

عنوان مقاله:

Application of Trimethylglycine Supplement in Broiler Chicken's Diets with a High Dose of Dietary Guanidinoacetic Acid: Influence on Growth Performance and Physiological Variables

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خلاصه مقاله:

The present experiment studied the effect of a high dose of guanidinoacetic acid (GAA; ۲.۲۵ g/kg), with or without trimethylglycine (TMG) on growth performance and physiological variables of broiler chickens. A total of ۳۰۰ day-old males Cobb ۵۰۰ were randomly assigned to three dietary treatments with ۵ replicates of ۱۰ birds in each. Treatments were including a basal diet (control treatment), the basal diet supplemented with ۲.۲۵ g/kg GAA, and the GAA diet with ۱ g/kg TMG. All birds received feed and water ad libitum during a ۴۰-days rearing period. Results indicated that weight gain during days ۳۱-۴۰ of the rearing period was impaired by feeding the GAA diet. Feed conversion ratio was impaired in all feeding stages when the high dose of GAA was included in the diet. However, the inclusion of TMG in the GAA diet restored these responses to a comparable level to the control group. The GAA diet caused a significant increase in malondialdehyde concentration in serum compared to the control treatment. Moreover, the use of GAA decreased the heterophil to lymphocyte ratio than other treatments. A high dose of GAA caused higher serum levels of creatine and homocysteine; however, TMG supplementation re-established those responses. In addition, TMG supplement significantly up-regulated hepatic adenosyl homocysteinase and methionine adenosyltransferase II beta genes. In conclusion, feeding a high dose of GAA could impact broiler growth performance, but this effect could be ameliorated by dietary inclusion of TMG supplement, suggesting the negative effects of high doses of GAA were linked to the methyl donor deficiency. The practical implication is to include TMG in diets when a high dose of GAA is going to feed

کلمات کلیدی:

Homocysteine, Methyl donor, Broiler chicken, Guanidinoacetic acid

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