

EFFECT OF PROBIOTICS ON BODY CONFORMATION OF THE FATTENING CHICKENS

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Abstract: The possibility of using different probiotic products primarily in animal food represents a special direction in the modern production of broiler meat. Intensive broiler production has been improved in the last few decades especially in the fields of genetics, nutrition and technology, in order to achieve maximum growth broilers, the optimal utilization of food and high yields, especially white meat. Considering the above mentioned research was conducted in order to examine the impact of commercial probiotic products on the body conformation of the carcasses of chickens after 42 days of fattening. In experiment was used a total of 30 chickens provenience Cobb divided into two groups (P and K). Chickens from both groups were vaccinated according to the plan and program of immunoprophylaxis, and selected technical and technological solutions of accommodation, as well as feeding and watering chickens were in accordance with the recommendations of the selectors for the floor system rearing. Chickens of experimental group (P) were given in drinking water, a commercial probiotic Probios®, a soluble powder for poultry, product of a company Chr. Hansen A / S, Denmark. Probiotic treatment of experimental groups of chickens was conducted the first three days of life and three days during the vaccination of chickens (the day before, on the day and the day after vaccination). Measures of body conformation (the breast circumference, keel length, breast depth, drumsticks circumference, shank length and breast angle) were determined on carcasses after the fattening of 42nd day using standard tools in livestock breeding. The results obtained from this study suggest that the usage of commercial probiotics in broiler chickens in intensive fattening has proved to be statistically significant on tested measure of body conformation.

Key words: probiotic, chickens, Cobb, body conformation, fattening

Introduction

The term "probiotic" was first introduced by *Lilly and Stillwell (1965)* when describing substances which secreting some microorganisms which stimulate growth of other microorganisms while Parker gave the definition of probiotics as "organisms and substances that contribute to intestinal microbial balance" (*Parker, 1974 cited Fuller and Cole, 1989*). Fuller later redefined the probiotics as "live microbial feed supplements which beneficially affect the animal by improving its intestinal microbial balance" (*Fuller, 1989*). In different experimental designs were examined the various commercial and experimental probiotic preparations which contain different strains of bacteria, mold, yeast, lactose and vitamin C. Numerous authors (*Brzóska at al., 1999; Djouvinov at al., 2005; Gagić at al., 1991a, 1991b; Rešidbegović at al., 2001; Softić at al., 2003; Kavazović at al., 2004, 2009*) confirmed the positive effects of probiotic use to production parameters, body conformation and the health of the broiler chickens. Intensive broiler production has improved the last decades, especially through the segments of genetics, nutrition and technology, in order to achieve maximum growth broilers, the optimal utilization of food and high yields. The general look and feel of meatiness of chickens depends first of all from body conformation, and in this regard is the goal of producing broiler meat production, especially in the breasts, thighs and drumsticks. Considering the above mentioned our goal was to investigate the effect of commercial probiotic preparations on the body conformation of carcasses of chickens after 42 days of fattening.

Materials and Methods

In experiment was used a total of 30 chickens provenience Cobb divided into two groups (P and K). Chickens from both groups were vaccinated according to the plan and program of immunoprophylaxis, and selected technical and technological solutions of accommodation, as well as feeding and watering chickens were in accordance with the recommendations of the selectors for the floor system to hold. Chickens of experimental group (P) were given in drinking water, a commercial probiotic Probios®, a soluble powder for poultry, product of a company Chr. Hansen A / S, Denmark. Probiotic treatment of experimental groups of chickens was conducted the first three days of life and three days during the vaccination of chickens (the day before, on the day and the day after vaccination). Measures of body conformation (the breast circumference, keel length, breast depth, drumsticks circumference, shank length and breast angle) were determined on carcasses after the fattening of 42nd day using standard tools in livestock breeding.

Results and Discussion

Absolute and relative values of measures of body conformation, and the statistical justification of the difference between the groups on chicken carcasses are shown in Table 1. Measures of conformation of broiler chickens, expressed as an index showing the ratio of body weight before slaughtering, and measure observed on the carcass, in order to minimize the effect of body mass and emphasizes the influence of the applied treatment, are also important indicators of carcass quality. Considering that the comparison of results regarding the effect of probiotics on measures of body conformation could not find the information in the available literature, our results could only compare with the results of other authors, whose experimental designs were different and other factors had an influence on these parameters.

