

Materials and Methods

The maximum thickness of the longissimus dorsi and gluteus medius muscles of 106 late periparturient Holstein-Friesian cattle (34 primiparous and 72 multiparous) were determined ultrasonographically at -3, 0, 3, 7, 14, 21, 28 days relative to day of parturition. Plasma creatinine was measured on the same days as ultrasonography. Mixed models analysis was used to explore changes over time using repeated measures and the linear association between variables of interest. $P < 0.05$ was declared significant.

Results

Mean longissimus dorsi muscle thickness at the loin area in primiparous and multiparous cattle at 28 days postpartum decreased by 3.7 and 7.7mm, respectively, compared to values 3 days prepartum (40.3 ± 5.1 , 37.8 ± 4.9 mm). Mean longissimus dorsi muscle thickness at the thoracic area declined by 6.6 and 8.5mm, respectively, compared to values

3 days prepartum (45.2 ± 5.3 , 45.0 ± 5.2 mm). Mean gluteus medius muscle thickness was also decreased at 28 days postpartum, but to a smaller extent. Plasma creatinine in primiparous and multiparous cattle at 28 days postpartum decreased by 0.24 and 0.29 mg/dL respectively, compared to values 3 days prepartum (0.97 ± 0.16 , 1.02 ± 0.12 mg/dL). Mean maximal longissimus dorsi muscle thickness at the thoracic area in mm was positively and linearly associated with plasma creatinine in mg/dL, such that $\text{thickness} = 23.9 + 19.2 \times (\text{creatinine})$.

Significance

Ultrasonographic measurement of maximum longissimus dorsi muscle thickness provides a promising practical and clinically useful on-farm method for monitoring the rate of protein mobilization in periparturient dairy cattle. Ultrasonographic measurement of muscle thickness complements ultrasonographic measurement of backfat thickness as a measure of the rate of fat mobilization.

Evaluation of a new portable blood cow side test for calcium monitoring in cows

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Introduction

Cows around calving are very vulnerable and susceptible for any metabolic disturbances. To identify cows at risk for hypocalcemia, a new portable on farm photometer was developed to enable the veterinarian to make on farm cow side decisions. The aim of this study was to evaluate this cow-side test for calcium measurements of dairy cows.

Materials and Methods

A new hand held photometer (Vetphotometer, Quidee.com) was designed for farm evaluations on cows at risk for the major problem areas of dairy cows (fat mobilization, hypocalcemia, and hypomagnesemia) or to serve as a prognostic parameter for successful surgical interventions (I-lactate). Two studies have been conducted to prove the accuracy of this new tool for calcium measurements. In this first study, 20 heparinized blood samples from lactating cows have been submitted to 2 different testing photometer protocols. The trial group was evaluated by the Vetphotometer at 520 nm with modified detergent (Diaglobal) and compared to the results obtained by spectral photometric evaluations (Spectral

photometer LS 500; 578 nm) that are regarded as “gold standard”. In a second study 15 heparinized blood samples from Holstein cows were collected for calcium measurements run either by Solaar AAS (Atomic Absorption Spectrophotometry; Thermo Fisher) or by the digital Vetphotometer (quidee).

Results

In the first study, a very high correlation between the 2 different photometric calcium measurements was obtained. A linear correlation of $0.9717x + 0.0152$ mmol/L was achieved. In the second trial a linear correlation of 0.9476 of total calcium between the 2 methods was achieved.

Significance

A new digital calcium cow side test showed high correlation and accuracy compared to standard laboratory analyses. This new approach serves as a quick testing method for calcium in the blood plasma of lactating cows to help better estimate the need for suitable treatment and feeding management decisions. Monitoring calcium levels in dairy cow can be done very easily, quickly and with a high accuracy cow-side.