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

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A FIELD TRIAL OF 2 POINT OF CARE GLUCOMETERS IN HEALTHY CALVES
(Your glucometer could be misdiagnosing your patient)

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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)
  - PX Analysis (n=80)
  - Simultaneous AT2 Analysis (feline setting, n=80)
  - Statistical Comparison (feline setting)
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.
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


