The Comparison of Performance of Three Hybrid Combinations of Broiler Chicks at Different Dose of Probiotic

Ján Weis, Gabriel Pál, Cyril Hrnčár, Beata Baraňska

Department of Poultry Science and Small Animal Husbandry
Faculty of Agrobiology and Food Resources, Slovak University of Agriculture, Nitra, Slovakia

Abstract: If we want to find replacement to use of antibiotics, we must search more naturally alternative methods. Such method can be also used with probiotics in poultry nutrition. By the help of them we can achieve better health state and higher increase of live and slaughter weight. We tested the effect of probiotic Propoul in the experiment. We applied two different doses of probiotic at three hybrid combinations broiler chicks (Ross 308, Hubbard JV, Cobb 500). We watched difference among live weight, body symmetry and feed conversation. In all hybrids we found statistically significant difference (P<0,05) between experimental groups and control group, only experimental group 2 and control group at hybrid Ross 308 we found statistically significant difference (P<0,05). We did not find the difference between experimental groups. With the application of probiotics are reached better feed conversation in experimental groups against control group. We did not find statistically significant difference in body symmetry.

Key words: broiler hybrids, feed consumption, live weight, probiotic

1. Introduction

The term probiotic stems from the Greek and means "in favor of life"; its antonym is antibiotics, which means "against life" (Coppola and Turnes, 2004). A probiotic is a live microbial feed supplement, which beneficially affects the host animal by improving its intestinal balance. It has been used as a substitute of antibiotics that is being used in considerable amounts as growth promoters in broilers production and is, associated with incalculable risks for human health resulting from the use of particular feed additives (Ahmad, 2006). The intestinal microflora lives in intimate contact with its surrounding intestinal wall and the bacteria can exert beneficial or deleterious effects on the host, depending on whether they are classified as probiotics or as pathogens. The interaction is determined on one hand by characteristics of the microorganisms, and on the other hand by characteristics of the intestinal wall. Together they determine the health status of the intestine (Jeurissen et al., 2002). Recent data demonstrate that at least some species of non -pathogenic intestinal microbiota also communicate with the epithelium and immune system, modulating tissue physiology and ability to respond to infection. Probiotics and prebiotics alter the intestinal microbiota and immune system to reduce colonization by pathogens in certain conditions (Patterson, Burkholder, 2003).

Capcarová et al. (2009) recorded that preventive application of probiotic preparations achieved better utilization of nutrients and feed and they had a positive effect on environment.

Kabir et al. (2004), for example, conducted a 6-wk growth performance study with broilers and found that live weight gain and carcass yields were significantly higher in broilers fed probiotic

* Corresponding author: Ján Weis, 00 421 37 641 4438, Jan.Weis@uniag.sk

supplementation. They also found significant differences among spleen and bursa weights.

2. Materials and methods

The experiment realized in half-operation conditions experimental base of Department of Poultry Science and Small Animal Husbandry of Slovak University of Agriculture in Nitra in three-floor cage technology. Tested probiotic preparate Propoul component *Lactobacillus fermentum CCM 7158* strain in the carrying media in the amount of 1 x 10^9 rudiments in 1 g, maltodextrin and fructooligosaccharide. As a result of its working the metabolism improves with a positive effect on weight gains and slaughter gains.

We applied two different doses of probiotic at three hybrid combinations of broiler chicks (Ross 308, Hubbard JV, Cobb 500). All hybrids were divided in 3 groups at 20 pieces:

1. Control group – without addition of probiotic preparate Propoul,
2. Experimental group no. 1 – applicated probiotic into the drinking water (1. and 2. week 6.6 mg, and the from 3. to 5. week 3.7 mg).
3. Experimental group no. 2 – applicated probiotic into the drinking water still at 3.3 mg dose from the beginning to the end.

The average body weight of growing broiler chickens we measured every week. Feeding and drinking have been *ad libitum*. We are monitoring the following indexes: live weight (g), feed consumption (kg) from 1 kg live weight, mortality and utility parameters.

3. Results and discussion

From table 1 we can read, that hybrid type Ross 308 was statistically significant difference ($P<0.05$) on 35. day to advantage for experimental group 2 against to control group. In hybrid Hubbard JV this statistically significant difference ($P<0.05$) was spotted already on 28. day to advantage for both experimental groups to compared with control group, and that difference was spotted too on last day. While at last hybrid Cobb 500 we registrated statistically significant difference ($P<0.05$) on 28. day to advantage experimental group 1 against control group and on 35. day both experimental groups show statistically significant difference ($P<0.05$) against control group.

