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The Effect of Zinc Oxide Nanoparticles on Performance Traits, Carcass Quality, Gut Morphology and Haematological Parameters of Broilers Fed Wet Diet

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Abstract : This study was conducted to investigate the effect of zinc oxide nanoparticles (Nano-ZnO) on carcass quality, blood parameters, and gut morphology in broiler chickens feeding wet diets. This research was conducted by total of 300 one-day-old broiler chicks (Ross-308) were distributed into a completely randomized design inclusion of 5 treatments in 4 replicated and 15 birds in each from 1 to 42 d. The experimental diets contain: 1) diet-based on corn-soybean dry (without Nano-ZnO), 2) dry diet whit 25 mg Nano-ZnO, 3) wet diet whit 25 mg Nano-ZnO, 4) dry diet whit 50 mg Nano-ZnO, 5) wet diet whit 50 mg Nano-ZnO to wet diet. The results indicated that trail diets had no significant effect on carcass and fraction cuts in 21 age ($P > 0.05$). Wet feeding increased ($P < 0.05$) live, carcass, pancreas, gizzard, proventriculus, breast, wing and SI weight index so that the birds fed wet diet contain 50mg/kg of Nano-ZnO had the highest ($P < 0.05$) live, carcass, pancreas, proventriculus, gizzard, breast, wing, and gut weights at 42d compared other treatments. The birds fed diet contain 25mg/kg Nano-ZnO had the higher ($P < 0.05$) leg weight and lowest gizzard and gut weight than others treatment. Wet diet inclusion of 50mg Nano-ZnO increased ($P < 0.05$) liver weight on d 42. Experimental treatments had no significant effect on blood hematology on 21 and 42. The lymphocyte count had increased ($P < 0.05$) in dry than wet diet, however, monocyte Percent had significantly ($P < 0.05$) decreased in dry and increased in wet diets. The birds of height and height: crypts villi ratio had significantly ($P < 0.05$) increased on d 42, so that the highest and lowest villus height observed in 50 mg Nano-ZnO to form dry and control, respectively. In conclusion, the results of indicated that used of Nano-ZnO and wet feeding had no effect on performance parameters. Wet diet caused increased monocyte percent and 50 mg level Nano-ZnO to form dry caused increased height of villi.

Keywords : broiler, blood, gut, performance, nanoparticles
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