Effects of Dietary Alfalfa Meal Supplementation on Growth Performance, Gut Development & Gut Microbes in Cherry Valley Ducks

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Dietary fiber (DF) is increasingly recognized to modulate the diversity of the gut microbiota of meat ducks to improve the growth performance and breeding benefits of meat ducks. The purpose of this study was to investigate the effects of different proportions of alfalfa meal added to diet on growth performance, gut development and microflora of young cherry valley ducks. A total of 400 one-day-old healthy Cherry Valley ducks were randomly divided into 4 groups with 4 replicates in each group, and 25 ducks in each replicate. The ducks in four groups were fed the basal diet supplemented with 0%, 3%, 5% and 7% alfalfa meal for 42 days , respectively. The results showed that compared with the control group, the three alfalfa meal group had a positive effect on the growth performance of meat ducks, especially in 5% AM group,the average daily feed intake and daily gain of ducks were significantly increased (P<0.05). In terms of slaughter performance,pectoral and leg muscle rates of ducks in 5% and 7% AM groups had significantly higher (P<0.05), and ileal villus height and villi/hidden value of ducks had significantly higher in 3% and 5% AM groups (P<0.05). In addition, AM diets also significantly affected gut microbiota by increasing the relative abundance of anti-inflammatory bacteria while reducing the relative abundance of pro-inflammatory bacteria. Correlation analysis showed that the growth performance indicators of cherry valley meat ducks were negatively correlated with the relative abundance of *Proteobacteria*, and positively correlated with the relative abundance of *Rumenobacteria*. Overall, the results of this study suggest that 5% AM can enhance growth performance, gut morphology and gut microbiota structure of meat ducks, which may be attributed to the interplay of DF-induced gut microbiota alterations.

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