

## **Pre-slaughter stress conditions, efficacy of electrical water bath stunning, and meat quality of broiler chickens reared in opened houses and closed houses**

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### **Abstract**

Avoiding pain or suffering during the process of slaughter is important to ensure the welfare of animals. This study was conducted to identify the effects of two different housing systems on pre-slaughter stress, efficacy of electrical water bath stunning (electrical parameters: voltage=20-30 V, current=200-400 mA, frequency=300 Hz), and meat quality of stunned broiler chickens. A total number of 104 birds (49 closed housed birds, 55 opened housed birds) were assessed (Body weight: 1.9±0.1 kg, 35±2 days old) in the study. Statistical analysis was done by using SAS version 9.0 and Minitab 19 software. Panting was assessed according to the severity of panting by using a scoring scale from 0-2. Closed housed birds showed severe panting ( $P<0.05$ ) at the lairage in comparison to opened housed birds. Observed reflexes and behaviours to detect the efficacy of water bath stunning were not different between the two groups except jaw tone which was exhibited by 96% (25/26) of opened house birds and 47% (10/21) of closed house birds ( $P<0.05$ ). Shorter time to loss of jaw tone and pupillary light reflex were observed in the opened house birds (14±1 s and 16±1 s, respectively) than in the closed house birds (29±1 s and 24±1 s, respectively) indicating shorter time to brain death in opened house birds after neck cutting. Neck muscle tone, beak movement and head shaking were started earlier in the opened house birds than in the closed house birds ( $P<0.05$ ) indicating faster recovery. Ultimate pH and water holding capacity were significantly higher in opened housed birds ( $P<0.05$ ). There was no difference ( $P>0.05$ ) in meat color values between the two groups. This study revealed that closed housed birds were more stressed prior to slaughter and resulted in lower quality meat with hemorrhages in the carcass. There was no effect of the housing system on the efficacy of water bath stunning.

**Keywords:** Broiler chickens, Electrical water bath stunning, Housing systems, Meat quality, Pre-slaughter stress

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