

Chloride-Enriched Timothy Hay Prevents Milk Fever

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There are several dietary strategies to prevent milk fever but the most common approach is to lower the dietary cation-anion difference (DCAD). The DCAD can be reduced by acidifying the diet with hydrochloric acid or by incorporating anionic salts. Unfortunately, the use of acidifying agents may reduce palatability and therefore cause a reduction in dry matter intake predisposing cows to other transition disorders. The objective of this study was to evaluate the effects of feeding timothy (*Phleum pretense* L.) hay which differed in DCAD on the capability of cows to maintain blood calcium concentration right after calving.

Forty-one dry pregnant cows entering their second or greater lactation were used in this study. Timothy hay was obtained from an established timothy stand that was fertilized with calcium chloride (low-DCAD) or not fertilized with calcium chloride (Control). Experimental diets, containing timothy hay at 65% of dietary DM (low DCAD vs. control), were fed ad libitum starting 30 d prior to the expected calving date. Subclinical milk fever was defined to occur when blood ionized calcium concentration was less than 1 mM.

Fertilization increased the chloride concentration by 86% (1.07 vs. 0.15%) and decreased the DCAD by 94% (1.2 vs. 21.6 mEq/100g). Dry matter intake was not affected by treatment and averaged 10.6 kg/d. The low-DCAD treatment decreased ($P < 0.01$) urine pH compared to control at 21 d (7.75 vs. 8.31), 14 d (7.69 vs. 8.22), and 7 d (7.50 vs. 8.19) before calving. In addition, cows fed the low-DCAD treatment had greater ($P = 0.04$) ionized calcium concentration compared to control at 0 h (1.10 vs. 1.02 mM) and 8 h (1.08 vs. 1.04 mM) post-calving. No clinical milk fever was observed in this study but nearly 67% of the cows on the control treatment and 35% of the cows on the low-DCAD were classified as having subclinical milk fever.

Implications: This study indicates that DCAD values of timothy affect the acid-base balance of periparturient dairy cows, and that chloride-enriched (low-DCAD) timothy hay may reduce the incidence and severity of milk fever.