

## The Effects of Arginine, Glutamine and Threonine Supplementation in the Starting Phase on Subsequent Performance of Male Broile

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**Abstract :** The current study was performed to investigate the effects of arginine, threonine, and glutamine supplementation in excess of requirements in the starter period (17 days) on performance, intestinal morphology, and immune response of broilers. Four hundred and sixteen male day-old chicks were assigned in a 2×2×2 factorial arrangement to a completely randomized design with four replicates (13 birds per replicate ). Treatments were: a control group that received the basal diet, basal diet plus 1% glutamine, basal diet plus 0.2% threonine, basal diet plus 0.75 % arginine, and combination of these three amino acids (glutamine+arginine, glutamine+threonine, arginine+threonine and arginine+ glutamine+threonine). The effect of glutamine supplementation on feed intake was significant in week 4 (p < 0.05), week 6 (p < 0.001), and total feed intake (p < 0.05) and caused declined feed intake. No significant differences of glutamine addition were observed on intestinal morphology (villi height, crypt depth, villi height to crypt depth ratio, villi width). Threonine supplementation caused increased weight gain in week 2 (p < 0.001) and 3 and a decrease of total feed intake (p < 0.05). Duodenum and jejunum villi height, crypt depth, villi height to crypt depth ratio, villi width were not affected. The effect of arginine supplementation was the increase of breast percentage (p < 0.05) and a decrease of jejunum villi high (p < 0.05) and Jejunum crypt depth (p < 0.05). Supplementation of arginine, threonine, and glutamine had no significant effects on blood titer of antibodies against Newcastle disease, infectious bronchitis, avian influenza. Overall, it seems that the supplementation of arginine, threonine, and glutamine in excess of requirements in the starter period had no effect on performance in subsequent periods and intestinal morphology.

**Keywords :** intestinal morphology, immunity, broiler chickens, glutamine, arginine, threonine

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