INFLUENCE OF SYNBIOTIC ON BROILER CHICKEN PERFORMANCE AND MEAT QUALITY

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INTRODUCTION. Over the last decades, probiotics, prebiotics, enzymes, feed acidifiers, anti-oxidants and different additives of plant origin have commonly served as feed additives. The favourable impact is secured through achievement of a better feed conversion and increase of the vitality of the animal system, promoting immunity and regulating the micro-flora of intestinal tract, which eventually results in higher production effectiveness. The **objective** of study is to evaluate the influence of the synbiotic (prebiotic *Jerusalem artichoke* (JA) dry form 0.5% and probiotic *Lactobacillus reuteri* 10 mg 1.0 X 108 CFU kg^{-1}on broiler growth performance, the intestinal microflora, carcass yield, and meat quality.

METHODS. 120 one-day-old cross-breed ROSS 308 broiler chickens were randomly allocated into trial and divided in two groups of 60 birds each. Experiment was carried out according to the scheme in Table 1.

Table 1 **The scheme of the trial**

Group	Basic feed BF	Feeding programme	
		Prebiotic: JA	Probiotic: *Lactobacillus reuteri*
Control Group **CG**	BF	-	-
Trial Group **G1**	BF	0.5 %	10 mg 1 x10^8 cfu kg^{-1}

Records of live body weights and feed consumption were obtained weekly. At the 42nd day of the experiment, 5 birds of each group were slaughtered, the pH of intestinal tract content was measured, meat biochemical testing was performed, and contents of *ileum* samples were tested for counts of lactic acid bacteria using Rogosa agar.

RESULTS. Higher average live body weight and improved feed conversion were found for broiler chickens of G1group on the 42nd day of the trial (Table 2).

Table 2 **Productivity of broiler chickens**

Parameters	**Groups**	
	CG	**G1**
Live weight, g	3325.0 ± 82.5	3456.0 ± 93.2
% to control	100.0	103.9
Feed conversion, kg kg^{-1}	1.80 ± 0.02	1.76 ± 0.05
% to control	100.0	97.7
Production efficiency factor	439.8	467.5
± to control	-	27.7

G1 group chickens' intestinal contents pH tended to decrease, but the numbers of lactic acid bacteria to increase ($p<0.05$) compared with CG group (Table 3).

Table 3 **Value of pH and lactic acid counts in the intestinal tract of 42 day old broiler chickens**

Parameters	**Groups**	
	CG	**G1**
pH in *duodenum*	6.34	5.59
pH in *jejunum*	6.27	5.89
pH in *ileum*	6.71	5.86
pH in *caeca*	6.75	6.34
pH in *colon*	6.50	5.93
Counts of lactic acid bacteria Lg_{10} cfu g^{-1} in *ileum* content	8.2	9.3

Trial group broilers' meat quality was better: meat quality index (total protein/ total fat) was higher, the energy value of meat was lower, and the cholesterol content of meat was lower compared with control group meat samples (Table 4).

Table 4 **Meat quality indices**

Parameters	**Groups**	
	CG	**G1**
Meat quality index	20.70	21.35
Energy value of meat, kcal 100 g^{-1}	101.90	91.86
Tryptophan, g 100 g^{-1}	0.28	0.29
Oxyproline, g 100 g^{-1}	0.074	0.071
Tryptophan / oxyproline	3.78	4.08
Cholesterol, mg 100g^{-1}	91.10	71.43

CONCLUSION. Addition of JA in 0.5% concentration in combination with 10 mg 1.0 x 108 cfu kg^{-1} *Lactobacillus reuteri* favourably influenced broiler chickens' performance and obtained meat quality.

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