Table 1. Average live weight of individual hybrids

Days	Groups	Ross 308		Hubbard JV		Cobb 500	
		n	x	n	x	n	X
1.	Control	20	47.35	20	49.30	20	50.30
	Exper. no.1	20	46.75	20	49.75	20	49.80
	Exper. no.2	20	47.15	20	49.80	20	50.60
7.	Control	20	106.25	20	111.90	20	110.45
	Exper. no.1	20	104.50	20	119.70	20	123.15
	Exper. no.2	19	96.89	19	112.68	20	107.15
14.	Control	20	296,45	20	330.80	20	306.00
	Exper. No.1	20	307.80	20	353.10	20	354.25
	Exper. No.2	19	296.89	19	333,37	20	333.80
21.	Control	20	650.65	20	680.85	20	693.25
	Exper. No.1	20	650.30	20	719.75	18	750.33
	Exper. No.2	19	661.79	19	729.05	20	727.75
28.	Control	20	1109.70	20	1123.50	20	1136.35
	Exper. no.1	20	1128.30	20	1206.15	18	1223.00
	Exper. no.2	19	1178.37	19	1217.38	20	1215.20
35.	Control	20	1644.70	20	1627.25	20	1629.15
	Exper. no.1	20	1683.95	20	1757.65	18	1757.28
	Exper. no.2	19	1765.05	19	1775.06	20	1766.00

Mutus et al. (2006) used a probiotics preparates witch contained a combination of *Bacillus licheniformis* and *Bacillus subtilis* strains, and they found the probiotics increased the live weight of chicks, but they did not find statistically significant difference between control group and experimental group and the feed consumption was the same with both groups.

Table 2. Body symmetry of hybrids by groups

	Lenght trunk	Semi-district	Lenght Carina	Depht Trunk	Lenght Thigh	Lenght shin	Length Leg
	16,35	16,7	9,85	9,9	9,65	11,65	8,2
	16,25	16,6	10,05	10,25	10,2	12,35	8,2
Ross 308	16,3	16,55	10,2	10,1	10,15	12,3	8,15
	16,1	16,2	10,2	10,05	9,9	12,25	8,2
	16,1	16,3	10,35	10,05	10,2	12,4	8,2
Hubbard JV	16,1	16,45	10,25	10,15	10,15	12,25	8,15
	16,05	16,1	10,25	10,05	10,05	12,35	8,2
	16,3	16,55	10,3	10,2	10,1	12,3	8,25
Cobb 500	16,25	16,3	10,3	10,2	10,15	12,3	8,1

We found a statistically significant difference ($P<0.05$) in live weight, but this difference we did not find in body symmetry. In most cases we can see that experimental groups account any higher attributes.

Table 3. Mortality of hybrids

Mortality	ROSS 308	Hubbard JV	Cobb 500
Control	-	-	-
Exper. No.1	-	-	10 %
Exper. No.2	5 %	5 %	-

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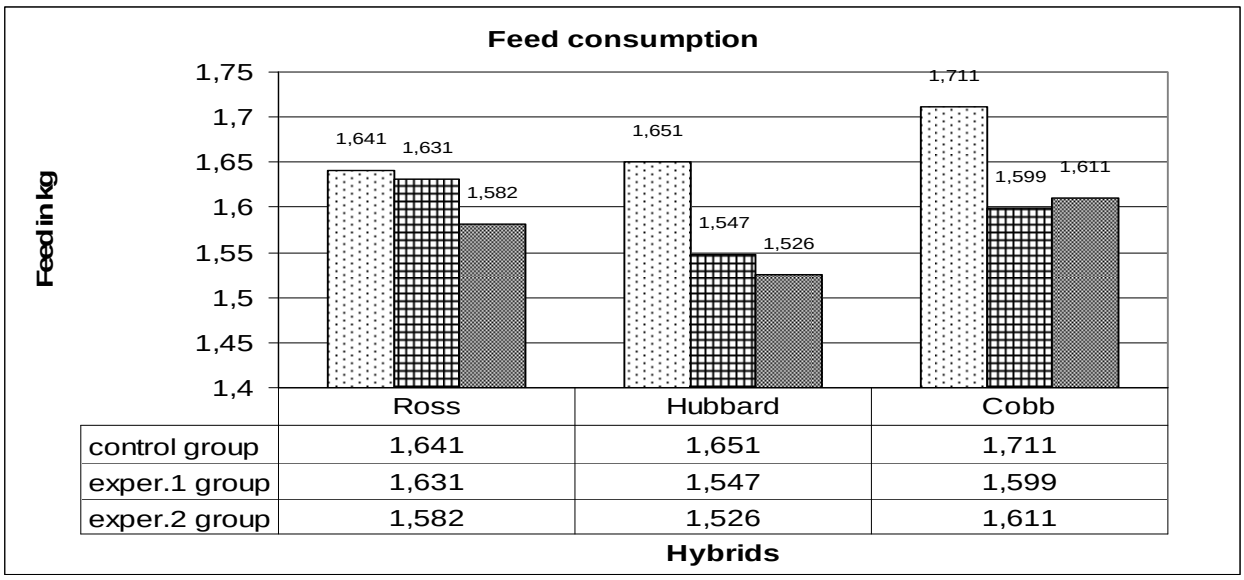

Figure 1. Feed consumption

In control groups we did not registrate any mortality, but in the experimental group 1 we

registrated a mortality at Cobb 500 hybrid and in experimental groups 2 in Hubbard JV and Ross 308 hybrides

From Picture 1 results, that at hybrids Ross 308 and Hubbard JV the feed consumption was lower in experimental group 2. they get smaller dose of probiotic. At the hybrid Cobb 500 the smallest feed consumption account experimental group 1.

4. Conclusions

Dosing of probiotics shows how they increase effectively live weight of chicks, where statistically significant difference between experimental groups against control group is showed and also decrease of feed consumption. However these results have not shown in symmetry of chicks. Even though mortality in control group is unlisted, but we found in the experimentals, we must do more experiments with more pieces to detect effectiveness of probiotics on health state.

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