

Sixty animals (55%) remained SCH at 2 DIM. Subclinical hypomagnesemia classification prepartum was not associated with the risk of cows being classified with SCH within 4 h of calving (RR=0.85; 95% CI: 0.68-1.06; P=0.2), or remaining SCH at 2 DIM (RR=0.9; 95% CI: 0.71-1.3; P=0.42). Additionally, there was no association of subclinical hypomagnesemia prepartum with the risk of subsequent retained placenta, metritis, hyperketonemia, or displaced abomasum. Outcomes of conception to first service and average milk production remain pending.

Significance

For the cohort of cows under study, prepartum plasma magnesium levels were not associated with the risk of cows being classified with SCH or with early lactation health events. However, the low prevalence of subclinical hypomagnesemia prepartum and the inclusion of primiparous animals in the cohort may have impacted the power to detect associations. In addition, prepartum plasma magnesium levels for the herds under study were higher than anticipated.

Comparison of four electronic cowside tests for diagnosing hyperketonemia in dairy cows

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Introduction

The objective of this study was to evaluate 4 cowside ketone meters for use in on-farm β -hydroxybutyrate (BHB) monitoring of hyperketonemia (HYK) in transition dairy cows.

Materials and Methods

Blood samples taken from 250 Holstein cows between 262 days pregnant and 15 days-in-milk were evaluated on 4 different cowside BHB meters: Precision Xtra, TaiDoc, Nova Max, and Nova Vet. Samples were screened using the Precision Xtra and tested on the remaining 3 meters if the sample BHB concentration fell into 4 pre-determined ranges. A total of 89 samples were used for analysis. Performance of each meter was compared to plasma BHB concentrations determined by a gold standard spectrophotometric Randox assay.

Results

All meters demonstrated Pearson correlation coefficients greater than 0.95. The Precision Xtra and TaiDoc

meters were 100.0% sensitive and 73.5% specific at a BHB concentration cut point of 1.2 mmol/L. The Nova Vet and Nova Max meters had sensitivities of 94.9% and 74.4% and specificities of 91.8% and 100.0%, respectively, at the same cut point. Sample variability from the gold standard was lowest for the Nova Vet meter when evaluated using a Bland Altman graph with a mean BHB difference of 0.08 mmol/L. Trends in variability were noted with the Precision Xtra and Nova Max meters resulting in increasing variability for both meters at higher plasma BHB concentrations, with mean BHB differences of -0.34 and 0.26 mmol/L, respectively. The coefficient of variation was <10% for the Precision Xtra, TaiDoc, and Nova Vet meters, and <15% for the Nova Max meter. All meters showed some variation in performance at blood BHB concentrations >3.0 mmol/L.

Significance

We conclude that the TaiDoc and Nova Vet meters are acceptable alternatives to the Precision Xtra meter for use in on-farm testing for monitoring and treatment of HYK.