

**Effects of graded dose dietary supplementation of Piper betle leaf meal and Persicaria odorata leaf meal on growth performance, apparent ileal digestibility, and gut morphology in broilers**

ABSTRACT

Due to antimicrobial resistance and the public health hazard of antibiotic growth promoters, there is a grave need to find potential alternatives for sustainable poultry production. Piper betle (PB) and Persicaria odorata (PO) are herbs, which have been reported for antimicrobial, antioxidant, and anti-inflammatory properties. The present study aimed to estimate the influence of different dose supplementation of Piper betle leaf meal (PBLM) and Persicaria odorata leaf meal (POLM) on growth performance, ileal digestibility and gut morphology of broilers chickens. A total of 210 one day-old broiler chicks were randomly grouped into 7 treatments, and each treatment group has 3 replicates ( $n = 10$ ) with a total number of 30 chicks. The treatments included T1 control (basal diet (BD) with no supplementation), T2 (BD + 2 g/kg PBLM); T3 (BD + 4 g/kg PBLM), T4 (BD + 8 g/kg PBLM), T5 (BD + 2 g/kg POLM), T6 (BD + 4 g/kg POLM), T7 (BD + 8 g/kg POLM). Growth performance, gut morphology and ileal digestibility were measured. Except for T4 (8 g/kg PBLM), graded dose inclusion of PBLM and POLM increased ( $P < 0.05$ ) the body weight gain (BWG), positively modulated the gut architecture and enhanced nutrient digestibility in both stater and finisher growth phases of broiler chickens. Birds fed on PBLM 4 g/kg (T3), and POLM 8 g/kg (T7) had significantly higher ( $P < 0.05$ ) BWG with superior ( $P < 0.05$ ) feed efficiency in the overall growth period. Chickens fed on diets T3 and T7 had longer ( $P < 0.05$ ) villi for duodenum as well as for jejunum. Furthermore, the birds fed on supplementations T3 and T7 showed improved ( $P < 0.05$ ) digestibility of ether extract (EE), and dry matter (DM) compared to the control group. However, least ( $P < 0.05$ ) crude protein (CP) digestibility was recorded for T4. In conclusion, dietary supplementations of PBLM 4 g/kg and POLM 8 g/kg were positively modulated the intestinal microarchitecture with enhanced nutrient digestibility, resulted in maximum body weight gain, thus improved the growth performance of broiler chickens.

**Keyword:** Broiler chickens; Growth performance; Gut morphology; Persicaria odorata; Piper betle