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Response of two Broiler Strains to Different Dietary Levels of Vitamin C During Summer

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Abstract

This experiment was conducted to investigate the responses of two broiler strains Ross 308 and Cobb 500 to 4 levels of vitamin C (0, 150, 200 and 250 mg per 1 kg feed). One hundred and twenty one-day-old chicks of each strain were used in this study. The experiment was extended for 6 weeks, during which starter feeds were fed for the first 3 weeks and finisher feeds were given there after. The experiment was conducted in an open-sided house at Khanfar area, Abyan district (Yemen). Birds were randomly assigned to the treatments with 3 replicates of 10 birds each. Weekly body weight, feed intake, body weight gain, feed conversion ratio (FCR), production yield kg m^{-2} and carcass characteristics were recorded. In addition some physiological parameters (body temperature, red blood cells and hemoglobin), heterophil, lymphocyte, lymphocyte heterophil ratio, serum protein, serum uric acid, serum glucose and serum cholesterol were also studied. A split-plot design was used in which 2 main plots (strains) were fed the 4 levels of vitamin C as sub-plots. Data were analysed by the general linear model (GLM) procedure; Duncan's multiple range test was used to compare the treatment means. The results revealed that Cobb 500 was significantly ($p \leq 0.05$) superior to Ross 308 in terms of body weight, feed intake, body weight gain, FCR and dressing percentage. However, Ross 308 showed significantly ($p \leq 0.05$) higher relative weights of heart, liver and gizzard than Cobb 500. With the increasing levels of vitamin C, live body weight, FCR, livability and production yield were significantly ($p \leq 0.05$) improved. Moreover, feed intake was numerically increased at 250 versus 0 mg vitamin C. Strain had no significant ($p > 0.05$) effect on body temperature. Nevertheless, supplementation with 200 mg vitamin C/kg feed significantly ($p \leq 0.05$) reduced body temperature compared to 0 and 250 levels. Supplementation with different levels of vitamin C significantly ($p \leq 0.05$) increased serum protein compared to unsupplemented chicken. Serum uric acid was significantly ($p \leq 0.05$) reduced at 200 and 250 mg vitamin C versus control.

Keywords: Broiler performance, carcass, physiology, strain, vitamin C