



DETERMINATION OF PROBIOTIC DOSAGES FOR INCLUSION IN THE DIETS OF GROWING KARABAIR FOALS

Luiza Tagayeva*

Shermat Jabborov**

Kunduz Normurodova*

*Department of Biotechnology and Microbiology, Faculty of
Biology and ecology, National University of Uzbekistan,
Tashkent, Uzbekistan. e-mail: tagaevaluiza646@gmail.com

**Scientific Research Institute of Livestock and
Poultry, Tashkent, Uzbekistan.

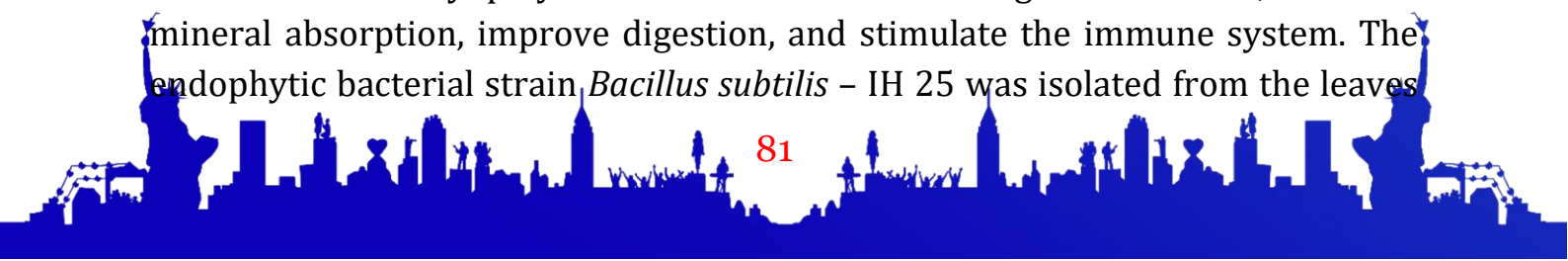
<https://doi.org/10.5281/zenodo.21904186>

Abstract: A probiotic dry mass-prepared from the *Bacillus subtilis* IH-25 endophytic bacterial strain, which was isolated from the leaves of the medicinal plant *Inula helenium* L. and evaluated for probiotic potential—was administered to weaned Karabair foals. It was added to their daily feed rations in amounts of 10, 20, 30, and 40 grams over a period ranging from 10 days to 3 months. Biochemical blood analysis revealed that the foals receiving 30 grams of the probiotic in their daily ration showed more favorable results compared to the other dosage groups.

Key words: *Inula helenium* L., medicinal plant, probiotic, *Bacillus subtilis* – IH 25, endophytic bacterium, strain, dry mass, Karabair breed foal, dietary ration, biochemical blood analysis.

Introduction. Ensuring the sustainable development of livestock farming and enhancing productivity through environmentally safe methods is a global priority in agriculture [1]. The period immediately following weaning is a critical stage in the development of the digestive system and gut microbiota in foals [1–3]. The transition from mother's milk to solid feed alters the nutritional regimen, triggering significant physiological and microbiological changes in the foal's digestive system—specifically, a reduction in beneficial gut microorganisms and a proliferation of opportunistic pathogenic bacteria. These changes can lead to reduced appetite, impaired feed digestion, diarrhea, and stunted growth. Consequently, the use of medicinal plants or probiotics represents one of the most effective strategies for supporting the development of the digestive system and gut microbiota in foals [4].

Based on the information presented above, *Inula helenium* L. is recognized as a medicinal plant widely used in horse breeding; it synthesizes immunomodulatory polysaccharides that modulate gut microbiota, enhance mineral absorption, improve digestion, and stimulate the immune system. The endophytic bacterial strain *Bacillus subtilis* – IH 25 was isolated from the leaves





of this medicinal plant, identified using molecular-genetic methods, and its probiotic potential was investigated [5].

Accordingly, the aim of this study was to determine the dosage for incorporating a dry-mass probiotic based on *Bacillus subtilis* – IH 25 into the diet of weaned foals of the Karabair breed.

Research methods. Forty foals are divided into five groups of eight. The foals in the control group are fed the standard daily farm ration. For the other groups-each consisting of eight foals-a probiotic is added to the standard daily farm ration at dosages of 10 g, 20 g, 30 g, and 40 g, respectively, over a period of three months.

Results and analysis. The inclusion of a dry-mass probiotic based on *Bacillus subtilis*-IH-25 in the diets of weaned 6-month-old Karabair foals was carried out according to the following table. (Table 1).

Table 1

Dosage rates for adding probiotics to the daily feed ration of weaned Karabair foals

Feed ration composition	Control n=8	Experimental groups, n=32			
		1st study group, n=8	2nd study group, n=8	3rd study group, n=8	4th study group, n=8
Alfalfa hay, kg	6,5	6,5	6,5	6,5	6,5
Oats (crushed), kg	2,0	2,0	2,0	2,0	2,0
Wheat bran, kg	0,5	0,5	0,5	0,5	0,5
Salt, g	18,0	18,0	18,0	18,0	18,0
<i>Bacillus subtilis</i> -IH 25, gr	-	10	20	30	40

Daily probiotic dosages of 10, 20, 30, and 40 grams were added to the foals' rations over a period ranging from 10 days to 3 months. To evaluate the study results, blood samples were collected from the Karabair foals after 3 months and subjected to biochemical analysis at the BIOQON veterinary diagnostic laboratory. The results indicated that, among the tested daily probiotic dosages ranging from 10 g to 40 g, the 30 g dosage yielded the most favorable blood analysis results compared to the other levels.

Conclusion. Probiotics based on **B. subtilis**-IH 25 (in dry form) were administered to weaned Karabair foals at daily dosages of 10 g, 20 g, 30 g, and 40 g over a period ranging from 10 days to 3 months. It was determined that the





blood analysis indicators associated with the 30 g daily dosage were superior to those of the other dosages.

List of references:

1. Hafizov I.I. Current state and development prospects of horse breeding in Uzbekistan // Collection of papers from the Republican scientific-practical conference on the topic "The role of social sciences and humanities in the development of the veterinary sector". February 23, 2024. P. 345–353.
2. Islamov A.Kh., Zaripova R.Sh., Murodova T.M., G'aybullaeva O.O. Propagation of *Inula helenium* L. plant and determination of elements content and biological characteristics // Research Journal of Analysis and Inventions ISSN (Online): 2776-0960. Volume-5, Issue-4, 2024. P. 15-20.
3. Salikhov Sh.I., Turayev A.S., Islamov A.Kh., Gaybullayeva O.O. Determining the amount of mineral elements in the roots of the black andes plant and its use in folk medicine // Folk medicine plus Scientific and practical social, medical, educational journal. 2022.-No. 4 (13). P.7-10.
4. Vasileva E.N., Akhtemova G.A., Zhukov V.A., Tikhonovich I.A. Endophytic micro-organisms and fundamental research in agriculture // Ecological genetics.– 2019. – V. 17. – № 1. – P. 19-32.
5. Tagayeva L.X., Normurodova K.T. Isolation of endophytic bacterial isolates from the medicinal plant *inula helenium* and study of their morphological and cultural characteristics // Bulletin of Agricultural Science of Uzbekistan, № 7/31. 2026. P. 24–26..

