

Abstract

This experiment was conducted to investigate the effects of probiotics and zinc supplementation to diet on performance, immunity response, egg quality and blood biochemical conditions in Japanese quail. Experiment was performed from 55 to 83 days of old by a total of 240 quail that randomly allocated to 6 treatments with 4 replicates (10 birds per replicate) as a completely randomized design in a factorial arrangement (2×3). Different levels of zinc including 15, 25 and 50 mg/kg and different levels of probiotic including 0 and 150 mg/kg were added in the diet. Effect of various treatments on feed intake was not significant ($P>0.05$). Effect of various treatments on FCR was not significant ($P>0.05$). The different levels of zinc, probiotics and their interactions increased the antibody titer produced against red blood cells of sheep ($P>0.05$), and also reduced cholesterol and triglyceride levels and increased total protein content ($P>0.05$). The results showed that there is not significant relationship between zinc and egg indices at 4th week including egg weight, egg length, egg width, white and yolk weight, yolk diameter, white weight and shell weight ($P>0.05$). The effect of probiotics on egg weight, egg length, egg width, white and yolk weight was not significant ($P>0.05$). The interaction effects of probiotics and zinc on height, weight, protein content and shell weight were significant ($P <0.05$). And the best level of interactions is related to 25 level of zinc and 150 level of probiotics. Therefore, the results show that using 25 mg/kg zinc and 150 mg/kg probiotics levels can improve blood parameters and some egg indices. Also, levels of 50 mg/kg zinc and 150 mg/kg probiotics could boost immune system in Japanese quail during the layer period.

Keywords: Humoral immunity, Probiotics, Zinc, Feed conversion ratio, Cholesterol



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