

Behavioural evaluation of analgesic efficacy for pain mitigation in lame sows

MD Pairis-Garcia[‡], AK Johnson^{*†‡}, KJ Stalder[‡], CA Abell[#], LA Karriker^{§¶}, JF Coetzee^{#¶}
 and ST Millman^{¶*}

[†] 2356F Kildee Hall, Iowa State University, Ames, IA, USA

[‡] Department of Animal Science, Iowa State University, Ames, IA 50011, USA

[§] Swine Medicine Education Center, Iowa State University, Ames, IA 50011, USA

[#] Pharmacology Analytical Support Service, Iowa State University, Ames, IA 50011, USA

[¶] Veterinary Diagnostic and Production Animal, Iowa State University, Ames, IA 50011, USA

^{*} Department of Biomedical Science, Iowa State University, Ames, IA 50011, USA

* Contact for correspondence and requests for reprints: johnsona@iastate.edu

Abstract

Lameness in breeding swine has a large negative economic impact and is a welfare concern. Pain-related behaviour, such as postural changes, may be used to evaluate the presence and severity of pain in animals. The objective of this work was to determine the effects of flunixin meglumine (FM) and meloxicam (M) on postural changes in lame sows. Lameness was induced in 24 mature sows (*Sus scrofa*) using a chemical synovitis model. Three treatments were compared: FM (2.2 mg kg⁻¹; n = 24, intramuscular [IM]), M (1.0 mg kg⁻¹; n = 24, by mouth [PO]) and sterile saline (equivalent volume to FM; n = 24 [IM]), administered approximately 28 and 52 h after lameness induction. Behavioural data were collected in the home pen during 12-h periods and quantified using 15-min scan sampling on the day prior to (–24 h; Day –1) through +168 h post lameness induction. Frequency of behaviour was analysed by day using generalised linear mixed model methods. The frequency of standing postures significantly decreased and lying postures increased 24–72 h post lameness induction relative to baseline day. All postures returned to baseline frequencies by +168 h. Meloxicam-treated sows demonstrated lower frequencies of lying postures +48 and +72 h after lameness induction compared to saline-treated sows. Flunixin-treated sows did not differ in lying behaviours compared to saline-treated sows. No differences were noted in standing or sitting postures between treatments. The results of this study suggest that meloxicam mitigates pain sensitivity as demonstrated by higher frequency of standing and lower frequency of lying compared to saline-treated sows.

Keywords: animal welfare, behaviour, flunixin meglumine, lameness, meloxicam, swine