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INFLUENCE OF PREBIOTICS IN PIGS NUTRITION ON BODY WEIGHT AND CONTENT OF *Escherichia coli* IN FECES

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Abstract: The aim of this study was to determine the effect of prebiotics in the diet of piglets after weaning on the increase in the average weight of experimental animals between female (♀) and male (♂) piglets, dynamically by weeks of experiment, as well as on the presence of *Escherichia coli* in faeces. The experiment included piglets at weaning, aged about 26 days. The F1 generation was used, which was created by crossing Landrace sows and Pietren boars. The piglets were fed for 56 days (8 weeks). Four groups were formed, each group was composed of 10 piglets (5 females and 5 males) with different concentrations of prebiotics and controls, in two replicates, a total of 100 experimental animals. Feed mixtures consisting of the same nutrients were used in the diet. Control groups (OA and OB) were fed with ordinary feed mixture, without the addition of additives, groups (IA and IB) with the addition of Bio-Mos prebiotics, in a concentration of 0.1%, groups (II-A and II- B) with 0.2%, groups (III-A and III-B) with 0.3% and groups (IV-A and IV-B) were fed with the addition of prebiotics in a concentration of 0.4%. It was concluded that the differences observed in the average weight between ♀ and ♂ piglets in any measurement period were not statistically significant. However, the best results in terms of average weight were given by the highest used concentrations of prebiotics in food, 0.4% and 0.3%. The preparation had a positive effect in terms of reducing the number of *Escherichia coli* bacteria in the digestive tract of piglets in all treatment groups by 42 to 320 times.

Key words: pig, prebiotic, mass, *Escherichia coli*

Introduction

The European Union has completely banned the use of antibiotics as growth promoters since January 2006. Thus, the goal of many studies has become alternative strategies for modulating the gastrointestinal environment in piglets. One of the alternative solutions is the use of prebiotics. Prebiotics have been defined by numerous authors, including (*Manning and Gibson, 2004; Awati and Moughan, 2006*) as indigestible food ingredients that act by selectively stimulating the growth and activity of non-pathogenic bacteria and have a beneficial effect on the health and production results of hosts. Fructo-oligosaccharides, inulin and mannan-oligosaccharides are some of the defined prebiotic additives intended for animal feed (*Pourabedin and Zhao, 2015*). Bio-Mos (*Alltech Inc®, USA*) is a product obtained by extraction of mannan-oligosaccharides from the outer part of the cell wall of the yeast *Saccharomices cerevisiae var. boulardii*. The effects of this preparation are as follows: it blocks the action of pathogenic bacteria by binding to them, strengthens the immune system by stimulating the synthesis of antibodies, stimulates the growth of beneficial bacteria in the intestines and thus improves conversion and production results. From previous research, it can be concluded that the best effect of Bio-Mos additive is manifested immediately after irrigation. *Radulović et al. (2014)* concluded that the use of prebiotics excludes negative effects, such as the appearance of residues, resistance and allergies, which were previously detected when using antibiotics in the diet. *Miguel et al. (2004)* conclude that its effect is most beneficial for piglets with slow growth (less than 180 g / day) during the first two weeks after weaning. Prebiotics play a significant role in preventing diarrhea during this period. Edema is a disease that most commonly affects piglets after weaning, and is caused by haemolytic strains of the bacterium *Escherichia coli*. *Priebe et al. (2002)* observed that a prebiotic can reduce the number of potentially pathogenic organisms such as bacteria from the genus *Clostridium*, from the family *Enterobacteriaceae* (genera *Escherichia coli*, *Enterobacter*, *Shigella* and *Salmonella*). The inclusion of prebiotics in the diet of piglets leads to an increase in the number of *Lactobacillus* and a decrease in the number of *Escherichia coli* in the ileum and colon of piglets, found *Deng et al., (2007)*. Results similar to the previous ones were presented by *Liu et al. (2008)* in which they state that the addition of prebiotics to the diet of weaned piglets successfully increases the number of *Lactobacillus* bacteria and reduces the number of *Escherichia coli* in faecal samples on days 14 and 21 after weaning. They also concluded that adding prebiotics to the diet of weaned piglets improves production parameters by increasing digestibility, reducing the frequency of diarrhea and improving intestinal morphology. The results of two experiments performed to examine the effect of mannan-oligosaccharides on the production results of broilers indicate that the use of Bio-Mos in the amount of 0.1 and 0.2% results in a statistically significantly higher body weight of broilers. In the first experiment, this increase was 4.8, and in the second 5.5% *(Newman, 1999)*.

