

Investigation of biochemical and immunological effects of both corticosterone and turmeric powder in broiler chickens

Abstract

Broiler chickens face many stress factors affecting their body weight, decreasing their immunity, and resulting in huge financial losses. In this study, corticosterone (CORT) and turmeric powder (TURM) were evaluated for their influences in broiler chicken's immunity and growth performance. A total of 243 one-day-old male broiler chicks were randomly divided into 9 groups, 3 replicates each. TURM was added as 0.4% of the basal diet starting from the first day of age and CORT was added as 5, 10, and 20 mg/L in drinking water starting from the 21st day of age. Also, combinations of TURM at 0.4% with the previous CORT treatments were done. Total body weight, feed intake, feed conversion, blood and serum samples were collected from each group for hematological and biochemical analysis including (TP, GLU, CHOL, TG, LDL, HDL, AST, ALT, RBCs, WBCs, and heterophil to lymphocyte (H/L) ratio). Moreover, the antibodies titre of New Castle was measured in all groups 3 and 7 days after the start of the CORT treatment. At the same time, the liver and lymphoid organs including spleen, thymus and bursa of Fabricius were harvested and weighed. In general, CORT treatments at 5, 10, 20 mg/L, and only the combination of TURM and CORT at 10, 20 mg/L had negative influences on chickens' growth performance and immunity. In contrast, all parameters were positively affected by the turmeric treatment. TURM treatment caused to decrease the liver enzymes and lipid measurements. However, WBC, H/L ratio, and other immunity responses were elevated. Also, the combination of TURM 0.4% and CORT at 5 mg/L treatment showed to have a measurements very closed to the control group. Thus, turmeric powder could be used as immuno-modulator for broiler chickens that enhances the growth under normal and stress circumstances.

Keywords: *Corticosterone, Turmeric powder, Broiler immunity, and Blood parameters.*