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Aflatoxin B1-induced muscle lipid oxidation, performance and carcass quality in broiler chicks: Ameliorative effect of ginger (*Zingiber officinale*)

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Abstract

The ameliorative effect of ginger on performance carcass quality and muscle lipid oxidation in aflatoxin-poisoned broiler chicks was investigated. One hundred and twenty eight, one-day old broiler chicks were randomly allotted to four treatments, four replicates with 8 birds per replicate in a completely randomised design. Treatment 1 was the control experiment with no aflatoxin and no ginger, treatment 2 is the positive control diet with 0.5 mg/kg of aflatoxin B1, treatment 3 contained 0.5mg aflatoxin B1 + 0.5 % ginger and treatment 4 contained 0.5mg aflatoxin B1 + 1 % ginger. The feeding trial lasted for 8 weeks for both the starter and finisher phases. Data on feed intake, final weight, body weight change and feed conversion ratio were taken for performance. Significant reductions were recorded in the feed intake final body weight and body weight change of birds in treatment 2 compared with those in treatment 3 and 4 with ginger supplement. At 42 days, blood samples (5mL) were collected via the jugular veins from 2 birds per replicate for serum biochemistry and haematology. Aflatoxin ingestion caused a significant reduction in serum protein and a significantly elevated level of aspartate amino transferase (AST) while other serum biochemical parameters were not affected. However, the values of serum biochemical parameters for T1 (control) were similar to those of T3 and T4. Haematological studies showed a significant reduction in the values of packed cell volume, haemoglobin, red blood cells and lymphocytes for T2 and an elevated heterophils. At the end of the eight week, 2 birds per replicate were randomly selected and slaughtered by carefully severing the jugular vein for carcass analysis and meat lipid oxidation study. Birds from treatment 1 had the highest final weight while birds from treatment 2 had the lowest. Lipid oxidation was highest in treatment 2 right from 7th day of storage up to the 56th day but lowest in treatment 4. 1 % ginger was found to ameliorate the effect of aflatoxin on performance, serum and haematological parameters and also reduced the lipid oxidation in the broiler meat thereby promoting healthier carcass composition and preservation of meat quality.

Keywords: Aflatoxin, broiler chicks, carcass quality, muscle lipid oxidation, performance