Performance of calves offered MR without (Diet 1) or with (Diet 2) essential oils/botanical product

Item	Diet 1	Diet 2	*P*-value	SE
BW gain, kg	20.6	22.8	0.10	0.914
MR (DM), kg	24.1	25.0	0.07	0.342
Starter (DM), kg	20.2	20.9	0.66	1.070
Feed/Gain	2.28	2.10	0.04	0.060
Scour score,[1] 2 wk avg	1.35	1.22	0.01	0.030
Scour days, 2 wk	4.53	3.03	0.01	0.388

[1]Scour score = 1 to 4 scale; 1 = normal to 4 = watery with dehydration.

Key Words: calves, milk replacer, essential oils/botanical

M315 Effects of two sources of rumen-protected fat associated or not with conjugated linoleic acid (CLA) on milk fatty acid profile in dairy ewes. E. Ticiani[1], J. De Souza[2], F. Batistel[2], M. Baldin[3], R. Dresch[3], M. A. S. Gama[4], F. C. F. Lopes[4], and D. E. Oliveira*[1,3], *[1]Universidade do Estado de Santa Catarina, CEO, Chapecó, Santa Catarina, Brazil, [2]Universidade de São Paulo, ESALQ, Piracicaba, São Paulo, Brazil, [3]Universidade do Esatado de Santa Catarina, CAV, Lages, Santa Catarina, Brazil, [4]Embrapa Gado de Leite, Juiz de Fora, Minas Gerais, Brazil.*

The aim of this study was to evaluate the associative effects of 2 sources of calcium salts of fatty acids (Agelac 84 or Megalac E) and an unprotected CLA (UnCLA) supplement (Luta-CLA60) on milk fatty acid profile in dairy ewes. Thirty-nine Lacaune and 36 East Friesian ewes in mid lactation (70 ± 7 DIM) received for 53 d one of the following dietary treatments in a 2 × 2 factorial design:1) 27g of Agelac 84; 2) 30g of Megalac E; 3) 27g of Agelac 84 + 20g of UnCLA; and 4) 30g of Megalac E + 20g of UnCLA. The UnCLA supplement contained 29.9% of trans-10, cis-12 and 29.8% of cis-9, trans-11. Ewes grazed Panicum maximum Jacq. cv. Aruana grass and were fed an isoproteic concentrate (1 kg DM/d) in which the fat supplements were added. Milk samples were collected on the 14th day of the experimental period and analyzed for fatty acid profile by gas chromatography. Data were analyzed using the PROC MIXED of SAS. There was no interaction between treatments and breed. The concentration of fatty acids < 16C in milk fat was reduced by CLA and Megalac E (Table 1). Milk fat trans-10, cis-12 CLA was increased by 861% in ewes fed CLA (0.026 vs 0.224 g/100g of FA, $P < 0.001$) with no fat and fat x CLA effects. Milk fat cis-9, trans-11 was increased 18% (0.99 vs 0.84 g/100g of FA) and 0.7% (0.84 vs 0.83 g/100g of FA) by CLA and Megalac E ($P < 0.01$), respectively and there was an interaction between CLA x fat (Megalac E +UnCLA = 1.09 vs Agelac 84 +UnCLA = 0.89 g/100g of FA, $P < 0.02$). All desaturase indexes were reduced by CLA, and Megalac E reduced C16:1/C16:0 and CLA/trans-11 C18:1 ratios. The milk fatty acid profile of ewes was altered by dietary supplementation with UnCLA and different sources of rumen-protected fat.

Table 1. Milk fatty acid profile of dairy ewes fed two sources of rumen-protected fat (Agelac 84 or Megalac E) associated or not with UnCLA

	Treatment				*P*-value		
Item	Agelac 84	Megalac E	Agelac 84 + UnCLA	Megalac E + UnCLA	UnCLA	Fat	CLAxFat
Ratio							
<C16	30.9	30.0	25.7	24.4	0.01	0.03	0.91
C16+C16:1	26.2	25.2	25.8	23.4	0.02	0.01	0.05
>C16	43.1	45.5	48.7	51.6	0.01	0.01	0.82
Desaturase Index							
14:1/14:0+14:1	0.013	0.011	0.009	0.008	0.01	0.05	0.75
16:1/16:0+16:1	0.036	0.029	0.027	0.022	0.01	0.02	0.56
18:1/18:0+18:1	0.604	0.585	0.542	0.534	0.01	0.11	0.44
CLA/t1118:1+CLA	0.322	0.301	0.276	0.265	0.01	0.01	0.41

Key Words: dairy ewes, fatty acid profile, desaturase index

M316 Feeding protected lysine to lactating dairy cows improved milk protein yield. J. A. Davidson*[1], S. E. Boucher[2], and B. L. Miller[1], *[1]LongView Animal Nutrition Center, Land O' Lakes Purina Feed, Gray Summit, MO, [2]Kemin AgriFoods North America, Des Moines, IA.*

The objective was to determine if increasing metabolizable Lys with either blood meal (BM) or a rumen protected lysine source, USALysine (Kemin Industries, Des Moines, IA), improved milk yield and milk protein yield of dairy cows. Twenty-four cows averaging 90 DIM (blocked by parity, milk yield, and DIM) were assigned to one of 3 treatments varying in metabolizable Lys supply (g/d): Control (Ctrl, 180 g/d), BM (200 g/d), or USALysine (204 g/d). All diets were formulated with Dynamic Nutrition System model of Land O' Lakes Purina Feed with a minimum of 0.14 kg/h/d of BM and 22 g/h/d of Smartamine M (Adisseo, Antony, France) to provide 60 g/d of metabolizable Met. To increase Lys, the BM treatment included an additional 0.27 kg/h/d of BM. Smartamine M was added to diets to maintain a 3:1 ratio of Lys:Met. Cows were individually fed with Calan door system for 28 d. Data from d 5 to 28 were analyzed with repeated measures procedure of SAS. No differences were detected for main effect of day or interactions with day, thus data were pooled across day. Dry matter intake was 22.1 for cows fed additional BM and 23.1 and 23.8 kg/d for Ctrl and USALysine, SE 0.58, $P = 0.13$). Adjusting for actual DMI, cows consumed 165, 177, and 184 g/d of metabolizable Lys and 56, 52 and 54 g/d of metabolizable Met for Ctrl, BM and USALysine, respectively. Cows fed USALysine had greater milk protein concentration (2.92%) and yield (1.30 kg/d) than Ctrl (2.77% and 1.22 kg/d) and BM (2.75% and 1.19 kg/d) fed cows (SE 0.04 and 0.03, respectively, $P < 0.05$). Energy-corrected milk yield tended to be greater for USALysine cows (42.1 kg/d, SE 0.88, $P = 0.07$) compared with the other groups (40.6 and 39.3 kg/d for Ctrl and BM). However, daily milk yield was not statistically different (41.9, 42.0, and 44.1 kg/d for Ctrl, BM, and USALysine, respectively, SE 1.51). Increasing metabolizable Lys with BM numerically decreased DMI, thus no improvements in milk or milk protein yield were observed. Utilizing USALysine to deliver additional metabolizable Lys increased milk protein concentration and yield. USALysine is a protected source of Lys that can be used to improve lactation performance when Lys supply is limiting.

Key Words: dairy cows, milk protein, protected lysine