5,6±0,4	7,04±0,06
Segmented neutrophils	37±2,5	36,4±3,4	38,4±2,8
Lymphocytes	55,4±3,6	54,6±4,29	51,2±1,06
Monocytes	1,28±0,08	1,38±0,06	1,92±0,10

Reliability: p<0,05

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During the application of the bacterial association probiotic ProBioKorm, no foreign proteins were produced by the microorganisms during digestive processes.

Conclusion

1.The physiological state of rabbits when using a probiotic feed additive is characterized by an increased adaptive capacity of the organism, which is manifested by a decrease in heart rate and respiratory rate.
2.In rabbits fed with a probiotic feed additive at a dose of 200 g/t, metabolic processes in the organism were activated.
3.Probiotic feed additives stimulate hematopoiesis, which is manifested by an increase in the number of red blood cells, white blood cells, platelets, and hemoglobin levels in peripheral blood.

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