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Use of meloxicam, buprenorphine, and Maxilene® to assess a multimodal approach for piglet pain management, part 2: tail-docking

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Abstract

Piglets on commercial pig farms are often tail-docked to reduce the incidence of tail-biting. While this is a painful procedure, piglets are often not provided analgesia or anaesthesia for pain relief. The objectives of this study were to assess a multimodal approach to managing tail-docking pain in piglets, using 0.4 mg kg^{-1} meloxicam (MEL), 0.04 mg kg^{-1} buprenorphine (BUP), and Maxilene® (MAX), a topical anaesthetic. The effectiveness of each drug and drug combination was evaluated using behavioural indicators, vocalisation, and facial grimace analysis. This study also assessed whether male and female piglets responded differently to pain or pain treatments. Piglets were randomly assigned to one of six possible treatments: MEL, BUP, MEL + BUP, MEL + BUP + MAX, no treatment (tail-docked control), or sham (non-tail-docked control). Vocalisations were recorded at initial handling, injection, and tail-docking. Piglets administered MEL + BUP and BUP demonstrated significantly fewer pain behaviours than piglets in the MEL and no treatment group. MEL + BUP + MAX and BUP piglets displayed significantly lower facial grimace scores than piglets in the no treatment group. There were no significant differences in emitted vocalisations between the analgesia-treated piglets and the no treatment group and both injection and tail-docking elicited piglet vocalisations of similar frequency, power, and energy. There were no significant differences in behaviour, facial grimacing or emitted vocalisations between male and female piglets. All treatment groups with buprenorphine were able to alleviate tail-docking-associated pain, suggesting that opioid administration is highly effective for managing piglet pain.

Keywords: *analgesia, animal welfare, multimodal, pain assessment, piglet, tail-docking*