Effects of vitamin E, an oil blend and L-Arginine on breast meat from broiler chickens

ABSTRACT

The study examined the effects of supplementing vitamin E on the fatty acid profile and breast meat quality of broilers fed diets containing an oil blend and L-Arginine. Two hundred sixteen Cobb 500 one-dayold broilers were randomly allocated to six treatments, namely T1: 6% palm oil (control); T2: blend of 4% palm oil and 2% sunflower oil + 0.25% L-Arginine (positive control); T3: T2 with 20 mg/kg vitamin E added; T4: T2 with 50 mg/kg vitamin E added; T5: T2 with 100 mg/kg vitamin E added; and T6: T2 supplemented with 150 mg/kg vitamin E. Relative to T1, the other diets increased growth rate and improved feed conversion ratio (FCR) similarly. Linoleic, arachidonic, and polyunsaturated fatty acids were greater and palmitic and saturated fatty acids were lower in the meat of birds fed T2–T6 relative to T1. Supplementation of vitamin E reduced drip loss (DL) and increased redness, tenderness, free thiol content, and the oxidative stability of meat during storage at 4 °C. Regardless of diet, free thiol, redness and Warner-Bratzler shear force (WBSF) value decreased significantly, whereas the carbonyl content, thiobarbituric acid-reactive substances (TBARS), and DL of breast meat increased over the ageing period. In conclusion, relative to T1, the other diets were effective in improving growth performance and meat quality during post-mortem storage.

Keyword: Fatty acid profile; Free thiol; Lipid oxidation; Palm oil; Protein oxidation; Sunflower oil