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2471 The effect of prepartum high-starch diet on colostrum yield and serum biochemical profile in dairy goats. M. González-Cabrera*[1], A. Morales-delaNuez[1], A. Torres[2], A. Argüello[1], N. Castro[1], and L. E. Hernández-Castellano[1], [1]*IUSA-ONEHEALTH 4. Animal Production and Biotechnology, Institute of Animal Health and Food Safety, Universidad de Las Palmas de Gran Canaria, Arucas, Spain,* [2]*Unit of Animal Production, Pasture, and Forage in Arid and Subtropical Areas, Canary Islands Institute for Agricultural Research, La Laguna, Spain.*

This study hypothesizes that feeding a high-starch (HS) diet during the last month of gestation can enhance the metabolic status of goats as well as colostrum yield and composition. Fourteen multiparous *Majorera* dairy goats were randomly assigned to a prepartum dietary treatment (control vs. HS) at wk −4 relative to expected parturition. Goats were fed either a control (n = 8; 100% of starch requirements) or HS (n = 6; 150% of starch requirements) diet during the last month of gestation according to INRA (2018) guidelines. Blood samples were collected on wk −5, −4, −3, −2, and −1 relative to parturition and immediately after parturition. Yield, SCC, and BRIX values on colostrum, as well as blood serum metabolites, were determined. Data were analyzed using the MIXED procedure of SAS (SAS 9.4). The model included the prepartum diet (PD), time (T), and the interaction between both as fixed effects. The statistical significance was set as $P \leq 0.05$. No differences were observed in colostrum yield, SCC, and BRIX values between groups ($P > 0.137$). An interaction (PD × T) was observed for BHB ($P_{PDxT} = 0.017$) and free fatty acids (FFA; $P_{PDxT} < 0.001$) concentrations. The prepartum HS group showed lower BHB concentration on week −4, which increased progressively until parturition, whereas FFA concentrations remained constant until parturition. In contrast, BHB and FFA concentrations in the control group decreased from week −4 to −2 and peaked at parturition. In addition, the HS group showed higher glucose (46.8 [41.5–52.7] vs. 40.3 [36.4–44.6] mg/dL; $P_{PD} = 0.028$) and lower albumin (2.9 ± 0.05 vs. 3.2 ± 0.05 g/dL; $P_{PD} = 0.001$), lactate dehydrogenase (322.3 ± 24.56 vs. 406.2 ± 21.30 U/L; $P_{PD} = 0.022$), total protein (5.8 ± 0.21 vs. 6.9 ± 0.18 g/dL; $P_{PD} = 0.001$), and urea (24.1 [21.9–26.6] vs. 31.7 [29.1–34.5] mg/dL; $P_{PD} < 0.001$) concentrations than the control group. The present results indicate that prepartum HS diet does not increase either colostrum yield or composition but promotes a smoother transition from late pregnancy to early lactation in dairy goats.

Key Words: physiology, gestation, energy

2472 Effect of slow-releasing urea encapsulated by microspheres lipidic of low-*trans* vegetable fat on intake, digestibility, and nitrogen metabolism of lambs. L. R. Bezerra*[1,2], P. H. S. Mazza[3], K. H. D. O. S. de Lucena[1], A. M. Barbosa[3], M. A. Fonseca[4], and R. L. Oliveira[3], [1]*Federal University of Campina Grande, Postgraduate Program in Animal Science and Health, Patos, Paraiba, Brazil,* [2]*CNPq-Brazil Researcher, Brasilia, Distrito Federal, Brazil,* [3]*Federal University of Bahia, Salvador, Bahia, Brazil,* [4]*University of Nevada, Reno, Reno, NV.*

