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The effect of stun duration and level of applied current on stun and meat quality of electrically stunned lambs under commercial conditions

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Abstract

Electrical head-only stunning is a widely used method in sheep (*Ovis aries*) slaughter. To investigate the influence of current level on stun and meat quality in practice, two studies were carried out at a commercial slaughterhouse. In trial one, 200 lambs were randomly assigned to four groups with a current level of 0.6, 0.8, 1.0 and 1.25 A, respectively, using 50-Hz sine wave supply voltage and a stun duration of 10.5 s. In trial two, 135 lambs were randomly assigned to two groups, with electrical current of 1.25 A applied for 14 and 3 s. For each lamb, the position of the tongs was observed and classified as correct or incorrect. The stun quality was evaluated based on observations of the corneal reflex, eye movements, rhythmic breathing, head-righting reflex and kicking during the tonic phase. Blood splash (haemorrhages in Longissimus dorsi muscle) was evaluated four days after slaughter. Incorrect tongs' positioning was seen commonly, and positively correlated with poor stun quality. The lowest current level tested produced an unsatisfactory stun in the majority of animals observed. Short stun duration increased the risk of a poor stun quality. There was no significant effect of current level, stun duration or tongs' position on the risk of blood splash. These data underline the importance of a correct technique, including choice of tongs' positioning, sufficient current levels and sufficient stun duration, for electrical stunning of lambs to achieve unconsciousness before sticking and thereby avoiding unnecessary suffering at commercial slaughter.

Keywords: animal welfare, blood splash, electrical stunning, sheep, slaughter, stun quality