

ABSTRACT

An experiment was conducted to survey the effects of different levels of dietary peppermint (*Mentha piperita*) on performance, carcass attributes, blood variables, immunity, and intestine morphology of growing Japanese quail. A total of 360 seven-day old quail chicks were distributed into 6 experimental groups (positive control, negative control, 1, 2, 3, and 4% of peppermint) with 5 replicates. The experimental treatments did not affect the feed intake, weight gain, feed conversion ratio, carcass attributes, and bursa size ($P > 0.05$). However, the highest intestine length was observed in birds fed 4% of dietary peppermint ($P < 0.05$). Humoral immunity and population of lactic acid bacteria were increased in birds received 3% of dietary peppermint ($P < 0.05$) while the coliform bacteria decreased in birds fed 1% of dietary peppermint ($P < 0.05$). The effects of dietary treatments were significant on villus length, villus width, crypt depth, villus area and the ratio of villus length to crypt depth ($P < 0.05$). The highest villus length and villus width were observed in birds fed 4% of dietary peppermint and positive control, respectively ($P < 0.05$). The birds fed 4 and 1% of dietary peppermint, respectively, showed the highest villus area and the ratio of villus length to crypt depth compared to other groups ($P < 0.05$). Although the aspartate amino transferase (AST) activity was not affected by dietary treatments, the activity of alanine amino transferase (ALT) differed between experimental groups in which the lowest ALT activity was observed in birds fed 4% of dietary peppermint ($P < 0.05$). Dietary treatments affected the lipid profile of blood in which the lowest concentrations of triglyceride and cholesterol were observed in birds fed 1 and 3% of dietary peppermint, respectively. In comparison to positive and negative control diets, the highest and lowest concentrations of HDL and LDL, respectively, were observed in birds received 3% of dietary peppermint ($P < 0.05$). This study showed that the use of peppermint in the diet might boost the immunity system and improve the lipid profile of blood, intestinal microbial population, and intestine morphology indices.

Keywords: Japanese quail, peppermint, blood biochemistry, humoral immunity, intestinal absorption



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