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Effects of carprofen, meloxicam and butorphanol on broiler chickens' performance in mobility tests

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Abstract

Lame broiler chickens perform poorly in standardised mobility tests and have nociceptive thresholds that differ from those of non-lame birds, even when confounding factors such as differences in bodyweight are accounted for. This study investigated whether these altered responses could be due to pain, by comparing performance in a Group Obstacle test and a Latency to Lie (LTL) test of lame (Gait Score [GS] 2.5–4) and non-lame (GS 0–1) broilers administered analgesia or a saline control. We used exploratory subcutaneous doses of the non-steroidal anti-inflammatory drugs (NSAIDs), meloxicam (5 mg kg^{-1}) or carprofen (35 mg kg^{-1}) or the opioid butorphanol tartrate (4 mg kg^{-1}). We included butorphanol to explore the possibility that NSAIDs could improve mobility by reducing inflammation without necessarily invoking an analgesic effect. Lameness was a significant predictor in all analyses. Neither the number of obstacle crossings nor latency to cross an obstacle was significantly changed by either NSAID, but LTL was longer in lame birds given carprofen and meloxicam than in lame birds given saline. LTL was associated with foot-pad dermatitis and ameliorated by both NSAIDs. Butorphanol did not affect LTL but appeared soporific in the obstacle test, increasing latency to cross and, in non-lame birds, reducing the number of crossings. Combined with data from other studies, the results suggest carprofen and meloxicam had some analgesic effect on lame birds, lending further support to concerns that lameness compromises broiler welfare. Further investigation of opioid treatments and lameness types is needed to disentangle effects on mobility and on pain.

Keywords: *analgesia, animal welfare, broiler chicken, lameness, mobility, pain*