Effects of melatonin implants during lactation were assessed in 72 dairy ewes of 2 breeds (Manchega, MN; n = 36, 72.4 ± 1.9 kg BW; Lacaune, LC; n = 36, 77.7 ± 2.3 kg BW) differing in milk yield and composition. Ewes were under intensive conditions, lambed in autumn and received a TMR ad libitum. Treatments were: Control (CO, n = 36) and Melatonin (MEL, n = 36) that was subcutaneously implanted in the left ear-base. Milk yield was recorded daily using automatic milk meters (MM25 SG, DeLaval, Tumba, SE) and ruminal bolus transponders (Datamars, Bedano, SW), whereas milk composition was measured biweekly. Data were analyzed by the PROC MIXED for repeated measurements of SAS (v.9.4, SAS Institute Inc., Cary, NC, USA) and LS means separated by PDIF at P < 0.05. No MEL effects were detected on DM intake (P = 0.12) or milk yield (P = 0.60), although they were 51% and 87% greater (P < 0.001) in LC ewes when compared with MN, respectively. Milk composition varied by breed, the LC producing lower fat and protein contents than the MN ewes (P < 0.001), but no CO vs. MEL effects were detected on milk composition (P = 0.25 to 0.99) nor milk-fat standardized milk (P = 0.73). Nevertheless, numerical greater persistence coefficients of milk yield were estimated for the groups CO vs. MEL of both breeds (LC, –0.015 vs. –0.013 L/d; MN, –0.012 vs. –0.010 L/d, respectively), resulting in a decrease in milk yield of MEL by 7 and 3% in MN and LC ewes, respectively. On the other hand, BW and BCS did not vary by MEL treatment or by breed throughout the experiment. In conclusion, the use of exogenous MEL implants, together with the endogenous MEL secreted under decreasing photoperiod conditions, had no effects on the lactational performances of dairy sheep in early lactation, despite their milk yield and composition potential.

Key Words: dairy sheep, early lactation, melatonin

254 Effects of calcium nitrate on dry matter intake, milk yield, milk composition, and ruminal parameters in dairy goats. K. V. de Almeida*,1,2, J. A. C. Osorio1, F. E. de Marchi1, T. Durman1, J. F. Cabral1, K. L. Guimaraes1, M. R. Sippert1, J. C. S. Lourenco1, C. R. Alcalde1, R. C. de Araujo1, and G. T. de Santos1, Universidade Estadual de Maringá, Maringá, PR, Brazil, 2University of Florida, Gainesville, FL, Brazil, 3GRASP EW Nutrition, Curitiba, PR, Brazil.

The objective of this experiment was to evaluate the effect of calcium nitrate (CN) on dry matter intake (DMI), milk yield, milk composition, and ruminal parameters in dairy goats. The CN can be used as an alternative source for NPN supplementation, but its effects on dairy goats are not well established. The hypothesis was that CN could be fed to lactating goats without affecting rumen fermentation parameters or milk production. Twelve Saanen goats (98.5 ± 13.1 d in milk; 53.5 ± 3.3 kg -body weight; mean ± standard deviation) were enrolled in a replicated 3 × 3 Latin square (21-d period; 14-d adaptation). Goats were fed ad libitum with a TMR composed of 45% corn silage and 55% concentrate on DM basis. Diets were isocaloric and isonitrogenous with 15.5% of crude protein and 10.5% of rumen degradable protein. Treatments were: T1 - basal diet without CN; T2 - 1.0% CN (66.9% NO3-) on DM basis; T3 - 2% of calcium nitrate on DM basis. Milk samples were collected on d 15–16 of each period and analyzed for milk components by Bentley 2000 infrared analyzer. The blood was collected 3 h after the feeding and analyzed for methemoglobin. Ruminal fluid was collected 2 and 8 h after the feeding, the pH and volatile fatty acids were determined, the latter by gas chromatography. Data were analyzed by ANOVA with mixed models using the Mixed procedure in SAS. Diets with up to 2% of calcium nitrate did not affect DMI, milk yield, milk composition, or ruminal parameters in dairy goats. The mean values of DMI, milk yield, and milk contents of fat, protein, lactose and MUN were 1.86 ± 0.01 kg/d, 2.10 ± 0.04 kg/d, 2.7 ± 0.01%, 3.20 ± 0.03%, 4.8 ± 0.01% and 22.8 ± 0.01 mg/dL, respectively. Ruminal parameters also did not differ between treatments and showed the following means: 7.02 ± 0.09 for pH, 49.05 ± 5.6 mmol/mL of total volatile fatty acids, 31 ± 4.17 mmol/mL of acetate, 24.53 ± 8.97 mmol/mL of propionate, 6.32 ± 0.76 mmol/mL of acetate, 24.53 ± 8.97 mmol/mL of propionate, 6.32 ± 0.76 mmol/mL of propionate.
butyrate and 3.06 ± 0.36 of acetate:propionate ratio. Calcium nitrate can be used up to 2% on DM basis without affecting milk production, milk composition, or ruminal fermentation parameters.