The aim of this study was to determine whether Bio-Mos prebiotic affects the growth dynamics of the average weight of experimental animals, by weeks of the experiment, as well as the presence of *Escherichia coli* in the faeces. This research should enable adequate formulation of meals with the addition of Bio-Mos prebiotics for piglets after weaning, in order to make the most adequate use of all genetic predispositions and enable more economical production of pork.

Material and Methods

The experiment included piglets of F1 generation (landras x pietren), aged about 26 days, uniform body weight, fitness and health status. Piglets were treated with a dose of vitamin AD3E, a vaccine against swine fever, and male piglets aged 12 days were castrated. Piglets were measured individually, initially when forming groups, and then every seven days. The piglets were fed for 56 days (eight weeks). Each group consisted of 10 piglets, five females and five males. Four treatment groups were formed with different concentrations of prebiotics: I with 0.1%, II with 0.2%, III with 0.3% and IV with 0.4% and control (O) without prebiotics, in two replicates (A and B groups), which means that 10 groups of piglets were formed, a total of 100 experimental animals. Feed mixtures consisting of the same nutrients were used in the diet. During the experiment, three types of mixture were used: pre-starter, starter and grower. For the treatment groups, the prebiotic Bio-Moss was used as a supplement, which was included in the diet from the second week of the experiment. The piglets were fed four times during 24 hours. The food was distributed manually and water was available ad libitum.

Faecal samples were taken on three occasions, days 34, 45, and 55 of the experiment. Collective samples were taken from each group, which were then marked and sent for analysis to the Veterinary Institute "Dr Vaso Butozan" in Banja Luka. The test method used is called isolation and identification of *Escherichia coli*. The reference for this method is: "Colour Atlas and Textbook of Diagnostic Microbiology, 5th Edition, 1997" and "Manual for laboratory diagnostics-Standardization of diagnostic methods for bacterial, viral and parasitic diseases of animals whose control is prescribed by law, Belgrade, 1984". The reference culture of *Escherichia coli* was used. Method description: Cultural examination, then the material was seeded on two nutrient media (endo agar, Mc Conkey agar). The seeded media were incubated for 24-48 hours at 37°C. On endo agar the colonies of *Escherichia coli* are red with a metallic sheen, on Mc Conkey agar the colonies are pink. During the experiment, the dynamics of the average weekly increase in the mass of experimental animals, by weeks of the experiment and the presence of the bacterium *Escherichia coli* in the faeces were monitored.
Statistical analysis of the study was performed on experimental animals of both analysed groups, A and B, so that the sample of each treatment group for both female and male piglets was represented by 10 experimental animals (n = 10 biometric observation units). The obtained experimental results are presented in the tables as average values with corresponding measures of variability, by weeks of

measurement, especially for female (♀) and male (♂) piglets. The tables show the percentage difference in achieved masses between male and female piglets with a t-test of the significance of this difference.

Results and Discussion

In accordance with the set goal and the obtained experimental results in this research, the analysis and discussion are the results of the effect of applied diet treatments on the increase of average weight of experimental animals, dynamic and analysis results of *Escherichia coli* in faeces, as a consequence of applied diet treatments.

The effect of applied food treatments on the increase in the average weight of experimental animals, dynamically

Raising piglets largely depends on the diet, which directly affects growth. This period represents the most critical phase of production. Problems that occur due to the unaccustomedness of piglets to the consumption of concentrated nutrients, insufficiently developed digestive tract for digestion as well as due to insufficient secretion of hydrochloric acid in the stomach of piglets. Losses are greatest just after the weaning. This is the period when diarrhea, indigestion and other health problems occur and all together lead to losses in the body weight of piglets. Weaning of piglets with the level of stress reduced to a minimum and the transition to the next production phase, can be partially solved by adequately balanced meals with the use of additives, which are recommended in this phase of production. Prebiotics are considered a good solution, since many studies show that they have positive effects on the growth of animals, as well as on reducing diarrhea and indigestion, because they act on bacteria, regular inhabitants of the gastrointestinal tract. The initial body weight of piglets, before the introduction to the experiment, as well as the dynamics of the increase in the average weight of experimental animals are presented in this part of the paper. The dynamics of the average weekly increase in the weight of piglets in the control group is given in Table 1.

