

Efficacy of Mechanical versus Manual Cervical Dislocation for On-Farm Euthanasia of Layer Chicks

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According to animal welfare concern, the aim of any killing technique is to achieve rapid loss of sensibility to cause minimal pain in animals. This study assessed the efficacy of novel Koehner Euthanasia Device Model-S (KED) in comparison to manual cervical dislocation in anesthetized layer chicks (2-3 day old). Due to ethical concern, novel killing devices are tested in anesthetized animals. Thus, 16 chicks (Avg BW \pm SD; 44 ± 3 g, Shaver White, ISA Brown and Lohman Select Leghorn-lite) were randomly assigned to the two experimental groups: manual cervical dislocation in anesthetized chicks or mechanical cervical dislocation by KED in anesthetized chicks (n=8). Generalized linear mixed model (GLMM) by using SAS 9.4 version was used to analyze the antemortem measurements. Longer time to lose the pupillary light reflex (94.4 ± 7 s, P=0.09) and cessation of heartbeat (196.4 ± 15 s, P=0.03) was observed in the chicks killed by KED in comparison to the other group (66.6 ± 9 s and 138.5 ± 18 s respectively). Radiographs assessment reported that manual cervical dislocation resulted in cervical dislocations below the C4 vertebra. The ideal dislocation of skull to C1 was absent in both the killing method. Few chicks killed by manual cervical dislocation exhibited cervical fractures. Cervical dislocations and fractures were not observed in the chicks killed by KED. Higher scores for the subdural hemorrhage at the site of cervical dislocation was observed in the chicks killed by manual cervical dislocation whereas it was minimum for the chicks killed by KED. Brain trauma was absent in both the methods. Based on time to brain death and anatomical pathology, KED resulted in lower efficacy in comparison to manual cervical dislocation as on-farm euthanasia method for 2-3-day old layer chicks.

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