**Key Words:** milk component, small ruminants, volatile fatty acid

### 255 Changes in key blood metabolites and insulin in late-pregnant prolific Afec-Assaf ewes drenched with several doses and mixtures of propylene glycol and glycerol.

U. Moallem*1, T. Alon12, A. Rozov1, L. Lifshitz1, H. Dvir1, and E. Gootwine1, 1Department of Ruminant Science, ARO, Volcani Center; Rishon LeZion, Israel 2Department of Animal Science, University of Jerusalem, Rehovot, Israel.

In a previous study, we found that the effect of drenching late-pregnant prolific ewes with propylene glycol (PG; 106 mL) or glycerol (GL; 108 mL) was different; while PG was anti-ketogenic, the effect of GL was mainly glucogenic. In the present study, the effect of different doses of PG and GL was examined in late-pregnant ewes (~132 d pregnant) bearing 2–4 fetuses. Thirty ewes were divided according to BHBA blood levels, expected litter size, BW and BCS into 5 groups (6 ewes each) and were drenched with: 1) Control - 55 mL water; 2) PG100 - 106 mL PG; 3) GL100 - 108 mL GL (80%); 4) PG50 - 53 mL PG; 5) GL50 - 54 mL GL (80%). Blood samples were taken 60 and 30 min before, and every hour post-drenching (PD) for 13 h. Concentrations of glucose, BHBA, NEFA, lactate, glycerol and insulin were determined. Data were analyzed using the PROC MIXED procedure of SAS. According to the response pattern, data were analyzed in 2 time-periods PD: 1) 1-6 h; 2) 7-13 h. During period 1, glucose and insulin concentrations were higher in GL100 than in other groups (P < 0.05); PG50 was more effective in reducing the BHBA concentrations than PG100 with no differences in NEFA concentrations. Lactate concentrations were similar between PG100 and PG50, but higher than other groups (P < 0.02). Further, we tested the effects of mixtures of both substances in a similar design and analysis. Eighteen ewes were divided into 3 groups, and were drenched with: 1) Control - 55 mL of water; 2) PG100 - 53 mL PG + 54 mL GL (80%); 3) MIX50 - 26.5 mL PG + 27 mL GL (80%). No differences were observed in glucose, BHBA, NEFA, lactate, glycerol and insulin concentrations between groups in both periods; however, lactate concentrations were higher in the MIX100 group at period 1 (P < 0.05). In conclusion, in PG; 3) GL100 - 108 mL GL (80%); 4) PG50 - 53 mL PG; 5) GL50 - 54 mL GL (80%). Blood samples were taken 60 and 30 min before, and every hour post-drenching (PD) for 13 h. Concentrations of glucose, BHBA, NEFA, lactate, glycerol and insulin were determined. Data were analyzed using the PROC MIXED procedure of SAS. According to the response pattern, data were analyzed in 2 time-periods PD: 1) 1-6 h; 2) 7-13 h. During period 1, glucose and insulin concentrations were higher in GL100 than in other groups (P < 0.05); PG50 was more effective in reducing the BHBA concentrations than PG100 with no differences in NEFA concentrations. Lactate concentrations were similar between PG100 and PG50, but higher than other groups (P < 0.02). Further, we tested the effects of mixtures of both substances in a similar design and analysis. Eighteen ewes were divided into 3 groups, and were drenched with: 1) Control - 55 mL of water; 2) PG100 - 53 mL PG + 54 mL GL (80%); 3) MIX50 - 26.5 mL PG + 27 mL GL (80%). No differences were observed in glucose, BHBA, NEFA, lactate, glycerol and insulin concentrations between groups in both periods; however, lactate concentrations were higher in the MIX100 group at period 1 (P < 0.05). In conclusion, in GL100 than in other groups (P < 0.05). In conclusion, in GL100 than in other groups (P < 0.05). In conclusion, in GL100 than in other groups (P < 0.05). In conclusion, in GL100 than in other groups (P < 0.05).

