

## EFFECTS OF A LOW ENERGY DIET PREPARTUM ON SUBCLINICAL KETOSIS IN DAIRY COWS

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Despite decades of research the dairy industry remains challenged with high rates of disease after calving, often attributed to prolonged periods of negative energy balance (NEB). In an effort to reduce NEB it is common practice to provide an energy dense diet 3 wks before calving, but this may lead to over consumption of energy and actually increase the risk of metabolic disease post-partum. The aim of this trial was to compare the metabolic status of transition cows on a traditional pre-calving diet ( $NE_L=1.45$  Mcal/kg) versus a low energy, high forage diet ( $NE_L=1.34$  Mcal/kg). Cows were randomly assigned to either the control diet (cows were switched to the close up ration 3 wks prepartum) or the treatment diet (cows remained on the low energy diet until parturition). After parturition, all cows were fed a common lactation diet ( $NE_L=1.65$  Mcal/kg). Treatment groups were balanced for parity, previous 305 day milk production and body condition score. DMI was measured daily from 3 wks before to 2 wks after calving for 78 multiparous Holstein cows. Blood BHBA was measured daily for 10 d after calving. The MIXED procedure in SAS was used to test the fixed effect of treatment on BHBA for each day postpartum, and on DMI in the prepartum and the postpartum period. Cows on the low energy diet prepartum had lower BHBA levels than did control cows ( $0.48 \pm 0.03$  vs.  $0.65 \pm 0.03$  mmol/L;  $P<0.0001$ ). Using a threshold of  $1.0 \leq BHBA \leq 1.4$  mmol/L, fewer cows on the low energy diet prepartum were diagnosed as having subclinical ketosis compared to cows on the control diet (4.8% vs. 20.6%;  $\chi^2=7.17$ ,  $P=0.007$ ). Cows on the low energy diet had lower DMI compared to the cows on the close up diet ( $13.57 \pm 0.09$  kg/d vs.  $16.45 \pm 0.12$  kg/d;  $P<0.05$ ) and consumed slightly less DM in the first 2 wks postpartum ( $18.64 \pm 0.41$  vs.  $17.65 \pm 0.40$  kg/d;  $P<0.05$ ). Feeding a low energy diet before calving can reduce the risk of subclinical ketosis.

**Key words:** transition diets, intake, ketosis

