

Effects of offering free choice timothy hay in addition to TMR during the first five days postpartum on health and performance of dairy cows

L. E. Engelking and M. Oba
University of Alberta, engelking@ualberta.ca

Fresh cows often experience inflammation and low dry matter intake (DMI) which subsequently reduce milk yield. Some producers offer free choice hay, alongside total mixed ration (TMR), to fresh cows which is intended to promote DMI and rumination, and reduce inflammation, each of which may contribute to greater milk yield, but its effects have not been assessed through research. Thus, our objective was to assess the effects of offering free choice hay to fresh cows on milk yield, DMI, rumination, plasma metabolites, and serum inflammatory markers. Thirty-two multiparous cows were assigned to receive no hay ($n = 12$) or free choice timothy hay (61.6% NDF; 9.6% CP; $n = 20$), in addition to TMR, for the first 5 d postpartum. Both treatment groups were fed the same postpartum TMR containing 48% barley silage and 52% concentrate, and 26.8% starch, 33.0% NDF, and 23.4% forage NDF. Daily hay intake ranged from 0 to 4.7 kg/d (DM basis) or 0 to 55.2% (as a % of total DMI) for cows offered hay. Among them, cows who consumed more hay (as a % of total daily DMI) for the first 5 d postpartum had greater plasma ketone concentration ($P = 0.01$; $r = 0.60$), and greater serum concentration of haptoglobin, an inflammatory marker ($P < 0.01$; $r = 0.68$), within 24 h of calving. These results suggest that cows experiencing ketosis or inflammation postpartum may be motivated to consume more hay. On d 3 after calving, cows offered hay tended to have a lower serum concentration of haptoglobin compared to cows not offered hay (0.95 vs. 1.52 mg/mL; $P = 0.08$). However, cows offered hay had lower TMR DMI (15.0 vs. 17.1 kg/d; $P < 0.01$), and total DMI (TMR + hay intake; 15.9 vs. 17.1 kg/d; $P = 0.05$) for the first 5 d postpartum although rumination time, plasma energy metabolite concentrations, and milk yield were not different between treatments at any time points. **Take home message:** Offering free choice hay to fresh cows may mitigate postpartum inflammation but may not increase milk yield due to reduced DMI.

Effects of supplementing colostrum beyond the first day of life on growth and health factors in preweaned Holstein heifers

H. McCarthy¹(hmcicar01@uoguelph.ca), M. Cantor¹, A. Lopez¹, A. Pineada¹, D. Renaud¹, M. Nagorske², and M. Steele¹.
¹University of Guelph, ²[Saskatoon Colostrum Company Ltd](http://www.saskatooncolostrum.com)

The preweaning period of calves is defined by high morbidity and mortality rates, leading to financial losses. Research regarding ways to improve the health of calves continues to be crucial to the success of the dairy industry. The objective of this study was to explore the effects of supplementing colostrum replacer (CR) beyond the first day of life to calves on health and growth performance. Holstein calves ($n=200$; 50/TRT) were enrolled at birth, fed CR at 0 and 12h, and assigned to 1 of 4 treatments: 100% milk replacer (MR) from d2-49 (**CON**); 50%CR50%MR d2-3, and 100%MR d4-49 (transition; **TRAN**); 10%CR100%MR d2-14 and 100%MR d15-49 (extended; **EXT**); or 50%CR50%MR d2-3, 10%CR100%MR d4-14, and 100%MR d15-49 (**TRAN+EXT**). Body weight was recorded at birth and weekly until week 7, and blood serum samples were taken daily (d0-7) and weekly until week 7. In addition, a health assessment was completed daily. All data were analyzed using PROC GLIMMIX and LIFETEST in SAS (version 9.4; SAS Institute Inc., Cary, NC). Calves fed TRAN, EXT, and TRAN+EXT had greater average daily gain (ADG) in the first 4 weeks of life ($P = 0.02$) compared to CON calves. The incidence and length of diarrhea and respiratory illness did not differ by treatment; however, the TRAN, EXT, and TRAN+EXT calves had a delay in onset of diarrhea ($P = 0.03$). Calves fed TRAN and EXT were at a lower hazard of mortality ($P = 0.05$) compared to CON calves. Serum IgG levels did not differ by treatment ($P = 0.80$). Supplementing CR to dairy calves for a minimum of 3d postnatal positively impacts ADG, delays the age of diarrhea onset, and reduces the hazard of mortality during the preweaning phase. Future research should look to further refine the supplementation strategy of CR and explore the mechanism of action.

Take home message: Supplementing colostrum beyond day one of life can be an effective strategy to improve growth, delay diarrhea onset, and reduce mortality in preweaning dairy calves.