

Abstract

The aim of current study was to evaluate the effects of ginger and probiotics on performance, blood metabolites, humoral immune response, carcass attributes, meat quality and intestinal microbiology of growing Japanese quails. The birds received six dietary treatments including 3 levels of ginger (0, 0.25 and 0.5% of diet) and 2 levels of probiotics (0 and 0.15 g/kg of diet) as a factorial arrangement of 3×2 in a completely randomized design. Body weight gain (BWG) and feed intake (FI) were recorded on weekly basis and appropriate feed conversion ratios (FCR) were calculated. In order to assess primarily and secondary immune responses against sheep red blood cells (SRBC) antigen, the birds were injected through wing vein on d 18 and 25, respectively. On d 35, two bird of each replicate were sacrificed and carcass attributes were weighed immediately. The main effects of dietary ginger and probiotics caused an increase in FI during the 7 to 28 and 7 to 35 d of age and their interactions on FI was significant ($P < 0.05$). Dietary ginger only increased BWG during the 7 to 14 d of age ($P < 0.05$) but the effect of probiotics in BWG was not significant during the first week of experiment ($P > 0.05$). Dietary ginger did not affect FCR ($P > 0.05$) while dietary probiotics significantly decreased FCR compared to control group during the 7 to 21 and 7 to 35 d of age ($P < 0.05$). Dietary treatments decreased the levels of triglycerides, LDL, cholesterol, ALP, and ALT in the serum but HDL level in birds received probiotics increased sharply ($P < 0.05$). Dietary treatments boosted humoral immunity system against SRBC antigen in which dietary ginger increased antibody levels in secondary SRBC immunity and probiotics increased antibody levels in both primarily and secondary immunity compare to control group ($P < 0.05$). Dietary ginger increased the testes relative weight and decreased the gizzard relative weight ($P < 0.05$). However, dietary probiotics increased the relative weights of breast meat, heart, gizzard and testes ($P < 0.05$). The use of ginger powder and dietary probiotics significantly decreased the malondialdehyde in meat samples compared to control group ($P < 0.05$). Although the effect of dietary ginger was not significant on microbial population of intestine ($P > 0.05$), probiotics administration significantly increased the lactic acid bacteria and total bacterial population compared to control group ($P < 0.05$).

Keywords: Japanese quail, Ginger, Probiotics, Performance, Immunity, Meat quality



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**The effect of Ginger (*Zingiber officinal*)
powder and Probiotic in different level on
performance, humoral immune response and
intestinal microbiology of Japanese quail**

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