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Use of meloxicam, buprenorphine, and Maxilene® to assess a multimodal approach for piglet pain management, part 1: surgical castration

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Abstract

Surgical castration of piglets is a routine procedure on commercial pig farms, to prevent boar taint and reduce aggression. This procedure is known to cause pain, yet piglets are often not provided appropriate analgesia for relief. The objective of this study was to assess a multimodal approach to managing post-castration pain in piglets, using 0.4 mg kg^{-1} meloxicam (MEL), 0.04 mg kg^{-1} buprenorphine (BUP), and Maxilene® (MAX). Efficacy was evaluated using behavioural indicators, vocalisation, and facial grimace analysis. Male piglets were randomly assigned to one of ten possible treatments (n = 15 piglets per treatment group): MEL + BUP + MAX (castrated or uncastrated); MEL + BUP (castrated or uncastrated); BUP + MAX (castrated or uncastrated); MEL + MAX (castrated or uncastrated); saline (castrated control); or sham (uncastrated control). Castrated piglets in the MEL + BUP + MAX, MEL + BUP, and BUP + MAX treatment groups displayed significantly fewer pain behaviours than piglets administered saline. MEL + MAX was insufficient in reducing surgical castration pain behaviours. At 24 h post-procedure, saline and MEL + MAX-castrated piglets displayed significantly more pain behaviours than all other treatment groups and time-points. Facial grimace analysis indicated that MEL + MAX-castrated piglets had significantly higher grimace scores than MEL + BUP (castrated and uncastrated) and BUP + MAX-uncastrated. There were no significant differences in emitted vocalisations between the analgesia-treated and saline-castrated piglets. All treatment groups with buprenorphine were effective in alleviating castration-associated pain behaviours, suggesting that opioid administration is beneficial for managing piglet castration pain.

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