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The Influence Of A Complex Of Probiotic Cultures On Intensity Of Development The Animals.

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ABSTRACT

Currently, probiotics are an effective element in the technology production of environmentally safe products of animal husbandry and it seen as a necessary element to maintain animal health and to obtaining products high veterinary and sanitary quality, which will be safe by the bacterial and chemically indicators. Probiotics have a positive effect on body's animal, help to restore the digestion, biological status and immune response. Using the complex of probiotic bacteria based on strains of *Bifidobacterium bifidum, Enterococcus faecium* and *Enterococcus faecalis* significantly reducing the costs of animal's treatment, increases their productivity, and improves product quality. Directions of using probiotics affect a wide range of problems associated with the correction of intestinal biocenosis, immune, hormone and enzyme systems of young and adult animals.

Keywords: white mice, probiotics, *Bifidobacterium*, *Enterococcus*.

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INTRODUCTION

The term «probiotic» has been propose in the mid XX century. Probiotics are identify as live microorganisms that are beneficial for the health of the host. [3] Probiotics restores the natural balance to intestinal flora and processes of metabolism, they allow to quickly return the animal to its normal physiological state after the diseases, that lead to a change in the normal intestinal flora [6].The mechanism of action of probiotics is based not only on the recovery natural microbial's background of bowels, but allows to reduce the effect of toxic products metabolic of conditionally pathogenic and pathogenic microorganisms on the intestinal epithelium and the whole immune system [10, 13, 18, 20].The antibacterial activity of the strains probiotic microorganisms is due to the ability to produce the alcohols, hydrogen peroxide, lactic, acetic and other organic acids, synthesize the lysozyme and broad spectrum antibiotics and actively compete for adhesion's receptors and nutrients [11]. Bifidobacteria are natural organic sorbents and able to reduce a significant quantity the heavy metals, phenols, formaldehyde and other toxic substances that enter the body from the environment. Due to the synthesis of organic acids by bifidobacteria, it leading to reduce acidity of intestinal tract to pH 4.0, which helps to prevent the development of bacteria of the family *Enterobacteriaceae* [12, 21]. Probiotics containing bifidobacteria evinces antagonism towards a wide variety of pathogenic bacteria [8, 16, 17, 19]. In veterinary practice, absence the analogs of preparations which contains probiotic enterococci and bifidobacteria. This is due, primarily, with a little study of them as probiotics. In the medicine and food industry, the enterococci widely used as antimicrobial agents and substances which accelerate fermentative processes [2, 22, 24], that this they themselves plays a significant role in the suppression of opportunistic bacteria by producing special antibacterial substances - bacteriocins [4, 5, 23].The strains of *Enterococcus faecium* and *Enterococcus faecalis* are most responsible for the standards genetic safety, much less contain genes pathogenicity [7].

Several authors point out that the application the probiotics activates digestive processes of animal, increases the motility of the intestine and suction's function, increases metabolism. These changes have had a positive impact on the growth and development of animals [9, 14, 15].

In this article, we present the results of research of influence strains of complexes of the bifidobacteria and enterococci on growth and development of white laboratory mice.

MATERIALS AND METHODS

It were used the deposited strains of *Bifidobacterium bifidum DSM 20456, ATCC 29521, Enterococcus faecium MAC 86* and *Enterococcus faecalis* H_{22}.Culturing bifidobacteria were conducting aerobically at 37 °C temperature within 24-48 hours on the medium Bifidum-media (Obolensk, Russia).Enterococci were culturing under aerobic conditions at a temperature of 37 °C for 24 hours on the medium M17 (OOO NPC «BIOKOMPAS-S», Russia).

The studies were conducted on the model of adult albino mice (n = 30), in the conditions of experimental biological clinic (vivarium), at the Department of Epidemiology and Microbiology of the Stavropol State Agrarian University.The animals were keeping in accordance with the general accepted rules and standards [1].Animals were divided into 3 groups: a control group and two experimental groups (I and II).White mice of the experimental group I, were daily feeding the complex of probiotic bacteria *Bifidobacterium bifidum DSM 20456, ATCC 29521*, and *Enterococcus faecalis H22*in 30 days. White mice of the experimental group II, were daily feeding the complex of probiotic bacteria *Bifidobacterium bifidum DSM 20456, ATCC 29521 и Enterococcus faecium UDS 86*also in 30 days. Probiotics were using at the dosage 0.2 ml per animal. A third group of mice was the control and complex of probiotic bacteria were not feeding, and received 0.2 ml of saline.

