Efficacy of probiotic supplementation on growth performance and carcass traits in Japanese quails

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ABSTRACT

This study aimed to evaluate the effects of probiotics on fattening performance and carcass parameters in 1– to 35–day-old Japanese quails. Day-old male Japanese quail chicks (288) were randomly divided into 4 treatments with 3 replicates of 24 / pen (mean body weight 8.39 g). The dietary treatments were as follows: Group A, basal diet; group B, basal diet supplemented with 0.5 kg/tonne protexin; group C, basal diet supplemented with 1.0 kg/tonne protexin; and group D, basal diet supplemented with 1.5 kg/tonne protexin. The study lasted for 5 weeks. Results showed that probiotic did not influence body weight gain (BWG), feed intake (FI), feed conversion ratio (FCR), and carcass traits of 35–d-old broilers (P> 0.05). Inclusion of 1.5 kg/tonne probiotic in the diet of quails decreased average weekly body weights, compared with those fed with basal diet and another groups (P< 0.05).

Key words: Carcass, Japanese quail, Performance, Probiotic

MATERIALS AND METHODS

Day-old male Japanese quail chicks (288) were randomly divided into 4 treatments with 3 replicates of 24/ pen (mean body weight 8.39 g). Quails were housed in fattening cages (100 cm ×50 cm ×17cm). The dietary treatments were as follows: Group A, basal diet; group B, basal diet supplemented with 0.5 kg/tonne protexin; group C, basal diet supplemented with 1.0 kg/tonne protexin; and group D, basal diet supplemented with 1.5 kg/tonne protexin. The study lasted 5 weeks.

The diet was formulated according to National Research Council (1994) guidelines and nutrient contents of the diet are presented in Table 1. The common diet contained 240 g/kg protein and 3,080 kcal/kg ME.

The room temperature was controlled at 32±1°C in the first week and then decreased to 24°C until the end of the experiment. The experiment was carried out from 0 to 35 days, feed and water were provided ad lib. and a continuous lighting schedule was used all throughout the experimental period. Feed ingredients (corn, soybean meal, fish meal and meat-bone meal, were analyzed for all nutrient contents.

Weight gain (WG) and feed intake (FI) were measured weekly and feed conversion ratio (FCR) was calculated accordingly. Mortality was recorded on a daily basis. At the end of the experimental period, 6 birds for each dietary
treatment were slaughtered to determine carcass characteristics and weight of internal organs.

Statistical analysis
The data were analyzed using the general linear (GLM) procedure of SAS (SAS Institute 1996) and Duncan’s Multiple Range test was used to detect differences among treatment means (P<0.05).

RESULTS AND DISCUSSION
The data related to performance parameters and carcass traits as affected by treatment are given in Tables 2–5. In this study, probiotic supplementation to the diet affected average weekly feed consumption (first week, second week and fourth week) and average weekly body weights (P<0.05). However, supplemental probiotic did not affect cumulative feed consumption (P>0.05). None of the carcass traits measured were significant (P>0.05).

Probiotic supplementation to the diet affected feed consumption (first week, second week and fourth week) and body weights (P<0.05). In other hand, supplemental probiotic did not affect cumulative feed intake (P>0.05). The higher feed intake (group B) might be due to the increased rate of appetite and enzymatic activity in the digestive tract in those treatments.

Khosravi et al. (2008) showed that dietary probiotic supplementation did not affect BW, FC and FCR at 42 days of age. In another study, Rajmane and Sonawane (1998) investigated the effects of dietary probiotics on the performance of broilers and found no significant differences in FC among the treatments.

Similarly, Maiolino et al. (1992) showed that probiotic dietary supplementation in broiler diets did not improve FCR, BW and FCR.

The results showed that BWG and FCR improved (P<0.05) in chicks fed on probiotic supplemented diets compared to control diets (Anjum et al. 2005, Ghahri et al. 2013, Roul et al. 2015).

The effects of probiotics on body weights were statistically insignificant (P>0.05). In the following weeks, the effect of probiotics on daily body weight values was statistically important. The greatest increase in body weight gain was achieved by probiotic supplementation (group C), while the highest feed consumption was observed in group B. The results are similar with the findings by Sarica et al.
(2009). This result contrasts with those of Rajmane and Sonawane (1998) where protexin supplementation caused increase in body weight gain.

This study finding is in line with those of El-Nagmy et al. (2007), Babazadeh et al. (2011), Ghahri et al. (2013), Roul et al. (2015) with inclusion of probiotics. Probiotics did not significantly improve (P>0.05) feed conversion ratio (Table 4). The feed conversion ratio was the best in protexin group (group C) in the overall period. The results are similar with the findings by Yazdani et al. (2014), Mohan et al. (1996), Aftahi et al. (2006). Shabani et al. (2012) also showed that the chicken broilers fed with protexin had the lowest feed conversion ratio.

Although the slaughter and carcass weights varied by treatment group (Table 5), none of the carcass traits measured were significant (P>0.05). Vali (2009) similarly observed a lack difference in slaughter performance of hens fed probiotics. Carcass yields were not affected by probiotics in this study. This is in agreement with the findings of Anjum et al. (2005), in which the carcass yields had not significantly increased respectively with the probiotic inclusion levels in the diets. This result is in disagreement with that of Kavyani et al. (2012) who indicated that carcass yield increased in broilers fed with diets containing probiotic.

Heart weight did not change by probiotics (P>0.05). This result is consistent with that of Azadegan Mehr et al. (2014). Liver weights did not get affected by probiotics. This result is in contrast with the finding (Ghahri et al. 2013) which indicated that the supplementation of protexin in broilers diet had significant effects on liver weight. Azadegan Mehr et al. (2007) have demonstrated significant decrease in liver relative weight in male broilers receiving diets supplemented with probiotics.

According to this study, probiotic supplementation did not affect performance and carcass characteristics of Japanese quails.

REFERENCES

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