

Nutrition and immunity : the effects of the combination of arginine and tryptophan on growth performance, serum parameters and immune response in broiler chickens challenged with infectious bursal disease vaccine.

ABSTRACT

To explore the effects of the combination of tryptophan (Trp) and arginine (Arg) on growth performance, serum parameters and immune response of broiler chickens challenged with intermediate plus strain of infectious bursal disease virus vaccine, an in vivo experiment was conducted. A corn-soybean meal-based diet containing different levels of Arg and Trp was used. Cobb500 male broiler chickens from 0 to 49 days of age were subjected to a diet supplemented with the combination of Trp and Arg. Growth performance parameters and serum parameters were measured at 27 and 49 days of age. To evaluate the immunomodulatory effects of the combination of Trp and Arg on the challenged chickens, we measured the serum levels of interferon- α , interferon- γ and immunoglobulin G at 27, 35, 42, and 49 days of age. The results showed that the three evaluated immune system parameters including interferon- α , interferon- γ and immunoglobulin G were significantly enhanced after treatment. This enhancement resulted in the recovery of infectious bursal disease virus-infected chickens compared with controls as confirmed by histopathological examinations. Moreover, serum parameters such as albumin and total protein increased, whereas the treatment decreased ($P < 0.05$) the feed:gain ratio, aspartate amino-transferase, alkaline phosphatase, lactic dehydrogenase, triglyceride and cholesterol. These findings suggest that the combination of Arg and Trp has a regulatory effect on growth performance. Moreover, it modulates the systemic immune response against infectious bursal disease.

Keyword: Bursal disease; Argine; Tryptophan; Broilers; Immune response.