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Animal Welfare 2012, 21: 247-256
doi: 10.7120/09627286.21.2.247
ISSN 0962-7286

Survey of the incidence of post-stun behavioural reflexes in electrically stunned broilers in commercial conditions and the relationship of their incidence with the applied water-bath electrical parameters

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Abstract

Despite recent technological advances, stunning efficiency of broilers in commercial plants is still questionable and a major public concern. The aim of this survey was to assess the electric water-bath parameters used in poultry processing plants, establish practical ways for the assessment of stunning efficiency in these conditions, link their incidence to the applied current and propose methodology for the online evaluation of the effectiveness of electrical water-bath stunning. A total of 5,378 broilers were assessed randomly for signs of post-stun recovery at 4, 8, 13 and 25 s post-water-bath exit (WBE) through corneal reflex, rhythmic breathing, head shake and escape behaviour on three processing lines. The electric water-bath parameters used did not meet the recommended current and frequencies for effective stunning. No rhythmic breathing was detected with any of the birds at 4 s post water-bath exit, while this reflex returned by 8 s in some birds. Broilers that had their necks cut had a significantly lower incidence of breathing compared to those that missed the neck cutter. The electric water-bath stunners that were tested did not abolish the corneal reflex where 38.4% of birds tested positive, at 4 s post WBE. Pulsed DC-stunned birds that missed the knife had a significantly higher incidence of positive corneal reflexes than those that had their necks cut. Head shake was present on 26.7% of the birds when assessed at 25–30 s post WBE. The trends in incidence of behavioural reflexes with time post WBE may be used for the assessment of stunning efficiency, particularly on birds that miss the knife, but none of the assessed indicators could unequivocally demonstrate unconsciousness.

Keywords: animal welfare, behavioural, broilers, reflex, stunning, water bath