Accounting of live weight of animals were conducting by individual weighing albino mice of all groups at 1, 15 and 30 days, on the scales non-automatic actions platform GSP-1.

The study of the microflora of faeces white mice of the experimental and control groups were carried out before the start of the experiment during the first day before giving probiotics, then after 7, 15, 21 and 30 days of the experiment by sampling feces from all mice in each group.

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RESULTS AND DISCUSSION

The results showed an increase in growth of body weight of mice in the experimental groups compared with the control group, after the feeding by the complex of probiotic bifidobacteria and enterococci.

The indicators of second group are surpass the indicators of the first group, which indicate more effective by the probiotic enterococcus species *E. faecium.* The body weights animals of this group in the average were enhance over 9.8% since the beginning of the experiment. Reducing the weight the animals of the first experimental group after 15 days after the start of the experiment is indicate a possible dietary properties of probiotic bacteria, in particular, *E. faecalis*. At the same time body weight was increasing by 6.4% during the experiment. The control group slightly gain weight, the gain was 6% in during of the experiment.

Research microflora of fecal white mice of the control and experimental groups indicates that the feeding probiotic is affects for formation the fundamental populations the microorganisms of intestinal, which evince itself as in the dynamics of the formation the population, so and in the change their population composition.

It were establishing the growth a Gram-positive flora in the intestines of white mice. The introduction in the recommended dosages the complex of probiotics of the *Bifidobacterium bifidum* and *Enterococcus faecium / faecalis* to laboratory animals are contribute to an increase as total fecal microflora so and the bifidobacteria with enterococcis.

Thus, the results indicate that under the influence complex of probiotic *Bifidobacterium bifidum*, and *Enterococcus faecium / faecalis*, which were feeding the white mice, was surviyed the positive dynamics to accumulation the natural microflora of intestinal of the animals.

CONCLUSION

Use of a complex of probiotic bacteria based on bifidobacteria and enterococci leads to an accumulation this bacterium in the gastro-intestinal tract of animal, promote to increase the bodyweight, reducing stress and increasing digesting of feed. In addition, probiotic agents do not cause disorders of organs and systems of the body, do not cause allergies and does not have a toxic effect.