Table 1. Measures of body conformation on chicken carcasses provenience Cobb

Groups	P (Experimental)	K (Control)
Average weight (g)	2410,12	2350,22
Breast circumference (mm)	315,67*	306,67
Drumstick circumference (mm)	163,8*	156,2
Index (g/mm)	14,71	15,05
Keel length (mm)	152,47*	144,6
Index (g/mm)	15,8	16,25
Shank length (mm)	87,53	85,73
Index (g/mm)	27,53	27,41
Breast depth (mm)	127,66	125,53
Index (g/mm)	18,88	18,72
Breast angle (degrees)	127,33***	116,4

By analyzing the results we have found the best average body weight at the end of fattening period of chickens in experimental groups. Similar to our results, the positive effects of probiotics on body weight of chickens during the experiment was confirmed by other authors (*Brzóska et al., 1999; Djouvinov et al., 2005, Ivanković et al., 1999*). *Kavazović et al. (2009)* in their work have found positive effects of implementing a commercial probiotic Probios at the end of fattening period of 42 days on production performance (body weight, weight gain, food conversion), which is consistent with our research. The highest average value of the breast circumference of 315.67 mm was measured in experimental groups of chickens. Keel length as one measures of body conformation can be viewed from two aspects. The long keel has more space for chest muscles, and thus the curvature of the lower trunk, with one, and if given the priorities meatiness, then it

would have the advantage of relatively long keel, with the second aspect. Considering the fact, the lower index value (g/mm) indicates a more favorable conformation. Our results obtained in both cases are confirmed by a more favorable conformation in the treated chickens. Application of inactivated yeast, vitamin C and lactose in live broiler chickens of Cobb 500 strain during the fattening period of 42 days in the experimental conditions, *Softić et al. (2003)* found positive and statistically significant differences of probiotics on body weight, chest circumference and length of the keel. *Kavazović et al. (2004)* also found positive effects (increase in average body weight and weight gain, and FCR) application of the same probiotic agents in chickens for fattening than 42 days. Leg meat is, along with white breast meat, the best part of chicken carcasses. In chickens with rounded and fuller drumsticks circumference is larger, and the relative value of the expressed lower leg index indicates a more favorable conformation. By this criterion, a more favorable conformation achieved by a group of chickens treated with probiotics. Higher index of breast depth and shank length a more favorable conformation, our results are also in this view were better in the treated chickens. The highest average values breast angle we found a group chickens treated with probiotics. In comparison with the works of other authors (*Pavlovski et al. 2006; Softić, 2005*) for all parameters of body conformation, and bearing in mind, a different design of experiments and the use of other broiler strains in them, our results obtained were higher.

Conclusion

Based on the presented results of our work and their consideration in the context of earlier studies of similar themes, we can conclude that the use of commercial probiotics Probios[®] proved to be justified to test a measure of body conformation in broiler chickens.

Uticaj probiotika na telesnu konformaciju pilića u tovu

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Rezime

Mogućnost korišćenja različitih probiotskih preparata pre svega u stočnoj hrani predstavlja poseban pravac u savremenoj proizvodnji brojlerskog mesa. Intenzivna brojlerska proizvodnja je poslednjih decenija unapređivana posebno u oblastima genetike, ishrane i tehnologije, s ciljem postizanja maksimalnog rasta brojlera, optimalnog iskorišćavanja hrane i visokih prinosa, posebno belog mesa. S

obzirom na navedeno izvedeno je istraživanje sa ciljem da se ispita uticaj komercijalnog probiotskog preparata na telesnu konformaciju obrađenih trupova kod pilića nakon 42 dana tova. U eksperimentu je korišćeno ukupno 30 pilića provenijence Cobb podjeljenih u dve grupe (P i K). Jedinke iz obe grupe vakcinisane su prema utvrđenom planu i programu imunoprofilakse, a odabrana tehnička i tehnološka rešenja smeštaja, te ishrana i napajanje pilića, bili su u skladu sa preporukama selekcionera za podni sistem držanja. Pilići eksperimentalne grupe (P) dobijali su u vodi za piće komercijalni probiotik Probios[®], topivi prašak za perad firme Chr. Hansen A/S, Danska. Probiotski tretman eksperimentalne grupe pilića bio je prva tri dana života i trodnevno pri vakcinisanju pilića (dan pre, na dan vakcinisanja i dan nakon vakcinisanja). Mere telesne konformacije (obim grudi, dužina kobilice, dubina grudi, obim bataka, dužina piska i grudni ugao) utvrđene su na trupovima nakon završetka tova 42. dana uz korišćenje standardnih pomagala u stočarstvu. Dobijeni rezultati ovog istraživanja upućuju na zaključak da upotreba komercijalnog probiotika kod brojlerskih pilića u intenzivnom tovu pokazala se statistički opravdanom na ispitivane mere telesne konformacije.

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