Table 1. Dynamics of average weekly weight gain of piglets in the control group

Terms	♀		♂		% $\Delta\bar{X}$	t_{exp}:
	$\bar{X} \pm S_{\bar{X}}$	*Vk*	$\bar{X} \pm S_{\bar{X}}$	*Vk*		
Initial weight	7164.5 ± 72.6	3.20	6981.5 ± 104.9	4.75	2.69	1.434 *ns*
7	7416.0 ± 230.5	9.28	7190.0 ± 95.3	4.18	3.14	0.906 *ns*
14	8141.0 ± 281.8	10.95	8249.5 ± 115.1	4.41	1.33	0.356 *ns*
21	9476.0 ± 385.6	12.87	9834.5 ± 169.8	5.46	3.78	0.851 *ns*
28	11600.0 ± 534.9	14.58	12080.0 ± 256.9	6.73	4.13	0.809 *ns*
35	12945.0 ± 652.7	15.94	12915.0 ± 519.5	12.72	0.23	0.036 *ns*
42	15020.0 ± 737.3	15.52	15265.0 ± 684.9	14.19	1.63	0.243 *ns*
49	17500.0 ± 1005.2	18.16	17723.0 ± 1017.9	18.16	1.27	0.156 *ns*
56	19945.0 ± 1162.4	18.43	20235.0 ± 1146.3	17.91	1.45	0.178 *ns*

Insight into Table 1 shows that the difference in average weight between male and female piglets in terms of measurements differs from 0.23% (day 35) to 4.13% (day 28). The significance of the difference determined by the t-test between male and female piglets of the control group shows that it is not statistically significant at any time. For the final analysis of the effect of the applied feeding models, we can state that the piglets in the control group, regardless of sex, achieved an average weight of 20090 grams in 56 days of feeding in this experiment. The dynamics of the average weekly increase in the weight of piglets of the first treatment group is given in Table 2.

Table 2. Dynamics of the average weekly increase in pig weight in the first treatment group with the addition of Bio-Mos prebiotics in a concentration of 0.1%.

Terms	♀		♂		% $\Delta\bar{X}$	t_{exp}:
	$\bar{X} \pm S_{\bar{X}}$	*Vk*	$\bar{X} \pm S_{\bar{X}}$	*Vk*		
Initial weight	7319.0 ± 83.1	3.58	7222.5 ± 127.9	5.60	1.34	0.633 *ns*
7	7497.0 ± 158.5	6.69	7377.5 ± 212.9	9.13	1.62	0.452 *ns*
14	8401.0 ± 294.8	11.10	8041.5 ± 343.9	13.52	4.47	0.794 *ns*
21	10111.0 ± 415.7	13.00	9419.0 ± 555.8	18.66	7.35	0.997 *ns*
28	13175.0 ± 585.9	14.06	11765.0 ± 714.9	19.22	11.98	1.525 *ns*
35	15370.0 ± 684.4	14.08	13665.0 ± 999.2	23.12	12.48	1.408 *ns*
42	18480.0 ± 805.4	13.78	15975.0 ± 1022.0	20.23	15.68	1,925 *ns*
49	21540.0 ± 1024.9	15.05	18680.0 ± 1232.2	20.86	15.31	1,784 *ns*
56	23756.0 ± 1055.8	14.05	20770.0 ± 1370.7	20.86	14.38	1,726 *ns*

Insight into Table 2 shows that the difference in average weight between male and female piglets in terms of measurements differs from 1.34% (initial weight) to 15.68% (day 42). The significance of the difference determined by the t-test between male and female piglets of the first treatment group shows that it is not statistically significant at any time. However, in the sixth and seventh measurement periods (days 42 and 49), the average weight of female piglets is higher than that of male piglets by over 15%, which can be considered indicative according to the research goal. However, in the eighth measurement period (day 56) this difference is less than 15% and as it is not statistically significant for the final analysis of the effect of applied feeding models, we can conclude that piglets in the first treatment group, regardless of sex, for 56 days of this experiment achieved an average weight of 22263 grams. When we look at the increase, from the results of the analysis of other researchers, which included 24 experiments, performed by *Hooge (2003)*, it is noticeable that the use of prebiotics led to an improvement of 1.88% in the groups that used this additive in the diet in relation to groups without added additives.

The dynamics of the average weekly increase in the weight of piglets of the second treatment group is given in the Table 3.

Table 3. Dynamics of the average weekly increase in pig weight in the second treatment group with the addition of Bio-Mos prebiotics in a concentration of 0.2%.

