

Effect of shackling, electrical stunning and halal slaughtering method on stress-linked hormones in broilers

ABSTRACT

The objective of this study was to evaluate the effect of shackling and halal slaughter with head-only electrical stunning (ES) using water bath or no stunning (NS) on plasma levels of adrenaline (AD), noradrenaline (NAD) and corticosterone (CORT) levels of broiler chickens. Male and female broiler chickens (Cobb 500) 38 days old from a commercial farm in Johore, Malaysia, were placed in plastic crates (0.80 × 0.60 × 0.31 m) at 10 birds per crate, and transported for 2.5 hours in an open truck. The ambient temperature during transportation was 25 to 27 °C. Upon arrival at a commercial processing plant, a total of 50 male broiler chickens (2.2 - 2.5 kg) were randomly selected from the flocks that were delivered, transferred to different five crates (10 birds per crate) and held in a lairage for 2 to 3 h. Blood samples were collected at various points, namely after lairaging (P1) (first sampling point for both ES and NS chickens, regarded as basal values), shackling (P2) (second sampling point for both ES and NS chickens), stunning (P3) (third sampling point for ES chickens), and ventral neck incision in stunned (P4) (fourth sampling point for ES chickens) and no stun (P5) (third sampling point for NS chickens). Ten birds were sampled at each sampling point (50 birds in total). Both stunned and no stun birds were shackled. Results show that shackling (P2) did not significantly affect the AD, NAD and CORT levels. However, electrical stunning elevated both the AD and CORT levels significantly, but not NAD. Neck cut had negligible effect on the AD and NAD in NS and ES broilers, but significantly increased CORT compared with the basal CORT value. In conclusion, the study demonstrated that head-only electrical stunning using a water bath might elevate AD and CORT. The study concluded that, as measured by AD and NAD, slaughter with or without stunning may not induce a physiological stress response in broilers.

Keyword: Corticosterone; Adrenaline; Noradrenaline; Primary processing; Poultry