

Effect of Dietary Graded Levels of L-Theanine on Growth Performance, Carcass Traits, Meat Quality, and Immune Response of Broilers

Authors : Muhammad Saeed, Sun Chao

Abstract : L-theanine is water soluble non-proteinous amino acid found in green tea leaves. Despite the availability of abundant literature on green tea, studies on the use of L-theanine as an additive in animals especially broilers are scanty. The objective of this study was to evaluate the effectiveness of different dietary levels of L-theanine on growth performance, meat quality, growth, immune response and blood chemistry in broilers. A total of 400 day-old chicks were randomly divided into four treatment groups (A, B, C, and D) using a complete randomized design. Treatments were as follows: A; control (basal diet), B; basal diet+100 mg L-theanine / kg diet, C; basal diet+ 200 mg L-theanine / kg diet, and D; basal diet+ 300 mg L-theanine / kg diet. Results revealed that intermediate level of L-theanine (200 mg/ kg diet, group C) showed better results in terms of BWG, FC, and FCR compared with control and other L-theanine levels. The live weight eviscerated weight and gizzard weight was higher in all L-theanine levels as compared to that of the control group. The heaviest ($P > 0.05$) spleen and bursa were found in group C (200 mg L-theanine / kg diet). Analysis of meat colors according to yellowness (b^*), redness (a^*), and lightness (L^*) showed significantly higher values of a^* and b^* in L-theanine groups. Supplementing broiler diet with L-theanine minimized ($P=0.02$) total cholesterol contents in serum. Further analysis revealed , lower mRNA expression of TNF- α and IL-6 in thymus and IFN- γ and IL-2 in spleen was observed in L-theanine group It is concluded that supplementation of L-theanine at 200mg/kg diet showed better results in terms of performance and it could be utilized as a natural feed additive alternative to antibiotics to improve overall performance of broilers. Increasing the levels up to 300 mg L-theanine /kg diet may has deleterious effects on performance and other health aspects.

Keywords : blood chemistry, broilers growth, L-theanine, meat quality

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