# Evaluating the efficacy of maternal bovine appeasing substance (MBAS) (FerAppease®) administration on pain outcomes in calves after cautery dehorning and surgical castration

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## Introduction

Castration and disbudding are routine procedures that cause pain and distress in cattle. No FDA analgesic or anesthetic drugs are currently approved in the U.S. to relieve pain in calves. Maternal bovine appeasing substance (MBAS) is naturally secreted by the sebaceous gland of the mammary gland and alleviates stress in nursing calves.

## Materials and methods

This randomized blinded controlled trial aimed to determine if a single topical synthetic MBAS analog dose (FerAppease®), or in combination with systemic analgesic would provide extended pain and stress relief to calves after disbudding and surgical castration. Forty-nine unprocessed Holstein bull calves 1-2 weeks old around 40 kg were assigned to one of the following treatment groups: lidocaine local anesthesia (LIDO; n = 9), lidocaine and meloxicam (LIDO-MEL; n = 10), lidocaine and MBAS (LIDO-MBAS; n = 10), lidocaine meloxicam and MBAS (COMBO; n = 9), sham procedures (SHAM; n = 6); and no analgesia (CONTROL; n = 5). Calves' performance, lie/stand behavior and gait were assessed in multiple timepoints. Linear-mixed models were used to determine potential associations between outcomes and treatment, post-procedures time and their interactions.

## Results

No significant differences in weight, average daily gain, feed efficiency, and lie/stand behaviors were observed between treatments ($P > 0.05$). There was a significant treatment by time interaction on gait measures ($P < 0.05$). Control calves had greater front and hind stance time at 8-, 12- and 24-hours post-procedures compared to other treatments.

## Significance

Differences in gait were noted only in control calves, local and systemic analgesics and MBAs did not differ. Further physiological outcomes analyses are needed to determine additional MBAS effects on calves undergoing painful procedures.

  