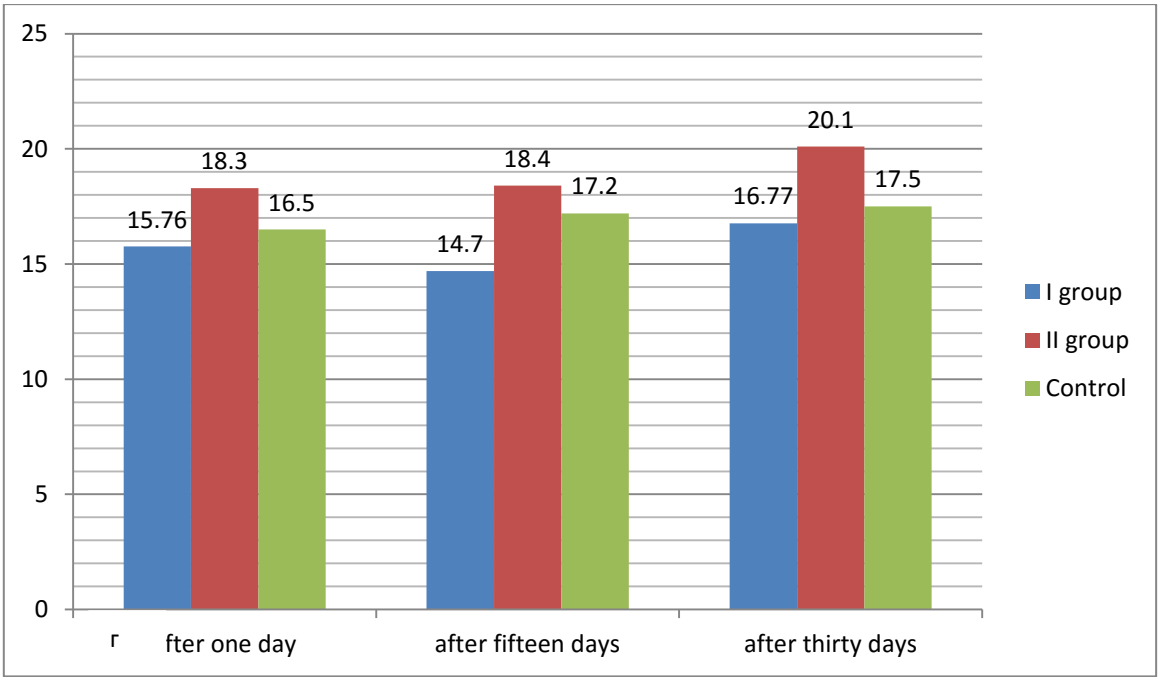

Figure 1: Changes the dynamics of gain the weigh the white mice by feeding the complex of probiotic bacteria

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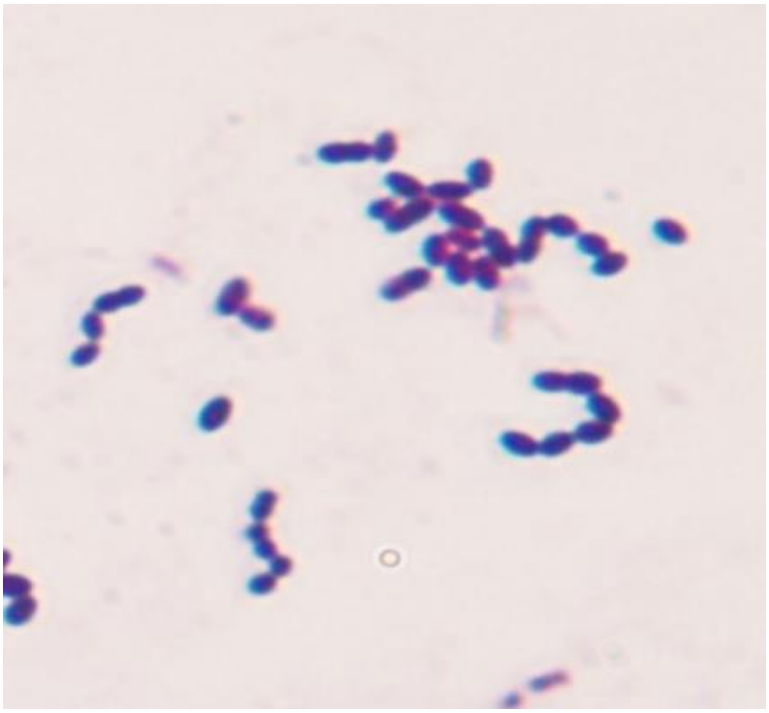

Figure 2: Probiotic - *Enterococcus faecium*, cultured on medium M17

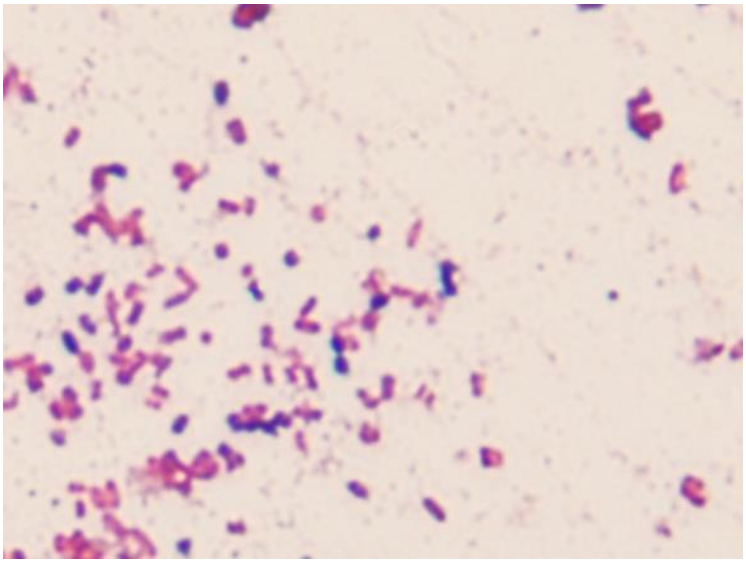

Figure 3. *Bifidobacterium bifidum* and *Enterococcus faecium* in faeces in the second group mice after 7 days experience

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