

ORAL CALCIUM BOLUS SUPPLEMENTATION

Study and Population	Diet and Product	Relevant Outcomes
<p>Domino et al, 2017</p> <p>1,478 multiparous cows from 1 commercial dairy</p>	<p>TMR twice daily with a targeted DCAD level of -10 to -15 mEq/100 g of DM and 0 mEq/100 g of DM</p> <p>Bovicalc (0 and 12h)</p>	<ul style="list-style-type: none"> No difference in risk of metritis, displaced abomasum, early lactation disease diagnosis, or pregnancy to first insemination No effect on average daily milk yield Cows treated that had high relative herd milk rank in previous lactation were less likely to be diagnosed with mastitis in the first 60 DIM compared with control Treated second-parity cows fed a negative prepartum DCAD ration were more likely to be removed from the herd than control cows
<p>Leno et al., 2018</p> <p>3,949 cows (all parities) from 6 commercial dairies</p>	<p>TMR; DCAD varying from -6.9 to 14.1</p> <p>Quadrical (1 dose within 24h)</p>	<ul style="list-style-type: none"> No difference for plasma Ca between 1 and 24 h after treatment. Treated primiparous cows had decreased risk of one or more health disorders Treated primiparous cows with BCS >3.5 or days carried calf >277 had increased milk production Reduced risk of one or more health disorders was observed in parity ≥3 MP cows with BCS >3.5 reduced risk of RP Lame cows reduced risk of DA For MP cows with low plasma Ca, BOL decreased risk of additional Ca treatment as well as risk of one or more health disorders
<p>Martinez et al., 2016a and b</p>	<p>TMR offered for ad libitum intake; parous cow diet DCAD -153 ± 96 mEq/kg</p>	<ul style="list-style-type: none"> Calcium supplementation decreased the prevalence of SCH on d 0 and 1 postpartum in all cows.

<p>450 Holstein cows from 1 commercial dairy – low risk and high risk for metritis</p>	<p>Bovicalc (2 boluses on d0 and d1 ± 1 boluses on d3 and d4 vs.</p>	<ul style="list-style-type: none"> • Oral Ca increased the incidence of metritis especially in LRM primiparous cows • Oral Ca increased morbidity in primiparous cows (at least one clinical disease) but not multiparous cows • For multiparous cows, Ca supplementation increased milk yield in the first 30 DIM in cows of greater production potential, decreased cows with below average production potential. • Primiparous cows reduced P/AI at first and all AI; multiparous cows improved P/AI at the first and all AI • Extended median days to pregnancy and smaller proportion of pregnant in primiparous cows, but shorter days to pregnancy and increased proportion of pregnant cows in multiparous cows
<p>Oetzel and Miller, 2012 927 multiparous cows from 2 commercial dairies</p>	<p>TMR; DCADs -`8 and -109 mEq/kg Bovicalc (1 bolus <2h; 2nd bolus 8-35h after calving)</p>	<ul style="list-style-type: none"> • Mean Ca²⁺ concentrations were not different between the control and oral bolus group. • Lame cows supplemented averaged 0.34 fewer health events in the first 30 d in milk • Cows with a higher previous lactation mature-equivalent milk production (greater than 105% of herd rank) and supplemented with oral Ca boluses produced 2.9 kg more milk at their first test

SUBCUTANEOUS CALCIUM SUPPLEMENTATION

Study and Population	Diet and Product	Relevant Outcomes
<p>Amanalou et al., 2016</p> <p>375 Holsteins all parities from 1 commercial dairy</p>	<p>TMR with DCAD of -130 mEq/kg</p> <p>250 mL of 40% Ca borogluconate SC after calving OR 500 mL of 40% Ca borogluconate SC after calving OR 250 mL of 40% Ca borogluconate after calving and repeat 12-18 h later</p>	<ul style="list-style-type: none"> • DMI in first 24 h after calving was higher for treated cows relative to control • Milk somatic cell counts were lower for cows treated with 500mL or 2 doses compared to control • Higher risk of developing metritis, and clinical and subclinical endometritis for control cows
<p>Domino et al, 2017</p> <p>1,478 multiparous cows from 1 commercial dairy</p>	<p>TMR twice daily with a targeted DCAD level of -10 to -15 mEq/100 g of DM and 0 mEq/100 g of DM</p> <p>Subcutaneous administration of 500 mL of 23% Ca gluconate</p>	<ul style="list-style-type: none"> • SC cows had greater Ca concentrations from 1 through 12 h post-treatment • Cows treated with SC that had a high relative herd milk rank in the previous lactation were half as likely to be diagnosed with mastitis in the first 60 DIM • Second-parity cows fed a negative prepartum DCAD ration and treated with SC were more likely to be removed from the herd
<p>Miltenburg et al., 2016</p> <p>984 cows of all parities from 7 commercial dairies</p>	<p>TMR with positive DCAD (no anionic salts fed)</p> <p>Theracalcium (120mL SC within 6h of calving, repeated 12-24h later)</p>	<ul style="list-style-type: none"> • tCa was significantly higher in the treated cows at 24h but no difference at 48 h • Treated cows were significantly less likely to have received supplemental Ca for exhibiting clinical signs of hypocalcemia than control cows