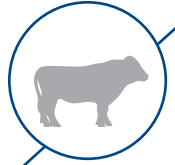


Research Notes

Arm & Hammer Animal and Food Production



CELMANAX reduced serum cortisol and altered microbial populations in transport-challenged beef heifers.

STUDY OVERVIEW

A study¹ was conducted to determine the effects of CELMANAX™ during post-weaning stress on cortisol concentration and fecal microbial populations of beef heifers.

Seventy-two commercial Angus heifers were blocked by sire and body weight, randomly assigned to one of two pens (4 heifers per pen) per block and assigned to treatments. From d0 to d60, heifers were fed twice daily with either 18g CELMANAX or corn germ (control) per animal per day.

After 60 days, two heifers per pen (n=32) were randomly selected for a transport challenge. Samples were collected as follows:

Fecal grab samples

During treatment:

- Day 0
- Day 69

During challenge:

- Hour -24
- Hour 0
- Hour 24
- 7 days post-challenge

Serum samples

During challenge:

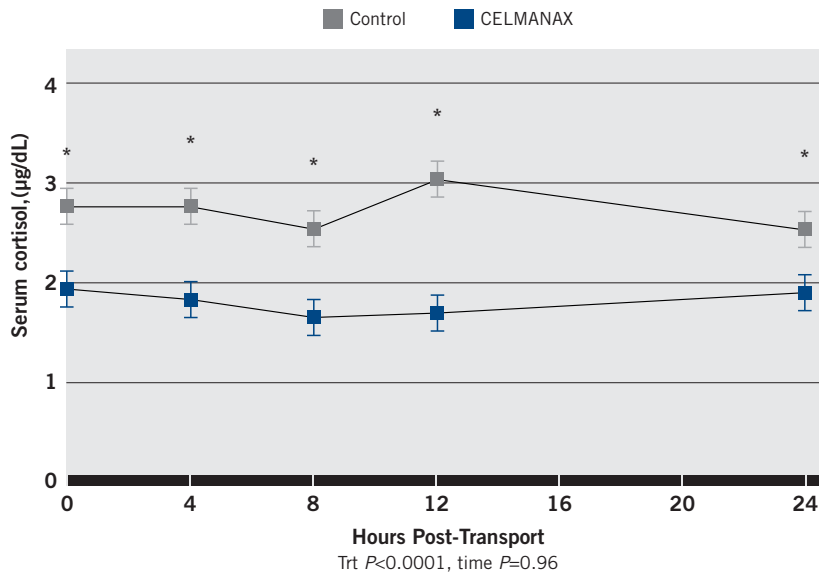
- Hour 0
- Hour 4
- Hour 8
- Hour 12
- Hour 24

Clostridia and *E.coli* were enumerated from fecal samples and isolates were genetically tested to determine if they were *C. perfringens* or pathogenic *E. coli*. Fecal samples were also enriched for detection of *Salmonella*.

RESULTS

- Transportation stress increased ($P<0.05$) populations of clostridia, *C. perfringens*, total *E. coli* and *Salmonella*, but decreased ($P=0.0252$) pathogenic *E. coli* counts
- Populations of total *E. coli*, *Salmonella* and *C. perfringens* decreased in CELMANAX-fed heifers compared to the control ($P<0.05$) following a transport challenge
- No differences in clostridia and pathogenic *E. coli* populations were observed between treatments ($P>0.05$) following a transport challenge
- Cortisol concentrations were decreased ($P<0.05$) in heifers fed CELMANAX compared to control heifers throughout the challenge

FIGURE 1: Serum cortisol concentrations (mg/dL) of heifers fed control diets vs. CELMANAX during a transportation challenge²



CONCLUSION

In this trial, supplementation with CELMANAX™ post-weaning reduced populations of total *E. coli*, *Salmonella* and *C. perfringens* and reduced cortisol concentrations during transportation in beef heifers. Results suggest that CELMANAX may be effective as a tool for reducing transport stress in cattle.



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¹ Long NM, et al. Effects of post-weaning supplementation of immunomodulatory feed ingredient on cortisol concentrations and microbial populations in programmed fed beef heifers. Abstract presented at Southern Section American Society of Animal Science meeting, 2019.

² Daniello J, et al. Effects of post-weaning supplementation of immunomodulatory feed ingredient on body weight and cortisol concentrations in program-fed beef heifers. *Domestic Animal Endocrinology* 2020;72 (July), 106427

