T383 Ruminal fermentation characteristics of lactation dairy diets with different forage-to-concentrate ratios without or with lipid extract algae in continuous cultures. S. Y. Yang*[1], K. Neal[1], J.-S. Eun[1], A. J. Young[1], and R. C. Sims[2], *[1]Department of Animal, Dairy, and Veterinary Sciences, Utah State University, Logan, UT, [2]Department of Biological Engineering, Utah State University, Logan, UT.*

The current in vitro experiment was performed to test the effects of supplementing lipid extract algae (LEA) in lactation dairy diets on ruminal fermentation in a 2 (level of forage in diets) × 2 (without vs. with LEA) factorial design with 4 independent runs of continuous cultures (n = 4). Diets with LEA completely replaced mixture of soybean meal and canola meal (50:50 in a DM basis). The data in this experiment were analyzed using the Proc Mixed procedure of SAS using a model that included fixed effects of level of forage, LEA supplementation, and their interaction and a random effect of fermentor within independent run. Feeding LEA decreased culture pH, regardless of level of forage, but the decrease of culture pH was greater under high-forage diet compared with low-forage diet, resulting in an interaction between level of forage and LEA. Under high-forage diet, total VFA concentration increased with feeding LEA, but it was not affected in low-forage diet, leading to a tendency (P = 0.08) of level of forage and LEA interaction. Adding LEA decreased ammonia-N concentration both in high- and low-forage diet. Overall results in this experiment indicate that feeding LEA in lactation dairy diets did not interfere with in vitro ruminal fermentation. The decreased ammonia-N concentration due to feeding LEA may have resulted from less degradation of N fraction in LEA compared with mixture of soybean meal and canola meal.

Contd.

Table 1 (Abstr. T383). In vitro effects of lipid extract algae supplemented in dairy diets

Item	Diet[1]				SEM	P[2]		
	HF		LF					
	–LEA	+LEA	–LEA	+LEA	FC	LEA	INT	
Mean culture pH	6.25[a]	6.04[b]	6.07	6.00	0.047	<0.01	0.05	0.05
Total VFA, m*M*	29.1[b]	34.0[a]	34.4	32.5	2.77	0.30	0.60	0.08
Individual VFA[3]								
Acetate (A)	46.1	47.3	47.3	47.7	3.92	0.21	0.33	0.53
Propionate (P)	36.5	36.8	40.6	38.7	2.64	0.01	0.45	0.30
A:P	1.26	1.29	1.19	1.24	0.168	0.06	0.54	0.47
Ammonia-N, mg/dL	8.04	5.36	6.54	3.10	0.403	<0.01	<0.01	0.31

[1]HF–LEA = high-forage diet (HF; 60% forage:40% concentrate) without lipid extract algae (LEA); HF+LEA = HF with LEA; LF–LEA = low-forage diet (LF; 40% forage:60% concentrate) without LEA; and LF+LEA = LF with LEA.
[2]FC = forage-to-concentrate ratio in the diet; LEA = supplementation of LEA; and INT = interaction between FC and LEA.
[3]Expressed as mol/100 mol.

Key Words: continuous culture, lactation dairy diet, lipid extract algae