T167 Synthetic antioxidant improves oxidative stability of breast meat and reduces incidence of Wooden breast myopathy in broilers fed diets containing oxidized fat

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Wooden breast (WB) is a degenerative myopathy which could be associated with increased hypoxia as well as oxidative stress, intracellular calcium imbalance, and fiber-type switching. A 59d broiler study was conducted to determine the effects of synthetic antioxidant {SANTOQUIN ®M6 with 66.6% Ethoxyquin (ETX)} along with Vit-E &C on incidence of severe category Wooden breast (WB) and other tissue changes. Day old YPM x 708 male chicks (n=1188; 11chicks/pen; 18pens/treatment) were randomly assigned to 6 treatments: fresh fat without ETX (T1) or with ETX (T2), and oxidized fat without ETX (T3), with 125ppm ETX (T4), with 180IU/ kg diet Vit-E &200ppm Vit-C (T5), and with Vit-E &C, and ETX (T6). For T3 to T6 diets, oxidized soy oil was added to get to 5meq peroxide/ kg in the starter and 7meq peroxide/kg in the grower and finisher diets. The study was carried out as RCBD and data were analyzed with 2 sets of factorial designs: T1 to T4 (fat sources/ ETX levels); T3 to T6 (ETX/ Vitamins). In addition to severe WB incidence, plasma lactate dehydrogenase (LDH) and raw meat (10d of refrigerated storage) thiobarbituric acid reactive substances (TBARS) levels were determined indicating tissue damage and lipid peroxidation (LP), respectively. For T1 to T4, no interaction (P>0.05) was observed for fat sources and ETX on TBARS, and LDH. Interaction was observed for WB (P=0.02) indicating birds fed oxidized fat with ETX (T4) reduced the severe WB incidence by 14 percentage points compared to birds fed oxidized fat with no ETX (T3). The main effects indicated that feeding oxidized fat increased TBARS (P=0.08), and LDH (P0.05) was observed for ETX and vitamins on TBARS, LDH, and WB. The main effects for ETX indicated reduction (P<0.05) of TBARS and LDH while vitamins indicated tendency to reduce LDH (P=0.08) but not for TBARS (P=0.42). Overall, feeding oxidized fat appears to be a contributing factor for increased muscle LP, tissue damage and WB. ETX reduced severity of WB, LP, and tissue damage while vitamins E&C reduced severity of WB and tissue damage.

Key Words: Antioxidant, Wooden Breast, Santoquin, Vit-E &C