

# Clinical evaluation of Vetericyn Plus™ Pinkeye Spray as an aid in reduction of pain and infection in calves with experimentally induced infectious bovine keratoconjunctivitis

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## Introduction

Infectious bovine keratoconjunctivitis (IBK), commonly called “pinkeye”, is a painful condition affecting beef and dairy cattle worldwide (Funk et al 2014). Although, it is not a fatal disease, it has a tremendous negative economic impact on the cattle industry including significant losses in body weight and milk production. It has been estimated that annual losses associated with only decreased weight gain from infected cattle exceeds 150 million dollars yearly (Lane et al, 2006). Currently, antibiotics are considered the treatment of choice (Lane et al, 2006). However, new legislation is making it necessary to reduce the use of antibiotics in food producing animals. Hence, Vetericyn Plus™ Pinkeye Spray may be an effective alternative to antibiotics that aids in reduction of pain and infection and aids in healing. Therefore, we hypothesized that Vetericyn Plus™ Pinkeye Spray will significantly aid in reduction of pain and infection following experimentally induced infectious bovine keratoconjunctivitis due to *Moraxella bovis*, and will not result in any detectable changes in sodium and chloride levels following topical ocular administration.

## Materials and Methods

Thirty dairy bull with normal ophthalmic examinations and *Moraxella bovis* culture negative were randomly assigned to 3 groups for a single eye block randomized blinded challenge study. Throughout the study, calves were housed in pairs according to their respective group in an approved isolation facility. A 0.6 mm corneal lesion was made on the center of the left cornea of calves in Groups 1 and 2 utilizing n-heptanol. Immediately following lesion formation, 1.0 x 10<sup>7</sup> of *Moraxella bovis* (strain Epp63-300; origin: NADC) was administered topically to the left cornea of calves in Groups 1 and 2. The calves in Group 3 (control group) received topical corneal administration of *Moraxella bovis* to their left eye, but nothing further was administered to these calves for the duration of the study. In Group 1, 2 mLs of Vetericyn Plus™

Pinkeye Spray was administered topically to each calf's cornea twice daily for 10 days. In Group 2, two mL of 0.9% saline was administered topically to each calf's cornea twice daily for 10 days. Each animal was given a pain score twice daily (based on blepharospasm, ocular discharge and tearing) utilizing a scale of 1 to 4. All eyes were cultured on day -7, 0, 1, 2, 3, 4, 5, and day 10. Additionally, serum and plasma samples were drawn from all calves on days 0, 1, 10, 11, and 17 and evaluated for changes in sodium and chloride levels.

## Results

The study was approved by the Auburn University Institutional Animal Care and Use Committee. Of the 37 animals purchased for the study, 7 were excluded prior to enrollment due to ophthalmic abnormalities. All calves in Groups 1 and 2 developed lesions in the left eye consistent with the n-heptanol lesion as determined by fluorescein staining. All calves in Group 2 developed lesions consistent with IBK in the left eyes. Calves in Group 2 only were determined to be culture-positive for *Moraxella bovis* during the study period. Between days 1 and 2, Group 1 (Vetericyn Plus™ Pinkeye Spray) had significantly ( $P < 0.05$ , repeated measures ANOVA) decreased pain scores when compared to controls. On average there was a 79.1% reduction in pain score by day 2, and an 83.7% reduction in pain by day 10, when compared to controls. Group 2 (saline) had an average reduction in pain score of 18.3% and 67.9% by day 2 and by day 10, respectively, compared to controls. There was no significant difference in sodium and chloride levels in the plasma and serum among all 3 groups at any of the sampling time points.

## Significance

Vetericyn Plus™ Pinkeye Spray was effective as an aid in the reduction of pain and infection due to infectious bovine keratoconjunctivitis in cattle.