

83,700 to 186,000. Milk production and somatic cell counts differed by month for all cows ($P = 0.0001$ and $P = 0.008$) and for mid-lactation cows ($P = 0.0001$ and $P = 0.080$), respectively. This study indicates possible benefits from yeast supplementation in high lactation Holstein cows and may be related to somatic cell counts.

Key Words: Lactation, Milk Production, Yeast Culture

M336 Blood metabolites in Holstein steers fed diets with different concentrate to alfalfa hay ratios. A. R. Vakili, M. Danesh Mesgaran*, A. Heravi Moussavi, and R. Valizadeh, *Ferdowsi University, Mashhad, Khorasan, Iran.*

In dry and semiarid regions, because of low pasture availability, ruminant diets are based on concentrates. The objective of the present experiment was to investigate the effect of diets providing different concentrate to alfalfa hay ratios on blood metabolites in Holstein steers. Four Holstein steers with initial body weight of 300 ± 15 kg fitted with ruminal Fistulae were used in a 4×4 Latin square design (28 days of each period). Animals were fed 7 kg of DM of diets differing in concentrate [155 g CP kg⁻¹ of DM; consisted of maize, barley, soybean meal, sugar beet pulp, wheat bran, cottonseed meal, CaCo₃, mineral and vitamin premix, salt (30, 34, 8, 5, 10, 12, 0.3, 0.5, and 0.2 g/100g DM; respectively)] to alfalfa hay ratios as 60:40 (C₆₀:L₄₀), 70:30 (C₇₀:L₃₀), 80:20 (C₈₀:L₂₀) and 90:10 (C₉₀:L₁₀). Steers fed the experimental diets as total mixed ration twice daily at 0800 and 2000 h. At day 24 of the each experimental period, blood samples were taken from jugular vein before the morning feeding, 2, 4 and 6 h post feeding. Serum samples were measured for glucose and urea N by Spectrophotometer (CE 1021, England). Data were analyzed using the GLM procedure of SAS and the means compared by the Duncan test ($P < 0.05$). Blood glucose was similar among diets but blood urea N was affected by treatments. The results of this study indicated that the blood glucose values were not significantly influenced by the concentrate to alfalfa hay ratios but urea N values were influenced significantly.

Table 1. Blood glucose and urea N (mg/dl) in Holstein steers fed diets differing in concentrate: alfalfa hay ratios

Item	Time (h)	Concentrate: alfalfa hay ratio ¹					SEM ²	P
		Treatment effect						
Glucose	0.0	86.95	87.50	85.72	89.91	4.46	0.31	
	2.0	84.50	87.82	86.10	93.37			
	4.0	89.42	91.78	95.27	84.74			
	6.0	93.20	93.40	90.60	92.78			
Blood Urea N	0.0	10.36	7.71	8.11	9.41	0.5	0.04	
	2.0	11.42	9.72	11.46	9.90			
	4.0	11.10	9.50	10.82	8.80			
	6.0	10.62	10.22	10.03	9.13			

1: Values were reported as the mean of four sampling periods. 2: SEM= Standard Error of Mean

Key Words: Fistulae, Blood Metabolites, Alfalfa Hay

M337 Effects of corn and alfalfa particle size on ruminal fermentation, digestibility and chewing activity of dairy cows in midlactation. Z. J. Cao*, S. L. Li, M. Ma, and L. L. Wang, *China Agricultural University, Beijing, China.*

This study evaluated the effects of, and interactions between, corn particle size and alfalfa particle size on dry matter intake (DMI), milk production, milk composition, ruminal fermentation, microbial yield, chewing activity and nutrient digestibility in midlactating dairy cows. Four multiparous Holstein cows with ruminal cannulas, averaging 595 kg (SD = 52) of body weight and 121 DIM (SD = 21) at the start of the experiment, were assigned randomly to a 4×4 Latin square design. Experimental periods were 21 d in length (14 d of treatment adaptation and 7 d of data collection). All diets were fed as TMR and were formulated to meet or exceed the requirements of a 600 kg multiparous cow producing 20 kg milk/ d with 4.0% fat. The ratio of concentrate to forage was 40:60 (DM basis). Treatments were arranged in a 2×2 factorial design; two levels of alfalfa particle size (2.54 cm and 6.22 cm) were combined with concentrates based on either ground corn (711 μ m) or cracked corn (1755 μ m). Corn and alfalfa particle size did not affect DMI, milk production and milk fat percentage. Milk protein percentage increased when corn particle size was decreased ($P = 0.04$). Milk urea nitrogen was lower for cows fed ground corn compared to cracked corn (118 vs 134 mg/ l, $P = 0.05$). Estimated microbial N supply increased 41.9 g/d for ground corn compared to cracked corn. Cows fed long alfalfa hay spent more time ruminating compared with cows fed short alfalfa hay ranging from 293 to 336 min/d ($P < 0.001$). Total time spent on chewing by cows increased from 505 to 574 min/d ($P = 0.002$) for short alfalfa and long alfalfa, respectively. Based on the results from this study, dairy cows can be fed diets that contain ground corn and short alfalfa hay without leading to negative effects on rumen pH or nutrient digestibility.

Key Words: Corn Particle Size, Alfalfa Particle Size, Ruminal Fermentation

M338 Effect of feeding pistachio by-product on milk yield, apparent nutrient digestibility and chewing activity of early lactation Holstein cows. A. Bohluli, A. A. Naserian*, R. Valizadeh, and F. Eftekharsahroodi, *Ferdowsi University, Mashhad, Iran.*

Eight multiparous Holstein cows in early lactation ($57 \pm$ DIM) were assigned into a replicated 4×4 Latin square design with 3-wk periods to study the effect of Pistachio By-product (PB) on their performance. Control diet consisted of 60% concentrate, 20% alfalfa, 5% cottonseed, and 15% corn silage. Pistachio by-product was substituted with corn silage at 0, 5, 10, and 15% in DM of control diet according to treat 1 to 4. DMI, daily milk yield and composition were not affected by treatments, although fat daily yield, Economically Corrected Milk (ECM) and 4% FCM were decreased linearly ($P < 0.1$) and daily milk protein yield was increased quadratically ($P < 0.15$) by increasing PB level in the diet. Milk urea nitrogen and Blood concentration of glucose, urea, and Hb were not affected by treatments. Urine pH was increased from 7.7 to 8.0 linearly ($P < 0.01$) from T1 to T4. Crud protein digestibility was similar for all diets ($P < 0.15$), but by increasing PB level in the diet, digestibility of DM, OM, NDF and ADF were decreased linearly ($P < 0.05$). Daily rumination and chewing activity alone or per DM, NDF or ADF daily intake were linearly decreased when PB level increased in the diet ($P < 0.05$). It seems the reduction in milk fat might be due to decrease in structural carbohydrate digestion and chewing activity by increasing PB in the lactating cow diet. The