

## Small Ruminant: Nutrition

**M372 Effect of breed and sex on fatty acid composition of fat-tailed and tailed lambs.** A. Yousefi,\* H. Kohram, A. Z. Shahneh, M. Sadeghi, and M. Poorhamdollah, *University of Tehran, Karaj, Tehran, Iran.*

The objective of this study was to compare fatty acid profile of longissimus dorsi (LD) between fat-tailed Chall (14 male and 15 female) and tailed Zel lambs (15 male and 15 female). All of lambs were pastured with average age of 10–12 mo and BW of  $36.5 \pm 1.6$  (Kg). LD muscles were dissected 24h after slaughtering to evaluation fatty acid composition. Data of fatty acid profile and intramuscular fat of LD muscle were analyzed by SAS 9.2 software and GLM procedure where HCW was used as covariate and breed and sex were used as fixed effect. Results showed (Table 1) that Zel and female stored more intramuscular fat than Chall ( $P < 0.001$ ) and male lambs ( $P < 0.0001$ ), respectively. Oleic (C18:1) acid was lower ( $P < 0.001$ ) and linolenic acid (C18:3n-3) was higher ( $P < 0.01$ ) in Chall compared with Zel lambs. Although percentage of linoleic acid (C18:2n-6) and SFA were not significant ( $P > 0.05$ ) between breeds, LD muscle of Chall contained more percentage of PUFA and PUFA/SFA ratio ( $P < 0.05$ ) rather than Zel lambs. LD muscle of male lambs showed higher percentage of PUFA ( $P < 0.05$ ) and lower proportion of n-6/n-3PUFA ( $P < 0.001$ ). Considering n-6/n-3PUFA, LD muscle of Chall lambs showed lower ratio ( $P < 0.01$ ) than Zel lambs whereas sex did not show significant difference ( $P > 0.05$ ). In conclusion, results indicated that meat produced by Fat-tailed and male lambs was more close to recommended nutritional quality for human.

**Table 1.** Mean  $\pm$  SE fatty acid and chemical components analysis

Trait (mg/100g)	Breed			Sex			Effect	
	Chall	Zel	SEM $\pm$	Male	Female	SEM $\pm$	Breed	Sex
C16:0	26.3	26.6	0.47	25.3	26.91	0.47	NS	NS
C18:1	36.9	40.2	0.64	38.7	38.41	0.65	***	NS
C18:3n-3	0.05	0.53	0.05	0.65	0.60	0.05	**	NS
C18:2n-6	5.98	5.47	0.24	6.25	5.20	0.24	NS	**
PUFA	9.33	7.61	0.46	9.24	7.70	0.46	*	*
PUFA/SFA	0.19	0.16	0.01	0.20	0.15	0.01	*	**
n-6/n-3PUFA	4.77	6.12	0.35	5.37	5.52	0.34	**	NS
Intramuscular fat	1.82	2.83	0.24	1.98	2.97	0.21	**	***

\* $P < 0.05$ ; \*\* $P < 0.01$ ; \*\*\* $P < 0.001$ ; NS = not significant.

**Key Words:** fatty acid composition, fat-tailed lamb, tailed lamb

**M373 The energetic efficiency of growing lambs fed high-concentrate diets with different roughages.** D. B. Galvani<sup>1</sup>, A. V. Pires<sup>2</sup>, I. Susin<sup>2</sup>, V. N. Gouvea<sup>2</sup>, A. Berndt<sup>3</sup>, L. J. Chagas<sup>2</sup>, J. R. R. Dórea<sup>2</sup>, A. L. Abdalla<sup>4</sup>, and L. O. Tedeschi<sup>5</sup>, <sup>1</sup>EMBRAPA Goats and Sheep, Sobral, CE, Brazil, <sup>2</sup>University of São Paulo, "Luiz de Queiroz" College of Agriculture, Piracicaba, SP, Brazil, <sup>3</sup>EMBRAPA Southeast Livestock, São Carlos, SP, Brazil, <sup>4</sup>University of São Paulo, Center for Nuclear Energy in Agriculture, Piracicaba, SP, Brazil, <sup>5</sup>Texas A&M University, Department of Animal Science, College Station.

