

عنوان مقاله:

Effect of Different amounts of Zinc Oxide Nanoparticles on the Performance and Activity of Mucosal Enzymes in Japanese Quail from ۱ to ۲۱ Days of Age

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خلاصه مقاله:

This study aimed to investigate the effect of varying quantities of zinc oxide nanoparticles (ZnO NPs) on growth performance and mucosal enzyme activity in Japanese quails at an early age. Using a completely randomized experimental design, ۱۶۰ one-day-old quail chicks were randomly assigned to ۴ experimental treatments and each treatment contained ۴ replicate pens of ۱۰ birds. The experimental treatments included T_۱: control (a basal diet containing ۳۵.۲ mg Zn only), T_۲, T_۳, and T_۴ containing basal diet plus ۲۰, ۴۰, and ۶۰ mg ZnO NPs, respectively. Performance characteristics were recorded weekly. After ۲۱ days, one quail was selected and slaughtered from each experimental cage with a body weight equal to the average body weight of quails in the same experimental cage. After slaughtering and opening the abdominal cavity, a ۵ cm sample was taken from the jejunum of the small intestine. The jejunum sample was stored at -۸۰ °C until the measurement of alkaline phosphatase, amylase, and lipase enzymes. The results showed that live weight was higher in the T_۳ and T_۴ groups than in the control group ($P < 0.05$). The feed conversion ratio was also lower in birds fed with basal diets supplemented with ۴۰ and ۶۰ mg ZnO NPs/kg (T_۳ and T_۴, respectively), compared to control treatments ($P > 0.05$). The results showed that amylase and lipase activity increased in the birds fed with ۴۰ and ۶۰ mg ZnO NPs/kg of the basal diet, in comparison to the control treatment; however, they were not significant ($P > 0.05$). The results of this study indicated that the addition of ۴۰ or ۶۰ mg ZnO NPs/kg to the basal diet could be used as a supplement to improve performance traits and enhance mucosal enzyme activity in Japanese quail in the starter stage.

کلمات کلیدی:

Enzyme, Japanese quail, Nanoparticles, performance

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