

RESEARCH FACTS



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IN PROGRESS

Evaluating local anesthetic to improve pain control in beef calves undergoing castration

PROJECT TITLE

Does local anesthetic improve pain control in beef calves undergoing castration?

In progress:

Results expected in end of 2021

RESEARCHERS

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Background:

The research regarding pain control for dehorning quite clearly shows that a multimodal approach using both local anesthetics and NSAIDS provides the most effective means of controlling pain in young calves. The current research on pain control for beef calf castration has largely not included local anesthetics as part of the pain control strategy. Any strategy that utilizes local anesthetics would have to be rapidly applied and relatively easy to administer in order to be of any practical use in the beef industry. This trial will assess the effect of local anesthetics given immediately prior to castration of calves, somewhat imitating the protocol followed for dehorning cattle.

Pain and illness are key components of animal welfare concerns in the eyes of the public. The recent development of the Canadian beef cattle code of practice highlighted many of these concerns and the difficulties in making scientific recommendations for producers in areas where there is a lack of scientific data. Development of pain control strategies will continue to evolve and practical methods of pain control are necessary in order for them to be widely adopted by industry. Currently there are no published studies in beef cattle assessing the effects of local anesthesia provided immediately before castration. Reducing pain during and after castration may improve performance, welfare, food safety and world market access. The conditions of this experiment are intentionally kept as close to the industry practices as possible to evaluate the viability of this pain control strategy in a real scenario.

Objectives:

- Assess the effects of local anesthetic administered immediately before castration. We will determine if anesthesia can be administered in a practical method to supplement current pain control strategies.
- Assess the use of local anesthetic in addition to meloxicam to improve the pain management for young calves post-castration. We will provide information on acute and chronic signs of pain, and health and welfare of calves following castration with local and topical anesthesia.

What They Will Do:

Forty-four cow-bull calf pairs will be used in the experiment. Calves will be homogenously divided into two treatment groups (n=22) based on date of birth (ranging from one to two months old). Treatments will include a control group (standard castration following industry practices) or the same procedure with local anesthetic nerve block with lidocaine in the spermatic cord 90 seconds before the procedure. All animals will be surgically castrated and meloxicam will be administered immediately prior to castration. One hour before the castration, cows will be separated from their calves and the calves will be processed through the chute to determine their temperament (chute score and exit speed). At the time of castration, calves will be brought individually to a tipping table where the castration will take place accordingly to their treatment assignment. Behavioural monitoring and sampling will be kept to a minimum to mimic industry practices and prevent too much handling to interfere with the expression of pain behaviours. Chute score, blood and hair samples to determine cortisol will be measured at the time of castration. Once castration is done, calves will be labelled and allowed to return to their home pen with his mother (exit speed will be measured). Video cameras will be set up to record behaviours for the following two hours after castration, including standing and lying, sucking behaviour, distance walked, group dispersion, tail flicks and flank kicks. Once all the calves have been in the pen for at least two hours, all cow-calf pairs will be moved around the farm through a designated circuit to assess ease of movement. The configuration of the treatments within the herd as it is being moved will be recorded. Wound healing, flight speed and blood cortisol will be further assessed seven, 14 and 21 days after castration.

Implications:

A technology transfer goal of this work is to provide producers with a practical and effective tool that controls pain for cattle during castration. The benefits to the Canadian beef industry include a simplified methodology for using anesthesia, with benefits in terms of society acceptance and animal welfare associated with improved pain control, and a potentially improved product (i.e. through increased average daily gain and enhanced recovery).

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