Terms	♀		♂		% $\Delta\bar{X}$	t_{exp}:
	$\bar{X} \pm S_{\bar{X}}$	*Vk*	$\bar{X} \pm S_{\bar{X}}$	*Vk*		
Initial weight	7188.0 ± 103.2	4.54	7350.5 ± 121.8	5.24	2.26	1.018 *ns*
7	7181.0 ± 139.4	6.14	7280.5 ± 155.8	6.77	1.38	0.476 *ns*
14	7814.5 ± 179.6	7.26	7988.0 ± 249.2	9.86	2.22	0.565 *ns*
21	9209.0 ± 222.8	7.65	9573.0 ± 416.1	13.70	3.95	0.771 *ns*
28	10545.0 ± 310.6	9.31	10780.0 ± 606.9	17.80	2.23	0.345 *ns*
35	12445.0 ± 383.6	9.75	13290.0 ± 874.2	20.80	6.79	0.885 *ns*
42	14315.0 ± 454.4	10.04	14935.0 ± 1102.1	23.34	4.33	0.520 *ns*
49	16625.0 ± 541.9	10.31	17605.0 ± 1467.5	26.36	5.89	0.626 *ns*
56	18825.0 ± 583.3	9.80	19760.0 ± 1656.6	26.51	4.97	0.532 *ns*

Insight into Table 3 shows that the difference in average weight between male and female piglets in terms of measurements differs from 1.38% (day 7) to 6.79% (day 35). The significance of the difference determined by the t-test between male and female piglets of the second treatment group shows that it is not statistically significant at any time. For the final analysis of the effect of the applied feeding models, we can state that the piglets in the second treatment group, regardless of sex, achieved an average weight of 19292.5 grams in 56 days of feeding in this experiment. *Newman (1999)* performed two experiments in which the aim was to examine the effect of mannan-oligosaccharides on the production results of broilers, where the preparation Bio-Mos was used. Reviewing the results, we notice that the use of Bio-Mos in the amount of 0.1 and 0.2%, respectively, results in a statistically significant increase in growth in the first experiment by 4.8% and in the second 5.5%.

The dynamics of the average weekly increase in the weight of piglets of the third treatment group is given in Table 4.

Table 4. Dynamics of the average weekly increase in the weight of piglets of the third treatment group with the addition of Bio-Mos prebiotics in the concentration of 0.3%.

Terms	♀		♂		% $\Delta\bar{X}$	t_{exp}:
	$\bar{X} \pm S_{\bar{X}}$	*Vk*	$\bar{X} \pm S_{\bar{X}}$	*Vk*		
Initial weight	7321.5 ± 90.25	3.89	7246.5 ± 144.6	6.31	1.03	0.440 *ns*
7	7456.5 ± 108.2	4.56	7441.0 ± 242.5	10.31	0.20	0.058 *ns*
14	8116.0 ± 226.3	8.82	8430.0 ± 337.1	12.64	3.72	0.773 *ns*
21	9864.5 ± 361.3	11.58	10302.5 ± 506.1	15.53	4.44	0.704 *ns*
28	12220.0 ± 456.2	11.81	12925.0 ± 765.9	18.74	5.77	0.791 *ns*
35	15075.0 ± 596.0	12.50	16040.0 ± 953.6	18.79	6.40	0.858 *ns*
42	15855.0 ± 801.1	15.98	18165.0 ± 1110.5	19.33	14.57	1.687 *ns*
49	19020.0 ± 734.1	12.21	20865.0 ± 1253.4	18.99	9.70	1.270 *ns*
56	21985.0 ± 881.7	12.68	24130.0 ± 1263.7	16.56	9.76	1.392 *ns*

Insight into Table 4 shows that the difference in average weight between male and female piglets in terms of measurements varies from 0.2% (day 7) to 14.57% (day 42). The significance of the difference determined by the t-test between male and female piglets of the third treatment group shows that it is not statistically significant at any time. For the final analysis of the effect of the applied feeding models, we can state that the piglets in the third treatment group, regardless of sex, achieved an average weight of 23057.5 grams in 56 days of feeding in this experiment. *Živković et al. (2011)* examined the influence of Bio-Mos in the diet of sows and piglets, where they observed a higher increase of 4.4% in experimental groups of animals that included this prebiotic in their diet. In contrast, data from an experiment conducted by *Biagi (2007)* show that there is insufficient evidence that prebiotics can significantly improve growth in weaned piglets.

