

Tryptophan Stimulates Immune Response in Broiler Chickens Challenged with Infectious Bursal Disease Vaccine

ABSTRACT

Infectious bursal disease is still a challenging issue by posing a serious threat to the commercial poultry industry especially due to the emergence of highly Infectious Bursal Disease Virus (IBDV). In the present study, we evaluated the immunomodulatory effects of Tryptophan (Trp) on innate, humoral and cellular immune responses in chickens challenged by oral administration of intermediate plus strain of IBD virus at 28 days of age. A corn-soybean meal based diet containing different levels of Trp (0, 0.10 and 0.20) for the starter, (0, 0.07 and 0.15) for the grower and (0, 0.05 and 0.13) for the finisher has been utilized. In a completely randomized design with three treatments of five replicates each and 10 chickens per replicate, 150 Cobb 500 male broiler chickens from 0-49 days of age were subjected to Trp diet. To measure the innate, cellular and humoral immunity indicators (interferon-alpha, interferon-gamma, immunoglobulin G, respectively) at 27, 35, 42 and 49 days of age, serum samples from each replicate of treatments were collected and subjected to ELISA. The result showed that Trp supplementation in the chickens basal diets significantly increased the serum levels of interferon-alpha at 35, 42 and 49 days of age ($p < 0.05$), interferon-gamma at 27, 35 and 49 days of age ($p < 0.05$) and immunoglobulin G at 27, 35, 42 and 49 days of age ($p < 0.05$). These results strongly suggest that tryptophan plays a vital role in modulation of protective immune response against IBDV.

Keyword: Tryptophan, infectious bursal disease virus, immune response, immunity indicators, broiler chicks