

Influence of pumpkin seed cake on production and slaughter indicators for broiler chickens

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INTRODUCTION

Nutritional needs of broiler chickens are very high. In average, feed mixtures contain 19-22 different crude proteins, which points out the necessity to use a significant part of fodders that are very rich in crude proteins. The usage of conventional fodders, such as soybean and soybean meal, has become common in poultry feeding, thanks to very good amino acid ratio and high crude protein level, ranging from 37% to 48%. Alternative fodders intended for broiler production are divided to those rich in crude proteins and those rich in energy. Pumpkin seed cake (PSC) contains up to 500 g/kg of crude proteins and 70 g/kg of raw fibre. Pumpkin seed cake is a high quality source of high quality fatty acids, proteins, herbal sterols and vitamins. For the purpose of preparation of meals for monogastric animals, only the pellets and cakes from shelled seeds are being used.

The aim of this study was to determine the influence of different rates of PSC, added to fodder mixtures at different concentrations, on production and slaughter indicators of broiler chickens.

MATERIALS AND METHODS

The study included 135 one-day-old broilers of Ross 308 chickens divided into three groups; Control group (C), Experimental group 1 (E1), and Experimental group 2 (E2). The C group fed feed mixtures with no PSC added. The E1 and E2 groups of broilers fed fodder mixtures containing 7% and 14% of PSC, respectively. During the experiment, individual weekly weighing of broiler chickens was performed, together with simultaneous monitoring of consumption of feed by groups. Based on the obtained results, weekly weight gains and conversion values in broiler chickens were calculated. After 42nd day of age and after 10-hour of hunger, 10 broiler chickens from each group were sacrificed randomly. The results of the research were analysed by the usage of computer program Statistica 12 (2013). The differences between mean values were tested by GLM (General Linear Model) variance analysis (ANOVA) at significance levels $P < 0.05$ and $P < 0.01$.

RESULTS

Table 1. Weight gains (g) in different weeks of fattening broiler chickens

Week	C group (0% PSC)	E1 group (7% PSC)	E2 group (14% PSC)	P value*
	$\bar{x} \pm sd$	$\bar{x} \pm sd$	$\bar{x} \pm sd$	
1 st	104.5 ^A ± 3.6	105.2 ^A ± 4.6	100.2 ^B ± 4.0	0.001
2 nd	169.6 ± 36.0	168.8 ± 29.2	157.2 ± 28.2	0.123
3 rd	283.1 ^A ± 39.9	307.7 ^B ± 42.5	271.1 ^A ± 26.6	0.001
4 th	356.6 ± 179.1	400.9 ^A ± 82.6	308.7 ^B ± 28.9	0.001
5 th	496.6 ^A ± 105.1	536.1 ^A ± 96.3	428.7 ^B ± 63.3	0.001
6 th	578.5 ^A ± 102.2	718.8 ^B ± 168.6	604.2 ^A ± 100.0	0.001

PSC – pumpkin seed cake; \bar{x} = mean value; sd = standard deviation; ^{A,B}($P < 0,01$)

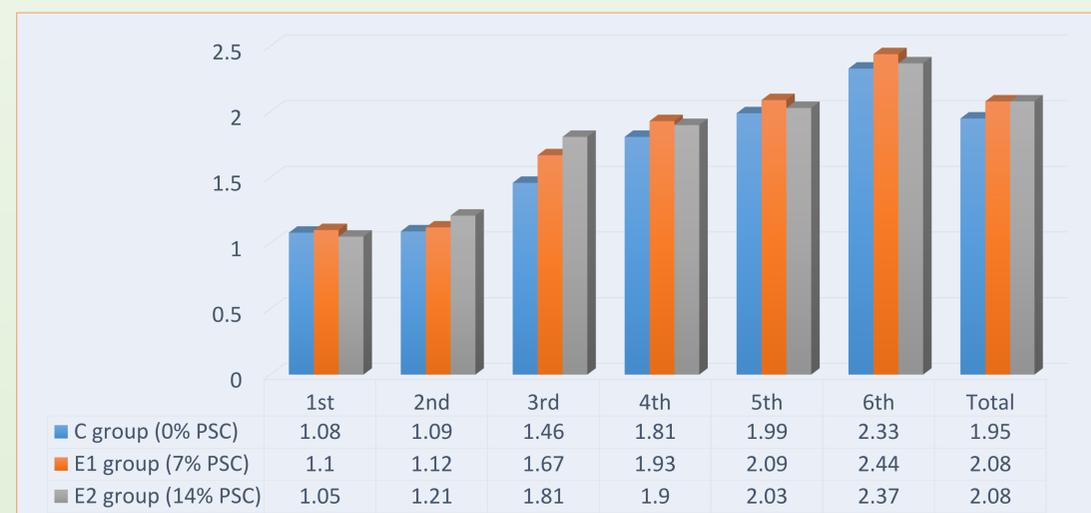


Chart 1. Feed conversion (kg/kg)

Table 2. Slaughter indicators of broiler chickens

Indicator	C group (0% PSC)	E1 group (7% PSC)	E2 group (14% PSC)	P value*
	$\bar{x} \pm sd$	$\bar{x} \pm sd$	$\bar{x} \pm sd$	
Live weight (g)	2295.9 ^A ± 239.3	2636.7 ^B ± 225.9	2078.3 ^A ± 113.2	0.001
Carcass weight (g)	1813.5 ^a ± 200.3	2018.0 ^{a,b} ± 190.1	1600.5 ^b ± 117.4	0.001
Dressing percent %	79 ± 9.4	76.5 ± 6.6	77.01 ± 7.9	0.431
Drumstick with thigh weight (g)	508.5 ± 62.9	565.0 ^A ± 58.4	448.0 ^B ± 42.1	0.001
Brest weight (g)	664.5 ^a ± 82.8	752.0 ^b ± 74.5	584.0 ^b ± 50.4	0.001
Wings' weight (g)	210.0 ^A ± 8.2	234.0 ^B ± 15.8	209.0 ^A ± 12.0	0.001
Back weight (g)	315.5 ^A ± 57.4	340.0 ^A ± 44.0	258.0 ^B ± 29.0	0.001
Neck weight (g)	115.0 ± 20.7 ^B	127.0 ^A ± 18.3	101.5 ^B ± 4.7	0.005

PSC – pumpkin seed cake; \bar{x} = mean value; sd = standard deviation; ^{A,B}($P < 0,01$); ^{a,b}($P < 0,05$)

CONCLUSION

Based on the obtained results, it can be concluded that PSC can be used as a substitute of quality for soybean meal in feeding broiler chickens. However, there are certain limitations related to quantity. Better results were achieved with smaller share (7%) of PSC in fodder mixture. After adding higher levels of PSC (14%), a bit worse production results were achieved, both in growth rates and in slaughtering indicators.



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