

Results

A total of 213 blood samples were collected at an average of 9 DIM. Prevalence of SCK as determined by the reference laboratory was 10.3%. The concordance correlation coefficient between the serum reference lab values and Nova Vet meter was 0.96 (95 CI: 0.95-0.97). The SE and SP of the Nova Vet meter at a cut-point of 1.2 mmol/L were 100% (95 CI: 83.9-100.0%) and 98.4% (95 CI: 95.5-99.7%) in whole blood, respectively. At a prevalence of 10%, the positive predictive value (PPV) and negative predictive value (NPV) were 87.6% (95 CI: 69.7-95.6%) and 100%, respectively.

For the Precision Xtra, the concordance correlation coefficient between the serum reference lab values and meter values was 0.94 (95 CI: 0.93-0.95). Sensitivity and SP of the Precision Xtra meter at a cut-point of 1.3 mmol/L were 95.5% (95 CI: 77.2-100.0%) and 98.4% (95 CI: 99.5-99.7%)

in whole blood, respectively. The PPV and NPV at the 10% prevalence were 87% (95 CI: 68.5-95.4%) and 99.5% (95 CI: 96.6-99.9%), respectively. For the milk test, the optimum cut-point was 0.23 mmol/L. Sensitivity and SP at this cut point was 88.2% (95 CI: 63.6%-98.5%) and 89.9% (95 CI: 83.7-94.4%), respectively. The PPV and NPV at this 10% prevalence were 49.3% (95 CI: 36.5-62.2%) and 98.6% (95 CI: 94.9 -99.6%), respectively.

Significance

In conclusion, the Nova Vet has similar test characteristics compared to the Precision Xtra meter. Its use would allow for rapid and accurate measures of β HB concentration on farm for detection and monitoring of SCK in postpartum dairy cattle.

The effects of sample temperature on the concentrations of glucose and β -OH butyrate measured by the Precision Xtra meter in plasma from periparturient dairy cattle

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Introduction

Early and accurate diagnosis of hypoglycemia and hyperketonemia is helpful in the diagnosis and treatment of ketosis in periparturient dairy cattle. The results of a preliminary study recently indicated that the glucose concentration [gluc] and β -OH butyrate concentration [BHB] measured by the Precision Xtra meter was impacted by sample temperature when temperature $< 89.6^\circ$ ($< 32^\circ\text{C}$). The objective of this study was to fully characterize the effects of sample temperature on the accuracy of the Precision Xtra® for measuring [gluc] and [BHB].

Materials and Methods

Ten plasma samples with [gluc] at 98.6°F (37°C) ranging from approximately 30 to 409 mg/dL, and 14 plasma samples with [BHB] at 98.6°F (37°C) ranging from approximately 0.5 to 7.5 mmol/L, were obtained from periparturient Holstein-Friesian cattle. Plasma samples were placed in a water bath at 44.6, 53.6, 62.6, 71.6, 80.6, 89.6, 98.6, and 107.6°F (7, 12, 17, 22, 27, 32, 37, and 42°C) for 30 minutes and then immediately analyzed in duplicate using the Preci-

sion Xtra meter. Linear regression was used to characterize the relationship between [gluc]_{meter} and temperature, and between [BHB]_{meter} and temperature.

Results

Plasma [gluc]_{meter} was minimally affected by the variation in sample temperature from 44.6 to 107.6°F (7 to 42°C) when the plasma [gluc]_{meter} was < 160 mg/dL; however, [gluc]_{meter} increased linearly with temperature when plasma [gluc]_{meter} > 160 mg/dL. Variation in sample temperature from 44.6 to 107.6°F (7 to 42°C) had no effect on the measured value for plasma [BHB]_{meter} when plasma [BHB]_{meter} was < 2.6 mmol/L; however, [BHB]_{meter} increased linearly with temperature when plasma [BHB]_{meter} > 2.6 mmol/L.

Significance

Sample temperature should be taken into the consideration whenever plasma [gluc]_{meter} > 160 mg/dL or plasma [BHB]_{meter} > 2.6 mmol/L as measured by Precision Xtra meter. We anticipate similar findings would occur when blood at different temperatures was measured by the meter.