

EFFECT OF PHYTOCHEMICALS ON GROWTH PERFORMANCES, SERUM PARAMETERS AND NUTRIENT DIGESTIBILITY OF BROILERS UNDER HEAT STRESS

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Implementing strategies to deal with heat stress on local broilers is crucial. A study was undertaken to examine the effects of dietary supplemental phytochemicals on the performance of broilers under heat stress. Two hundred, Cobb 500® broiler chicks were assigned into five treatments with four replicates in a completely randomized design. The experimental diets were negative control; basal feed with no supplements (T1), positive control; basal feed supplemented with 0.025% ascorbic acid (T2), and basal diets supplemented with powderly 0.5% cinnamon (T3) or 0.5% ginger (T4) or 0.5% turmeric (T5). Temperature humidity index (THI) was calculated to evaluate the potential heat stress. Growth performances, dressing percentage, serum parameters, nutrient digestibility of feed, and cost-benefit were evaluated. As evidenced by THI variations, broiler birds were experiencing high or moderate heat stress during their growing period. The significantly ($p < 0.05$) highest feed intake (3.67 ± 0.00 kg), carcass weight (1.88 ± 0.01 kg), dressing percentage ($74.6 \pm 0.28\%$), HDL-cholesterol (58.7 ± 0.79 mg dL⁻¹), and the lowest feed conversion ratio (1.43 ± 0.00) were reported in birds fed with T2. Feed intake, weight gain and performance efficiency of birds were significantly higher ($p < 0.05$) in T3 and T4 compared to T1. Further, there were no significant differences ($p > 0.05$) in live weight, weight gain and feed cost per bird among T2, T3, and T4. The inclusion of cinnamon (T3) and ginger (T4) at 0.5% level, significantly ($p < 0.05$) decreased serum triglycerides, total cholesterol, LDL-cholesterol and increased HDL-cholesterol compared to birds fed with T1. The profit per kg of carcass weight was significantly higher ($p < 0.05$) in T2, T3, T4, and T5 compared to the T1. Feeding the phytochemicals significantly increased ($p < 0.05$) the digestibility of crude protein and fat. In conclusion, supplementation of cinnamon and ginger at a level of 0.5% of feed has a beneficial effect on broiler performances and nutrient digestibility with a lower cost of production under heat stress conditions.

Keywords: Ascorbic acid, Cinnamon, Ginger, Supplementation