Poor quality roughages have been widely used as fiber source in high-concentrate diets for ruminants. Because roughage quality is associated with the efficiency of energy use in high-forage diets, the objective of this study was to determine whether using roughages with different quality in high-concentrate diets could change the energy requirements of growing lambs. Eighty-two Dorper  $\times$  Santa Ines ram lambs ( $18.0 \pm 3.3$

kg BW) were individually penned and divided into 2 groups according to the diet roughage quality: low quality (sugarcane bagasse; SCB) or good quality [coastcross hay (*Cynodon* sp.)]. Diets were formulated to be isonitrogenous (2.6% N) and to meet the minimum requirement of physically effective NDF (peNDF = 20%). After a 10-d ad libitum adaptation period, 7 animals from each group were randomly selected and slaughtered (baseline). Twenty one animals in each group were fed ad libitum and slaughtered at 25, 35, or 45 kg BW. The remaining 28 lambs were submitted to one of 2 levels of feed restriction: 70 or 50% of the ad libitum intake. Retentions of body fat, N, and energy were determined. Additionally, 6 ram lambs ( $52.3 \pm 6.9$  kg BW) were kept in cages to estimate diet ME content. There was no effect of intake level on diet ME content, but it was greater in the SCB diet than in the hay diet (3.18 vs. 2.94 Mcal/kg, respectively;  $P < 0.01$ ). Animals fed the SCB diet had greater body fat and energy concentrations as a response of a larger visceral fat deposition ( $P < 0.05$ ). Using poor quality roughage in high-concentrate diet for growing lambs did not change  $NE_m$  and the efficiency of ME use for maintenance, which averaged 72.9 kcal/kg<sup>0.75</sup> BW and 0.64, respectively. On the other hand, the greater ME content of the SCB diet resulted in a 17% better efficiency of ME use for gain ( $k_g = 0.41$  vs. 0.35;  $P < 0.05$ ), which was associated with a greater partial efficiency of ME retention as fat ( $k_f = 0.73$  vs. 0.58;  $P < 0.01$ ). In a meat production scenario, however, this increased nutritional efficiency should be viewed with caution because it is related to visceral fat deposition, a non edible tissue.

**Key Words:** efficiency of gain, energy retention, visceral fat

**M374 Intake and feeding behavior of Morada Nova lambs fed different energy levels.** D. A. Camilo<sup>1</sup>, E. S. Pereira<sup>1</sup>, P. G. Pimentel<sup>1</sup>, M. S. S. Carneiro<sup>1</sup>, I. Y. Mizubuti<sup>2</sup>, M. R. G. F. Costa<sup>1</sup>, G. M. B. Moreno<sup>1</sup>, and J. N. Rocha Junior<sup>1</sup>, <sup>1</sup>Federal University of Ceara, Fortaleza, Ceara, Brazil, <sup>2</sup>State University of Londrina, Londrina, Parana, Brazil.

The eating behavior of ruminants, such as feed intake, ruminating time and number of chews, varies by feed type and physical characteristics and has an important effect on the digestive physiology of the ruminant. The objectives of this study were to evaluate the effects of ME levels on nutrient intake and ingestive behavior of Morada Nova lambs. Forty Morada Nova lambs were used with an initial BW of  $12.2 \pm 2.05$  kg. Five treatments were defined according to the ME levels (0.96, 1.28, 1.72, 2.18 and 2.62 Mcal/kg DM). Diets were composed of Tifton 85 hay as roughage and concentrates based on corn grain, soybean meal, urea, sodium chloride, calcium carbonate, dicalcium phosphate and mineral premix and offered as a total mixed ration. The experimental model was a randomized block design. Regression equation was adjusted when 0.05 significance was observed, using PROC REG SAS (9.0). Linear effect ( $P < 0.0001$ ) of ME levels was determined for DMI, OM, CP, total carbohydrates (TC), non-fibrous carbohydrates (NFC) and TDN in g/day. Quadratic effect was determined for neutral NDF ( $P < 0.017$ ) and non fibrous carbohydrate intake ( $P < 0.003$ ). Eating, ruminating and total chewing times, expressed in h/d, decreased linearly ( $P < 0.0001$ ) with the energy levels of experimental diets. Idle time increased linearly ( $P < 0.0001$ ) with the increase of energy levels of the rations. Feeding and rumination efficiencies were influenced by the energy levels ( $P < 0.0001$ ) when expressed in g of DM/h. The number of ruminal boluses, number of chews and chews per ruminal bolus were not affected by the levels of ME. However, the time spent chewing per ruminal bolus