

Effect of Oral Meloxicam on Performance and Health of Stocker Calves after Castration

J.F. Coetzee¹, BVSc, Cert CHP, PhD, DACVCP; L. N. Edwards², PhD; R. A. Mosher¹, DVM, MBA; A. M. O'Connor³, BVSc, MVSc, DVSc, FACVSc; B. KuKanich⁴, DVM, PhD, DACVCP; D.A. Blasi², PhD

¹Department of Clinical Sciences, College of Veterinary Medicine, Kansas State University, Manhattan, KS 66506

²Department of Animal Sciences and Industry, College of Agriculture, Kansas State University, Manhattan, KS 66506

³Veterinary Diagnostic and Production Animal Medicine, College of Veterinary Medicine, Iowa State University, Ames, IA 50011

⁴Department of Anatomy and Physiology, College of Veterinary Medicine, Kansas State University, Manhattan, KS 66506

Introduction

Castration in weaned calves is stressful and affects profitability by reducing average daily gain (ADG) and increasing susceptibility to disease. This study investigated the effect of meloxicam, a non-steroidal anti-inflammatory drug (NSAID), on performance and health of stocker calves after surgical castration.

Materials and Methods

British and Continental bulls (n=145) and steers (n=113) (BW = 425 to 628 lb; 193 to 285 kg) were transported for 12 hours in three truckloads (day 0), weighed, and randomly assigned to treatment with either lactose placebo (CONT; 0.5 mg/lb; 1 mg/kg) or meloxicam (MEL; 0.5 mg/lb; 1 mg/kg) suspended in water and administered *per os*, 24 hours prior to castration. On day 1, bulls were surgically castrated (CAST) and steers were submitted to simulated castration (SHAM). Treatment groups were penned in groups of 8-14 and not mixed. Plasma meloxicam concentrations at the time of castration (day 1) were determined by mass spectroscopy. Pen-level ADG, dry matter intake (DMI), and gain:feed (G:F) were estimated using body weights obtained on days 0, 14, and 28 and weigh-back of feed. Individual animals were classified as sick based on a depression score of 2 on a 5-point scale and a rectal temperature of 103.6°F (39.78°C). On days 0, 1, and 14, calf chute temperament was evaluated using a 4-point scale. Data were analyzed using mixed effects regression models and survival curve analyses.

Results

Castration reduced pen ADG from day 1 to day 14 ($P<0.001$) and day 1 to day 28 ($P<0.03$). MEL administration was not associated with higher pen ADG in castrated calves ($P=0.48$) or steers ($P=0.29$). Performance did not differ between groups from day 15 to day 28 ($P>0.27$). Pen DMI ($P=0.038$) and G:F ($P=0.0095$) from day 1 to day 28 was lower in CONT-CAST compared with CONT-SHAM, but no different between MEL-CAST and MEL-SHAM calves. MEL treatment reduced the individual animal first pull rate in CAST calves by 41% ($P=0.04$) and reduced bovine respiratory disease (BRD) morbidity rate by 49% ($P=0.14$). Cumulative pull rate ($P=0.016$) and cumulative BRD treatment rate ($P=0.023$) were higher in CONT-CAST compared with MEL-CAST calves. Mean plasma drug concentrations at castration were similar between MEL treatment groups ($P=0.87$).

Significance

MEL administration prior to castration in post-weaning calves reduced the number of animals requiring treatment by feedlot personnel and the overall cumulative BRD morbidity rate. These results have implications for developing pain mitigation strategies using NSAIDs in calves at castration with respect to addressing both animal health and welfare concerns.