

Reducing Metabolic Stress of Dairy Cows during the Transition Period by Partial Milking or Nursing

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During the transition from pregnancy to lactation, the sudden increase in nutrient demand for milk production causes metabolic perturbations and high incidences of metabolic diseases in high yielding cows. We previously showed that limiting milk yield by milking once a day during the first wk of lactation improved metabolic status but reduced milk production during the following weeks (Journal of Dairy Science 92:1900). In this study, we examined if limiting milk harvest postpartum while maintaining milking stimulus could improve the metabolic status of cows without reducing overall milk production. 47 Holsteins cows were allocated to three treatments: 1) cows were milked completely twice a day from calving (control); 2) cows were partially milked twice a day until d5 after calving (partial); 3) cows were left with the calf to suckle from the dam until d5 and were milked once a day from d3 to d5 (nursing). All cows were milked twice a day from d6 to the end of the experiment (d63). During the treatment period (d1 to d5), milk production averaged 27.3 and 9.7 kg/d for control and partial treatments, respectively. There was no residual effect ($P=0.7$) of treatments on milk production which averaged 47.5, 45.9 and 46.4 kg/d for the control, partial and, nursing treatments, respectively, between wk2 and 9. The dry matter intake (DMI) of the cows were similar during and after treatment ($P>0.2$). From wk2 to 9, milk protein and lactose content were not affected by treatments, but milk fat content tended ($P=0.06$) to be higher in control cows than in cows where milk harvest was limited (partial + nursing). Blood concentrations of glucose ($P<0.001$) and phosphorus ($P<0.05$) were lower and the concentrations of Non-esterified fatty acid (NEFA) ($P<0.05$) and β -hydroxybutyrate (BHBA) ($P<0.0001$) were greater in control cows than in the other cows during the treatment period. The positive effects on glucose and BHBA remained significant ($P<0.05$) up to d28.

Implications: These results suggest that reducing milk harvest postpartum while maintaining milking stimuli reduces metabolic stress without compromising productivity of high yielding dairy cows.