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Effect of nitroglycerin blood pressure drug on performance and immune response of broiler under induced ascites syndrome

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Abstract

This experiment was conducted to evaluate the effect of addition of a nitroglycerin (NG) slow release drug on prevention of ascites syndrome in broiler chickens. A total of 500 broiler chicks at 7 days of age were used in a completely randomized design with 5 treatments, 5 replicates and 20 chicks per each replication. The experimental treatments included: 1) positive control group (without induction of ascites and without addition of NG); 2) negative control group (induction of ascites without adding NG, treatments 3, 4 and 5, including induction of ascites with 5, 10 and 20 mg/kg NG in diet, respectively. In order to induce cold stress, the temperature was fixed at 15°C from 15 until 42 day of age. The results showed that the performance of broiler were not affected by the treatments, but 10 and 20 mg nitroglycerin levels had a significant effect on the feed conversion ratio in the growth and whole period, an increased production index ($P < 0.05$). The results showed that cold stress significantly reduced the relative weights of spleen and thymus ($P < 0.05$) but had no significant effect on relative weight of bursa of Fabricius. The utilization of NG significantly increased the relative weights of Spleen and thymus ($P < 0.05$). The immunoglobulin M response and cutaneous basophilic sensitivity decreased as a result of cold stress, and significantly increased by using NG ($P < 0.05$). The concentration of AST, LDH enzymes and T_3 increased as a result of cold stress and the utilization of 20 mg/kg of NG in the diet significantly decreased them ($P < 0.05$). The lipid peroxidation index improved near meaningfully as a result of using NG ($P = 0.06$). In general, the results of this research showed that the utilization of 20 mg/kg of NG in cold stress condition led to improvement of FCR, production index, immune, enzymatic, hormonal responses.

Key words: enzyme, immune response, cold stress, broilers, nitroglycerin