

373 Abomasal amino acid infusions in postpartum dairy cows.

L. Bahloul¹, L. E. Hernández Castellano², H. Lapierre³, C. Schwab⁴, and M. Larsen*², ¹Centre of Expertise and Research in Nutrition, Adisseo, Commeny, France, ²Aarhus University, Foulum, Denmark, ³Agriculture and Agri-Food Canada, Sherbrooke, Canada, ⁴Schwab Consulting LLC, Boscobel, Wisconsin.

Our objective was to investigate the effect of additional supply of all AA (TAA) or only essential AA (EAA) in early postpartum dairy cows on milk production and composition. Nine multiparous Holstein cows were used in a randomized block design with repeated measurements. At the day of calving, continuous abomasal infusion of TAA (n = 4) or only EAA (n = 5) was initiated. The TAA infusion was graduated with half of full dose at 1 d in milk (DIM), full dose (805 g/d) at 2 to 5 DIM, and followed by daily reductions until 0 g/d at 35 DIM. The TAA infusate was based on casein profile and EAA infusate had only the EAA portion of TAA. Cows received the same TMR diet (NE: 6.85 MJ/kg DM, MP: 102 g/kg DM, NorFor 2011) from calving to 50 DIM. Feed intake and milk yield were recorded daily; milk was sampled and analyzed on DIM 5, 15, 29 and 50. Data were analyzed using MIXED procedure of SAS for repeated data. The DMI did not differ between treatments (P = 0.55) but increased with DIM (P < 0.01). Milk yield was greater with TAA (P < 0.01; +8.6 ± 1.9 kg/d from 1 to 50 DIM), averaging 40.4, 50.0, 51.8 and 49.5 (SEM = 2.42) kg/d for TAA, and 31.3, 39.0, 44.3 and 42.6 (SEM = 2.18) kg/d for EAA, at 4, 15, 29, and 50 DIM, respectively. Milk protein yield was greater (P = 0.01; 1,635 vs. 1,393 g/d, SEM = 49.6) although milk protein content tended to be lower (P = 0.06; 41.1 vs. 47.0 g/kg from 1 to 50 DIM), with TAA compared with EAA. Milk fat content was lower with TAA compared with EAA (P = 0.02; -5.85 ± 2.01 g/kg from 1 to 50 DIM), but treatments did not affect milk fat yield. Although milk lactose content was not affected, milk lactose yield increased with TAA compared with EAA (P = 0.02; +422 ± 97.3 g/d from 1 to 50 DIM). Overall, ECM yield increased with TAA (P = 0.02; +5.97 ± 2.16 kg/d from 1 to 50 DIM). Results indicate that some of or all NEAA are as important as EAA in the early postpartum period and further research is needed to delineate their role during this critical period. Further, continued higher milk yield through 50 DIM with TAA 15 d after ceasing infusions indicate early postpartum AA supply influences subsequent lactational performance.

Key Words: amino acid, early lactation, cow