The dynamics of the average weekly increase in the weight of piglets of the fourth treatment group is given in Table 5.

Table 5. Dynamics of the average weekly increase in the weight of piglets of the fourth treatment group with the addition of Bio-Mos prebiotics in a concentration of 0.4%.

Terms	♀		♂		% $\Delta\bar{X}$	t_{exp}:
	$\bar{X} \pm S_{\bar{X}}$	Vk	$\bar{X} \pm S_{\bar{X}}$	Vk		
Initial weight	7049.5 ± 137.4	6.16	7366.0 ± 123.2	5,29	4.49	1.715 ^{ns}
7	7239.0 ± 215.6	9.42	7500.5 ± 193.3	8,15	3.61	0.903 ^{ns}
14	7954.0 ± 261.6	10.40	8230.5 ± 278.4	10,69	3.48	0.785 ^{ns}
21	9501.5 ± 354.4	11.79	9792.2 ± 384.4	12,41	3.06	0.556 ^{ns}
28	12150.0 ± 466.6	12.14	12320.0 ± 444.4	11,41	1.40	0.264 ^{ns}
35	14400.0 ± 729.3	16.02	14885.0 ± 542.3	11,52	3.36	0.534 ^{ns}
42	17065.0 ± 711.9	13.19	17110.0 ± 601.1	11,11	0.26	0.048 ^{ns}
49	20765.0 ± 884.1	13.46	20745.0 ± 658.8	10,04	0.01	0.018 ^{ns}
56	22955.0 ± 914.3	12.59	23260.0 ± 800.1	10,88	1.33	0.251 ^{ns}

Insight into Table 5 shows that the difference in average weight between male and female piglets in terms of measurements differs from 0.01% (day 49) to 4.49% (initial weight). The significance of the difference determined by the t-test between male and female piglets of the fourth treatment group shows that it is not statistically significant at any time. For the final analysis of the effect of the applied feeding models, we can state that the piglets in the fourth treatment group, regardless of sex, achieved an average weight of 23107.5 grams in 56 days of feeding in this experiment.

The presence of *Escherichia coli* in the faeces, as a consequence of applied dietary treatments

It is believed that most diarrhea and indigestion in piglets are caused by different serotypes of the bacterium *Escherichia coli*. Infections caused by the bacterium *Escherichia coli* most often occur in young categories of pigs, in new-born piglets on suckling in the first days of life, weaned piglets, and immediately after weaning when the diet of concentrated nutrients begins. The transition from dairy to a concentrated diet and an overloaded digestive tract, after ingestion, result in excessive reproduction of *Escherichia coli* strains in the intestines. Prebiotics in this period have a significant role in reducing the number of *Escherichia coli* bacteria in the digestive tract, and preventing the occurrence of diarrhea and other indigestion to which this category of pigs is susceptible. *Escherichia coli* was analysed after switching to the grower diet. The results of the analysis are shown in Table 6.

Table 6. Number of *Escherichia coli* from faecal samples by treatment groups (× 10^8)

Treatment	Group	Day 35	Day 46	Day 55
Control	A	400	500	400
	B	250	300	300
I treatment group	A	7.5	1.5	1.5
	B	8.0	2.0	1.5
II treatment group	A	2.5	2.0	1.5
	B	2.5	1.0	1.0
III treatment group	A	2.0	2.0	1.5
	B	2.5	2.0	2.0
IV treatment group	A	2.5	2.0	2.0
	B	2.5	2.5	2.0

Table 7. Average for A and B (×10^8)

Treatment	Day 35	Day 46	Day 55
Control	325	400	350
I treatment group	7.75	1.75	1.50
II treatment group	2.50	1.50	1.25
III treatment group	2.25	2.00	1.50
IV treatment group	2.50	2.25	2.00

A review of Tables 6 and 7 shows that the content of *Escherichia coli* in the control group is higher than in the treatment groups fed with Bio-Mos prebiotic by at least 42 to 260 times, and at most by 52 to 320 times. Given such a drastic reduction in the content of *Escherichia coli* in the faeces of treatment groups fed with Bio-Mos prebiotic, such a phenomenon does not have to be proven by any statistical testing. Results similar to the results in this paper have been obtained and presented by many authors. *Deng et al. (2007)* found in their research that the inclusion of prebiotics in the diet of piglets leads to an increase in the number of *Lactobacillus* and a decrease in the number of *Escherichia coli* in the ileum and colon of piglets. The results in accordance with the above were also presented by *Liu et al. (2008)* in which they state that the addition of prebiotics to the diet of weaned piglets successfully increases the number of *Lactobacillus* bacteria and reduces the number of *Escherichia coli* in faecal samples taken twice.