This study produced a slow-release urea (SRU) coated from low-trans vegetable fat (LTVF) lipid matrix and to compare it to free urea (U) in the diet of lambs. Three urea:LTVF formulations, 30:70 (SRU_{30}), 40:60 (SRU_{40}), and 50:50 (SRU_{50}) ,were produced by the melt-emulsification method and evaluated. The SRU_{40} showed higher ($P < 0.05$) encapsulation and yield (82%), efficiency (85.5%), and CP content (115% in DM) than the other formulations. The SRU_{40} formulation was then tested in the diet of 32 Santa Ines male lambs (Animal Ethics Approval number 059/2021) with an average age of 6 mo and BW of 17.9 ± 2.01 kg from a randomized design into 4 treatments and 8 replicates: 3 SRU_{40} levels at 1.25% ($SRU_{1.25}$); 2.0% (SRU_2), and 3.0% (SRU_3) compared with a control diet with 0.5% free urea ($U_{0.5\%}$) as total dry matter-DM basis, evaluating intake, digestibility, and nitrogen (N) metabolism. Data means were compared using orthogonal contrasts (PROC IML, SAS). Differences were considered significant when $P < 0.05$. The inclusion of SRU linearly increased ether extract, NFC, and total digestible nutrients (TDN) intake ($P < 0.05$) and did not change DM, CP, and NDF intake. Slow-release urea dietary inclusion linearly increased CP digestibility. In contrast, including SRU linearly reduced N-urinary and N-fecal excretion and linearly increased N retention ($P < 0.05$). Blood urea nitrogen (BUN) and rumen pH decreased linearly with the inclusion of SRU, but ammonia nitrogen (NH_3-N) concentration increased linearly ($P < 0.05$). Nitrogen retained and N-microbial production linearly increased ($P = 0.014$) due to the inclusion of SRU in the lambs' diet. Lambs fed free $U_{0.5\%}$ presented the highest ($P < 0.05$) BUN concentrations postfeeding. The BUN concentration linearly decreased in lambs fed SRU at 4 and 6 h postfeeding ($P < 0.05$). Low-trans vegetable fat was efficient in encapsulating urea, and SRU_{40} is recommended in sheep's diets up to 3% (in DM total) because it improves the use of rumen N, reducing N excretion and increasing CP digestibility and N-retention. We thank FAPESq-PB, CNPq, and CAPES (Brazil).

Key Words: hydrogenated fat, rumen, urea

2473 Improving ruminant diets: Controlled urea release through calcium pectinate microparticles. L. R. Bezerra*[1], A. L. Silva[1], M. K. Melo[1], M. A. Fonseca[2], and E. C. Silva Filho[3], [1]*Federal University of Campina Grande, Patos, Paraiba, Brazil,* [2]*University of Nevada, Reno, Reno, NV,* [3]*Federal University of Piauí, Teresina, Piaui, Brazil.*

Managing ammonia release in the rumen is pivotal for optimizing ruminant nutrition, enhancing the conversion of dietary nitrogen into microbial protein, and mitigating animal intoxication risks. Our study aimed to explore calcium pectinate as a microencapsulation agent for achieving efficient and gradual urea release (SRU), thereby enabling higher urea supplementation in sheep diets without compromising the microflora or ruminal environment. We developed 3 microencapsulated formulations: 10% urea (MPec1), 20% urea (MPec2), and 30% urea (MPec3), in dry matter total in ratio of calcium pectinate as the shell and urea as the core, employing external ionic gelation/extrusion techniques based on citrus pectin solution mass. These SRU systems were characterized and compared with free urea (U) in 5 fistulated male Santa Ines sheep (Ethics Approval 116/2018-CEUA, University of São Paulo, São Paulo, Brazil). Microscopic analysis revealed that all 3 SRU systems exhibited uniform urea distribution without porosity or cracks, with MPec1 and MPec2 showing a more regular distribution. Incorporating urea into calcium pectinate microencapsulated systems increased microencapsulation yield (92.2%, 93.3%, and 97.1% for MPec1, MPec2, and MPec3, respectively). However, microencapsulation efficiency decreased with urea addition, resulting in values of 262%, 218%, and 264%, and actual urea retention rates of 25.2%, 28.4%, and 31.1% for MPec1, MPec2, and MPec3, respectively. The MPec1 and MPec2 systems presented higher ($P < 0.05$) blood serum concentrations of albumin, urea nitrogen (BUN), creatinine, and total cholesterol and