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Effects of Soyabean Oil and Garlic-in-Water Supplementation on Performance, Carcass Traits and Blood Indices of Broiler Chicken

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Abstract

Influence of soyabean oil and garlic (*Allium sativum*) dissolved in water on the performance, carcass characteristics and haematological variables of broiler chickens was assessed. A total of 160-four-weeks old Harbor strains of broiler chickens were allotted to 4 dietary treatments with 10 birds in each of 4 replicates. A 2×2 factorial experimental arrangement of a completely randomised design was adopted. There were 2 finisher diets (non-soyabean oil and soyabean oil diets) supplemented with or without garlic in drinking water. The soyabean oil diet contained soyabean oil at 2 kg per 100 kg of feed and garlic supplementation in water was at 1.8 g garlic L⁻¹. The study lasted for 4 weeks during which performance indices, water intake and apparent crude protein digestibility were measured. At the end of the feeding trial, 2 female chickens per replicate were sacrificed to evaluate the carcass characteristics, haematological variables and serum cholesterol. Final live weight (FLW) and total weight gain (TWG) of the birds were significantly ($p < 0.001$) affected by the dietary treatments with birds on the non-garlic supplementation consistently having higher values than those fed on garlic supplemented diets. Also, broilers fed on the soyabean oil-based diet had significantly ($p < 0.001$) higher FLW and TWG than those fed the non-soyabean oil diet. However, the FCR values of birds fed soyabean oil-based diet (2.46 and 2.54) were lower than those fed non-soyabean oil-based diet (2.56 and 3.01) for non-garlic and garlic-in-water supplementation, respectively ($p > 0.05$). Total water intake of birds fed supplementary garlic (5.6 ± 0.02 L bird⁻¹) was significantly ($p < 0.05$) lower than those on non-garlic supplementation (5.9 ± 0.31 L bird⁻¹). The carcass characteristics, relative weight of organs, haematological variables and the serum cholesterol concentration of the chickens were not significantly different between treatments ($p > 0.05$). Garlic-in-water supplementation numerically reduced abdominal fat deposition from 19.5 ± 5.85 to 18.7 ± 8.74 g kg⁻¹ live weight. Similarly, addition of soyabean oil to diets and garlic-in-water supplementation lowered ($p > 0.05$) serum cholesterol level (140.9 vs 136.6; 145.8 vs 130.4 mg dl⁻¹). It was concluded that the supplementation of soyabean oil in the diet could lead to better broiler performance, and garlic-in-water reduces the abdominal fat deposit with a concomitant serum cholesterol reduction.

Keywords: Broilers, cholesterol, garlic, performance, soyabean oil