THE IMPACT OF A PREPARTUM

FULLY ACIDOGENIC, HIGH CALCIUM DIET

In dairy cows, the transition from gestation to lactation results in a sudden, large demand for calcium due to the production and secretion of colostrum and milk. This period can leave your herd vulnerable to hypocalcemia and metabolic disorders.[1]

SUBCLINICAL HYPOCALCEMIA AFFECTS MORE THAN 50% OF COWS ENTERING THIRD OR GREATER LACTATION[2]

IN A UNIVERSITY OF WISCONSIN STUDY,
non-pregnant, non-lactating Holstein cows were fed fully acidogenic diets with varying concentrations of calcium, with Animate® nutritional specialty product as the sole source of added sulfur and chloride, for 21 days prior to an ethylene glycol tetraacetic acid (EGTA) challenge to induce hypocalcemia.*

Cows fed the high calcium diet (2.02%) saw significant differences compared to those fed the medium (1.13%) or low (0.45%) calcium diets.[3]

COWS FED THE HIGH CALCIUM DIET:

MAINTAINED HIGHER MEAN IONIZED CALCIUM (iCa) concentrations during feeding and EGTA infusion periods.
Figure 1 (on back)

Having more iCa in the blood prior to a challenge like the initiation of milk synthesis may help cows meet increased demands for calcium.

TOOK SIGNIFICANTLY MORE TIME to become hypocalcemic.
Figure 2 (on back)

REQUIRED MORE GRAMS OF EGTA to become hypocalcemic.
Figure 3 (on back)

Improved resistance to a hypocalcemic challenge is an indication that cows may have more biologically available calcium to meet the sudden, high demand for calcium with the initiation of lactation.

Feeding high dietary calcium in combination with a fully acidogenic diet prepartum may provide more biologically active calcium during the periparturient period when demand for calcium is high.

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*Hypocalcemia defined as 60% of pre-EGTA challenge blood iCa concentrations

[1] Curtis et al. 1985. J. Dairy Sci. 68:2347. [2] Reinhardt et al. 2011. The Vet J. 188:122-124. [3] Admundson et al., 2018. J. Dairy Sci. 96:5010.

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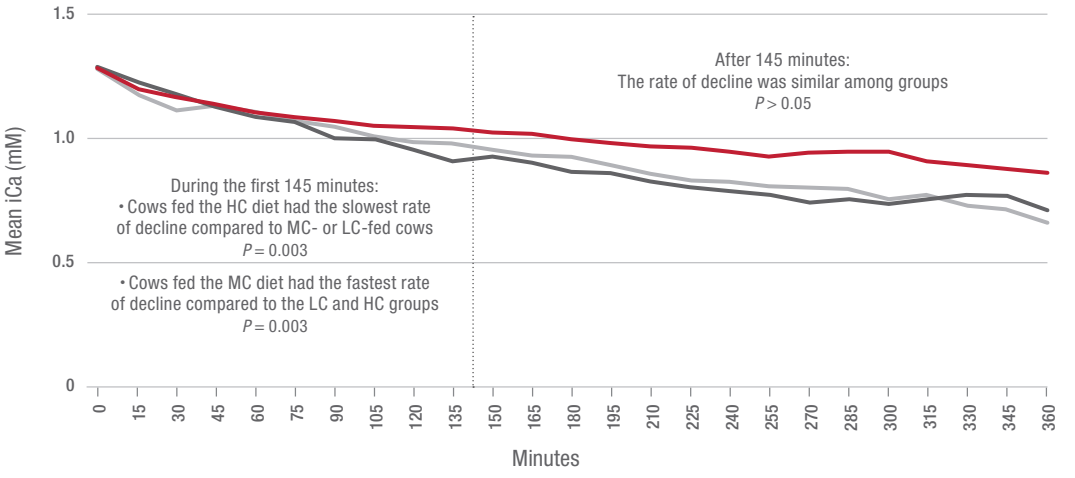
THE IMPACT OF A FULLY ACIDOGENIC, HIGH CALCIUM DIET

Figure 1

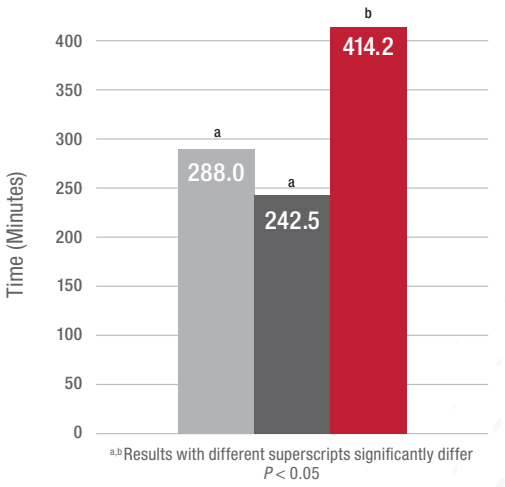
iCa CONCENTRATIONS DURING EGTA CHALLENGE PERIOD



LOW CALCIUM DIET (LC) | MEDIUM CALCIUM DIET (MC) | HIGH CALCIUM DIET (HC)

Figure 2

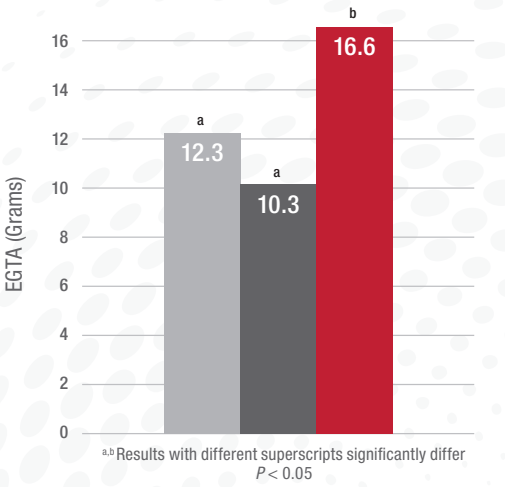
AMOUNT OF TIME NEEDED TO ACHIEVE HYPOCALCEMIA*



a,b Results with different superscripts significantly differ
$P < 0.05$

Figure 3

AMOUNT OF EGTA NEEDED TO ACHIEVE HYPOCALCEMIA*



a,b Results with different superscripts significantly differ
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LOW CALCIUM DIET (LC) | MEDIUM CALCIUM DIET (MC) | HIGH CALCIUM DIET (HC)

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