In the treatment groups fed with Bio-Mos prebiotic, only the treatment group I was singled out in the first term of analysis (7.75), which can be related to the fact that the smallest amount of prebiotics (0.1%) was used here, as well as that in further terms of analysis the content of *Escherichia coli* in the faeces, between this treatment group and other treatment groups with increased content of Bio-Mos prebiotics, there are practically no differences. Thus, the lowest concentration of prebiotics of 0.1% had a positive effect on the reduction of the number of *Escherichia coli* bacteria. In support of this statement, a noticeable decrease in the content of *Escherichia coli* in the faeces with the length of the diet with Bio-Mos prebiotic can be pointed out: 3.75 → 1.87 → 1.56, i.e. expressed by the base index: 100% → 49.87% → 41.6%. The performed analysis clearly confirms the influence of Bio-Mos prebiotics on the content of *Escherichia coli* in the faeces of piglets in this experiment.

Conclusion

The analysis of the significance of the differences in the average weight between female and male piglets observed at the level of weekly dynamics shows that the differences that occurred can be assessed as random, not argued by the statistical significance. Although without statistical significance, observing the results of all treatment groups, it can be noticed that the best results in terms of the achieved average weight are given by the highest used concentrations of prebiotics in food, 0.4% but also 0.3%. From the analysis of faeces for the number of *Escherichia coli* bacteria, it is clear that the number of bacteria differs significantly between the treatment groups and the control group. The preparation had a positive effect in terms of reducing the number of *Escherichia coli* bacteria in the digestive tract of piglets in all treatment groups, drastically, by 42 to 320 times. A decrease in the number of bacteria with long-term use was also observed, and according to the sampling stages, this share decreased from 100% over 49.87% to 41.6% in the last sampling period. The share, that is, the percentage of prebiotics in food is not of special importance, because even the lowest concentration used gave a positive result in reducing the number of *Escherichia coli*. It is recommended that the use of this preparation should probably be longer and in higher concentrations up to 0.3%, and that in the next phase of pig breeding, it is likely that there will be a significant manifestation of the positive effects of the additive used on production parameters.

Uticaj prebiotika u ishrani prasadi na telesnu masu i sadržaj *Escherichia coli* u fecesu

Mirjana Delić-Jović

Rezime

Cilj istraživanja je bio da se utvrdi uticaj prebiotika u ishrani prasadi po zalučenju na porast prosečne mase eksperimentalnih životinja, između ženske (♀) i muške (♂) prasadi, dinamički po nedeljama eksperimenta, kao i na prisustvo bakterije *Escherichia coli* u fecesu. Eksperimentom su bila obuhvaćena prasad po zalučenju, starosti oko 26 dana. Korišćena je F1 generacija, koja je nastala ukrštanjem krmača landrasa i nerastova pijetrena. Ishrana prasadi trajala je 56 dana (8 nedelja). Formirane su četiri grupe, svaka grupa bila je sastavljena od 10 prasadi (5 ženskih i 5 muških) sa različitim koncentracijama prebiotika i kontrolna, u dva ponavljanja, ukupno 100 eksperimentalih životinja. U ishrani su korišćene krmne smeše koje su se sastojale od istih hraniva. Kontrolne grupe (O-A i O-B) su hranjene krmnom smešom bez dodavanja aditiva, grupe (I-A i I-B) sa dodatkom prebiotika Bio-Mos-a, u koncentraciji od 0,1%, grupe (II-A i II-B) sa 0,2%, grupe (III-A i III-B) sa 0,3% i grupe (IV-A i IV-B) su bile hranjene sa dodatkom prebiotika u koncentraciji od 0,4%. Zaključeno je da razlike koje su utvrđene u prosečnoj masi između ♀ i ♂ prasadi ni u jednom terminu merenja nisu bile statistički značajne. Ipak, najbolje rezultate u pogledu ostvarene prosečne mase dale su najviše korišćene koncentracije prebiotika u hrani, 0,4 % i 0,3 %. Preparat je ispoljio pozitivan efekat u pogledu smanjenja broja bakterije *Escherichia coli* u digestivnom traktu prasadi kod svih tretmanskih grupa i to za 42 do čak 320 puta.

Ključne reči: prase, prebiotik, masa, *Escherichia coli*

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