SUPPLEMENT: A FIELD TRIAL OF 2 POINT OF CARE GLUCOMETERS IN HEALTHY CALVES

Joseph Smith  
*UTK*, jsmit604@utk.edu

Lisa Ebner  
*LMU*

Haley Cremerius  
*UTK*

Channing Cantrell  
*UTK*

Windy Soto-Gonzalez  
*UTK*

See next page for additional authors

Follow this and additional works at: [https://trace.tennessee.edu/utk_largpubs](https://trace.tennessee.edu/utk_largpubs)

Part of the [Diagnosis Commons](https://trace.tennessee.edu/utk_largpubs), and the [Large or Food Animal and Equine Medicine Commons](https://trace.tennessee.edu/utk_largpubs)

**Recommended Citation**

Smith, Joseph; Ebner, Lisa; Cremerius, Haley; Cantrell, Channing; Soto-Gonzalez, Windy; Rahn, Rebecca; Mochel, Jon P.; Olivarez, Jeff; and Kreuder, Amanda, "SUPPLEMENT: A FIELD TRIAL OF 2 POINT OF CARE GLUCOMETERS IN HEALTHY CALVES" (2021). *Faculty Publications and Other Works -- Large Animal Clinical Sciences*.  
[https://trace.tennessee.edu/utk_largpubs/50](https://trace.tennessee.edu/utk_largpubs/50)

This Presentation is brought to you for free and open access by the Veterinary Medicine -- Faculty Publications and Other Works at TRACE: Tennessee Research and Creative Exchange. It has been accepted for inclusion in Faculty Publications and Other Works -- Large Animal Clinical Sciences by an authorized administrator of TRACE: Tennessee Research and Creative Exchange. For more information, please contact trace@utk.edu.
Authors
Joseph Smith, Lisa Ebner, Haley Cremerius, Channing Cantrell, Windy Soto-Gonzalez, Rebecca Rahn, Jon P. Mochel, Jeff Olivarez, and Amanda Kreuder

This presentation is available at TRACE: Tennessee Research and Creative Exchange: https://trace.tennessee.edu/utk_largpubs/50
A FIELD TRIAL OF 2 POINT OF CARE GLUCOMETERS IN HEALTHY CALVES

(Your glucometer could be misdiagnosing your patient)

Joe Smith\textsuperscript{1,5}, Lisa Ebner\textsuperscript{2}, Haley Cremerius\textsuperscript{3}, Channing Cantrell\textsuperscript{3}, Windy Soto-Gonzalez\textsuperscript{4}, Rebecca Rahn\textsuperscript{4}, Jon P. Mochel\textsuperscript{5}, Jeff Olivarez\textsuperscript{5}, Amanda Kreuder\textsuperscript{6}

\textsuperscript{1}Department of Large Animal Clinical Sciences, University of Tennessee; \textsuperscript{2}College of Veterinary Medicine, Lincoln Memorial University; \textsuperscript{3}College of Veterinary Medicine, University of Tennessee; \textsuperscript{4}Department of Animal Science, University of Tennessee; \textsuperscript{5}Department of Biomedical Sciences, Iowa State University; \textsuperscript{6}Veterinary Microbiology and Preventive Medicine, Iowa State University
Introduction: Point of Care in Vet Med

• Point of care (POC) devices are becoming more utilized in veterinary medicine

• One area that has specifically benefitted from POC devices is ambulatory food animal practice
  • Rapid results
  • Lower cost
Introduction: Our Predicament...

• At the author’s institutions, glucometers and glucometer supplies are commonly purchased by a central supply office.

• So it is not uncommon for small animal glucometers to be most commonly purchased due to institutional supply procedures.

• What does this mean for the large animal clinician when they are interpreting results performed on a small animal POC device?
Introduction: Investigation Goals

• The goals of our investigation were to:

  • Determine the relationship between a POC glucometer validated for cattle vs a small animal POC glucometer in healthy calves

    • Using both the “Canine” and “Feline” settings of the small animal POC glucometer
Materials and Methods

• Samples were collected from 6 healthy calves
  • At various time points over a 14 day period

• Upon collection samples were immediately processed by both POC glucometers
  • Precision Xtra (PX, validated for cattle)
  • Alphatrak 2 (AT2, validated for dogs and cats)
    • Each sample was ran under either the canine or feline setting
Materials and Methods

Blood Samples Collected (n=160)

Samples for PX analysis (n=80)

PX Analysis (n=80)

Simultaneous AT2 Analysis (canine setting, n=80)

Statistical Comparison (canine setting)

Samples for AT2 Analysis (n=80)

Statistical Comparison (feline setting)

PX Analysis (n=80)

Simultaneous AT2 Analysis (feline setting, n=80)
Materials and Methods

• Samples were compared as previously described
  • Linear regression
  • Bland-Altman analysis

• Commercial statistical software program
  • Prism, Graphpad Inc.
Results

• Blood glucose concentrations ranged from 64-175 (mean ± standard deviation: 111.2 ± 22.1) and 89-215 (mean ± SD: 152.2 ± 23.6) mg/dL for the PX and AT2 (canine setting) devices respectfully

• Blood glucose concentrations ranged from 66-176 (mean ± SD 106.6 ± 23.1) and 89-223 (mean ± SD: 140.7 ± 27.6) mg/dL for the PX and AT2 (feline setting) devices respectfully

• Figures 1A and 1B demonstrate regression analysis of the comparisons

![Regression Analysis Graphs](image)
Results

- Figures 2A and 2B demonstrate Bland-Altman analysis for each setting.
Discussion

• Clinicians should be aware of the AT2’s ability to report an increased blood glucose concentration when compared to the PX device

• Of the AT2 settings, the feline setting appears to be closer to the PX results, although both AT2 settings demonstrate bias
Limitations and Future Directions

• Limitations include the small sample size of calves, and the use of a narrow age range of healthy calves

• More research is needed in the establishment of reference ranges for calves with the AT2 device

• Also needed is an exploration of agreement for hypo- and hyperglycemic samples from sick calves
  • More likely to be clinically important

• Questions: Joe Smith, jsmit604@utk.edu
References


