

Does poor stunning affect the assessment of animal-based measures consciousness in lambs at slaughter?

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According to EU legislation on the killing of animals (EC n. 1099/2009), to ensure that animals do not regain consciousness before slaughter, the efficiency of stunning method must be evaluated through animal-based measures (ABMs). In 2021 EFSA has indicated a list of ABMs commonly applied in the slaughterhouses to assess proper stunning in sheep. The aim of this study was to evaluate, in a commercial abattoir, whether the poor quality of the head-only electrical stunning (incorrect position of the electrodes, duration) influences the presence of signs of consciousness (ABMs) in lambs. Data were collected during normal slaughter routine, on 50 lambs (LW 6.0-8.0 kg) in one Italian slaughterhouse. Lambs were manually restrained and stunned with a head-only fixed on the wall and hoisted on the rail by one operator. A second operator bled each lamb by the perforation of jugular veins. Two fixed video cameras (GoPro 7 HERO) were used: one recorded the stunning and hoisting phases, while the second recorded the bleeding during post-cutting period up to 54.59 ± 15.29 s. Videos were analyzed using BORIS (8.17.1). The quality of the stun, the stun-to-stick interval, and the ABMs related to a poor stun (absence of tonic seizure, righting reflex, movements of the ears, the head, the nostrils, and the eyes) were evaluated by a trained observer. In 20 lambs the stun was correct, while in 28 lambs the electrodes were placed in the wrong position on the head of the animals, and in two lambs the duration of stun was less than 2s. When the stun was correct, the lambs showed: ears movements (18%), movements of the eyes (4%), movements of the head (16%), movements of nostrils (24%), righting reflex (14%) and absence of tonic seizures (4%). When the stun was poor the lambs exhibited: ear movements (24%), movements of the eyes (2%), movements of the head (14%), movements of nostrils (24%), righting reflex (26%) and absence of tonic seizures (12%). Moreover, a Mann-Whitney U test showed a significant higher probability of absence of tonic seizures correlated with longer stun-to-stick interval (23.3 ± 1.81 s vs 21.19 ± 5.81 s).

These preliminary results highlighted the critical presence of sign of consciousness in both correct and poor stunned lambs. Further analysis is needed to investigate the correlation between each ABM and other parameters. Furthermore, it would be useful to identify

possible automation solutions, which may inform the operator of the incorrect placement of the electrodes.