

Immunostimulatory effects of arginine in broiler chickens challenged with vaccine strain of infectious bursal disease virus

ABSTRACT

Infectious Bursal Disease (IBD) continues to pose potential threat to poultry industry all over the world. The disease can spell disaster not only through its infection but also by break of immunity in chickens vaccinated for other diseases. On the other hand, arginine (Arg), a ubiquitous, semi-essential amino acid has emerged as an immunostimulant from variety of human and animal studies. In the present study, we demonstrate the stimulatory effects of Arg on systemic immune response in chickens challenged by orally administration of intermediate plus strain of IBD virus at 28 days of age. A corn-soybean meal based diet containing different levels of Arg (0, 0.67, 1.37, 2.07 and 2.77) for the starter, (0, 0.53, 1.1, 1.68 and 2.25) for the grower and (0, 0.52, 1.04, 1.56 and 2.08) for the finisher was used. In a completely randomized design with five treatments of five replicates each and 10 chickens per replicate, 250 Cobb500 male broiler chickens from 0-49 days of age were used. To measure the innate, cellular and humoral immunity indicators (interferon- α , interferon- γ , immunoglobulin G) 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 Arg supplementation in the chickens basal diets significantly increased the serum levels of interferon- α , interferon- γ , immunoglobulin G at 35, 42 and 49 days of age ($p < 0.05$). The different levels of Arg at 27 days of age did not significantly affect interferon- α , interferon- γ , whereas Arg at 27 days of age significantly increased immunoglobulin G ($p < 0.05$). These results revealed that arginine stimulates systematic immune response against intermediate plus strain of IBDV.

Keyword: Arginine; Immune response; Immunity indicators; Infectious bursal disease virus; Broiler chicken