Effect of a Phytogenic additive on the performance of broiler chickens fed different levels of protein

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Abstract

A total number of 288 one-day-old male broiler chicks (Ross 308) were used for 42-d period to investigate the effect of different levels of dietary protein and phytogenic supplementation in the corn-soybean meal based diet on performance, blood biochemistry and antibody response. This experiment was conducted in a completely randomized design as factorial experiment (3 × 2) with 4 replicates. Treatments consisted of three levels of protein (recommended, 1.5 and 3 % lower than recommended level) and 2 levels of phytogenic supplementation (0 and 0.1 % of diet). Mean feed intake, weight gains, feed conversion ratio were determined at 10, 24 and 42 days of age. Antibody titers against Newcastle and infectious bronchitis disease viruses were determined by haemagglutination and Elisa tests, respectively, at 27 and 35 days. Blood samples were collected to determine some serum biochemical parameters. The results showed that the use of low-protein treatment (3 % lower than recommended level) in comparison with normal-protein diets reduced body weight gain and secondary antibody response to Newcastle and infectious bronchitis viruses and increased feed conversion ratio and blood triglycerides levels ($P < 0.05$). The effect of phytogenic supplementation on performance parameters and blood biochemical parameters were not significant. However, phytogenic supplement significantly increased primary antibody tire against Newcastle vaccine ($P<0.05$). Significant interaction between dietary protein and phytogenic supplement was observed in term of secondary antibody tire against Newcastle vaccine, so that adding phytogenic supplement to the 1.5 % lower dietary protein improved the antibody response ($P<0.05$). Moreover, the serum cholesterol level was significantly decreased when phytogenic supplement was included in the low-protein diet. According to the results of current study, the use of phytogenic could only improve the antibody response and cholesterol metabolism in low-protein diet based on corn-soybean meal diet.

Key words: Dietary protein, Phytogenic, Performance, Blood parameters, Immune system, Broilers

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