

Research Summaries 1

Close-up diet DCAD, urine pH, and total plasma calcium at calving on a commercial Jersey herd

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Introduction

Inducing a compensated metabolic acidosis by feeding anionic salts in close-up cows has been shown by some researchers to be a useful strategy for milk fever prevention. The objectives of this study were to 1) determine the daily variability of the dietary cation-anion difference (DCAD) in close-up diets; 2) evaluate the daily variability of urine pH and the proportion of cows that were properly acidified based on urine pH; 3) determine if acidification levels were maintained as parturition approached; 4) investigate the relationship between DCAD level and urine pH; and 5) evaluate the association between urine pH days prior to calving and postpartum calcium concentration on a commercial Jersey herd.

Materials and Methods

Over a 40-d period, feed bunk samples were collected daily for wet chemistry analysis. Mixing uniformity was evaluated weekly by sampling 5 feed bunk locations. Enrolled cows were fed a close-up diet for at least 10 d. Midstream urine was collected from 70 multiparous cows via manual stimulation for cow-side urinary pH measurements. Coccygeal blood samples were collected after calving for total plasma calcium analysis (47 cows). The evaluation of changes on urinary pH at -10 to 0 d relative to calving (RC) was conducted with the

MIXED procedure of SAS with repeated measurements. The association between DCAD and urine pH was evaluated using the CORR procedure of SAS.

Results

DCAD ranged from -136 to 151 mEq/kg of DM with a coefficient of variation (CV) of 216%, and DCAD distribution throughout the feed bunk was highly variable (CV=36 to 182%). The within-day variation of urine pH ranged from a CV of 3 to 19%. There was a tendency for an effect of day of the week ($P=0.07$) on urine pH, which was greatest on Monday (6.2) and lowest on Saturday (5.9). Urine pH was lower from -10 to -6 d RC (5.6 to 6.1) compared to -5 to 0 d RC (6.0 to 6.2; $P=0.08$). There was a tendency for a weak association between the dietary DCAD fed 24 h prior and the urine pH ($r=0.31$; $P=0.09$). Although urine pH was not associated with postpartum total plasma calcium from -10 to -4 d RC, it was from -3 to 0 d RC ($P=0.02$).

Significance

Our results indicate that in the study herd there was a wide within- and across-day variation in DCAD as well as urinary pH. Urine pH might not be a good indicator of postpartum plasma calcium levels.

Extension of anionic diet into the first three days of lactation and its effect on calcium blood levels in postpartum dairy cattle

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Introduction

Although the incidence of clinical hypocalcemia in postpartum dairy cows is low on US dairies, subclinical hypocalcemia post-calving is common and has been associ-

ated with metabolic and infectious disease. It is common farm practice to feed a diet rich in anions to prepartum dairy cattle to support calcium homeostasis; however, this diet is typically discontinued at parturition when calcium needs are still high. The objective of this study was to determine