IMPACT OF CARPROFEN ADMINISTRATION ON THE STRESS AND NOCICEPTION RESPONSE IN CAUTERY DEHORNED CALVES
Matthew L. Stock 1, Laura A. Barth 2, Nick K. Van Engen 1, Chong Wang 1, Suzanne T. Millman 1, Léa Labeur 1, Erica A. Voris 3, Johann (Hans) F. Coetzee 1,3
1Department of Veterinary Diagnostic and Production Animal Medicine (VDPAM), College of Veterinary Medicine, Iowa State University
2 Department of Veterinary Clinical Sciences (VCS), College of Veterinary Medicine, Iowa State University
3 Pharmacology Analytical Support Team (PhAST), College of Veterinary Medicine, Iowa State University
Matthew L. Stock
mstock@iastate.edu

The objective of this study was to investigate the analgesic effects of carprofen administered immediately prior to cautery dehorning. Forty Holstein calves aged 6 to 8 weeks old were either sham dehorned (n=10) or cauterized dehorned following administration of carprofen (1.4 mg/kg) subcutaneously (n=10), orally (n=10) or a placebo (n=10) in a randomized clinical trial. All animals received a cornual nerve block using a local anesthetic prior to dehorning. Pain biomarkers including mechanical nociception threshold, ocular temperature, and heart rate were evaluated following cauterized dehorning at predetermined times. Blood samples were collected over 96 hours and analyzed for plasma cortisol and substance P concentrations by radioimmune assay. Average daily gain (ADG) was calculated for 7 days post dehorning. Data were analyzed using a linear mixed effects model with repeated measures, controlling for baseline values by their inclusion as a covariate. Carprofen treated calves tended to be associated with an increased mechanical nociception threshold over the duration of the study (P=0.096). Maximum cortisol concentration tended to be decreased in calves treated with carprofen compared to dehorned controls (P=0.098). Oral carprofen administration resulted in the largest ADG (0.92±0.1 kg) which was 0.23±0.1 kg greater, albeit not significant, than placebo treated control calves (P=0.233) and significantly increased compared with calves administered carprofen subcutaneously (0.48±0.1 kg) (P=0.0039). Overall, results suggest a potential for a reduced pain and stress response following carprofen administration prior to cauterized dehorning. Additional studies are necessary to further elucidate the analgesic effects and differences observed in weight gain.