Objectives of current experiment were to determine the effects of sodium bicarbonate (SBC) and chromium propionate (Cr) supplementation on intake, growth performance, feed sorting, rumen pH, and blood indices under hot and humid conditions. Twenty-eight Beetal bucks were randomly assigned to 4 treatments (n = 7 bucks/treatment): Control (C) without supplementation, sodium bicarbonate (SBC); at 1.5% of DM, chromium propionate (Cr); at 1.5 mg chromium/animal/d, and (SBC+Cr) diet containing SBC at 1.5% of DM + Cr at 1.5 mg chromium/animal/d. Total duration of experiment was 8 wk. Animals were housed individually, fed on iso-nitrogenous TMR (30% oat silage and 70% soybean meal), and slaughtered at the end of experiment. The authors thank the Centro di Zootecnia e Acquacoltura (Italy) and the Associazione Italiana Allevatori (Italy).

**Key Words:** autochthonous, goat, lactation

### 257 Effects of sodium bicarbonate and chromium propionate supplementation on growth performance, blood and rumen indices of Beetal bucks under heat stress conditions.

M. A. Rashid*1, A. Jamal1, M. I. Malik1, A. B. Nisar1, Z. A. Qamar1, H. Rehman2, and M. S. Youssaf2, 1Department of Animal Nutrition, University of Veterinary and Animal Sciences, Lahore, Pakistan 2Department of Physiology, University of Veterinary and Animal Sciences, Lahore, Pakistan.

Objectives of current experiment were to determine the effects of sodium bicarbonate (SBC) and chromium propionate (Cr) supplementation on intake, growth performance, feed sorting, rumen pH, and blood indices under hot and humid conditions. Twenty-eight Beetal bucks were randomly assigned to 4 treatments (n = 7 bucks/treatment): Control (C) without supplementation, sodium bicarbonate (SBC); at 1.5% of DM, chromium propionate (Cr); at 1.5 mg chromium/animal/d, and (SBC+Cr) diet containing SBC at 1.5% of DM + Cr at 1.5 mg chromium/animal/d. Total duration of experiment was 8 wk. Animals were housed individually, fed on iso-nitrogenous TMR (30% oat silage and 70% soybean meal), and slaughtered at the end of experiment. The authors thank the Centro di Zootecnia e Acquacoltura (Italy) and the Associazione Italiana Allevatori (Italy).

**Key Words:** autochthonous, goat, lactation

### 256 Characterization of plasmatic oxidative and metabolic profile in Italian goat breeds.

C. L. Manuelian*1, A. Maggiolino2, G. Neglia3, M. De Marchi1, and P. De Palo1, 1Department of Agronomy, Food, Natural resources, Animals and Environment (DAFNAE), University of Padova, Legnaro, Italy 2Department of Veterinary Medicine, University of Bari Aldo Moro, Valenzano, Italy 3Department of Veterinary Medicine and Animal Production (DMVPA), University of Naples Federico II, Napoli, Italy.

Characterization of local breeds in terms of physiology and production is crucial to propose strategies for their preservation. Blood from autochthonous, goat, lactation

**Key Words:** sheep, propylene glycol, glycerol
(928.962 g/d). Additionally, ADG was higher in the SBC+Cr ($P < 0.05$) compared with the C and Cr (185 vs. 124 and 136 g/d). Feed sorting behavior, body measurements, blood metabolites and feed efficiency were not affected ($P > 0.05$) by the treatments. However, rumen pH was higher in the SBC and SBC+Cr ($P < 0.05$) than in the C and Cr treatments. In conclusion, combination of SBC at 1.5% of DM and Cr at 1.5 mg/animal/d improved DMI and ADG without any negative impact on rumen and blood indices.

**Key Words:** heat stress, growth, Beetal buck