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Telomere Length Genetics: Biomarker of Early Age Metabolic Activities and Oxidative Impact in Broiler Chicken (Gallus gallus domesticus)

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Abstract : This study was aimed at evaluating the roles played by early age in performance, organs weights, meat quality traits, and telomere length integrity. One hundred male Cobb 500® broiler chickens were grouped into ten replicates of ten chickens each. Growth performance, measurement of telomere length, weights of organs, and meat quality traits were determined on days 14, 28, and 42 of the experiment. There were significant ($p < 0.05$) differences obtained in the chicken growth performance across ages. Telomere length of blood, muscle, liver, and heart on day 14 were significantly ($p < 0.05$) shorter than telomere length obtained on days 28 and 42 of the age. Weights of organs on day 14 were significantly ($p < 0.05$) higher than those obtained on days 28 and 42. In this study, birds slaughtered on day 14 presented the highest ($p < 0.05$) pH, drip loss, redness, and yellowness. They, however, showed lower ($p < 0.05$) cooking loss, shear force, and lightness. There was a significant association between age, telomere length, and meat quality traits. It is therefore concluded that telomere length attrition is associated with early age metabolic activities and could be used to measure chicks' welfare.

Keywords : age, telomere length, organ weights, meat quality
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