Book of Abstracts

of the 76th Annual Meeting of the European Federation of Animal Science

EAAP · EUROPA · FEZ · EVT · EAX

Book of Abstracts No. 39 (2025)
Innsbruck, Austria
25 - 29 August, 2025

EAAP

European Federation of Animal Science

The European Federation of Animal Science wishes to express its appreciation to the Ministero dell'agricoltura, della sovranità alimentare e delle foreste (Italy) and the Associazione Italiana Allevatori (Italy)
for their valuable support of its activities.

Book of Abstracts of the 76th Annual Meeting of The European Federation of Animal Science

Innsbruck, Austria, 25st – 29th August , 2025

EAAP
Via G. Tomassetti 3 A/1
Rome (Italy)
www.eaap.org
eaap@eaap.org

ISBN: 979-12-210-6769-9

First published, 2025

Quality determination of fresh, refrigerated, frozen and refrozen goat colostrum using a digital BRIX refractometer

Y. Falcón-Quintana[1], M. González-Cabrera[1], A. Morales-Delanuez[1], A. Argüello[1], N. Castro[1], L. E. Hernández-Castellano[1]
[1] IUSA-ONEHEALTH 4 Animal Production and Biotechnology Group, Institute of Animal Health and Food Safety, Universidad de Las Palmas de Gran Canaria, Trasmontaña s/n, 35413 Arucas, Spain

Colostrum is the primary source of immunoglobulins, particularly IgG, for newborn goat kids. However, limited colostrum availability or poor-quality colostrum (i.e., low IgG concentration) forces farmers to store high-quality colostrum. Given the strong correlation between IgG concentration and BRIX degrees, optical and digital refractometers have been widely used to rapidly assess the quality of fresh colostrum. However, no information is available in the literature regarding this correlation in stored colostrum. This study aimed to evaluate the use of a digital refractometer for the rapid assessment of colostrum quality in fresh, refrigerated, frozen, and refrozen colostrum. The statistical analysis was performed using the software SAS 9.4 (SAS Institute, Cary, NC, USA). The variance and the normality of the residuals were graphically assessed using the PROC UNIVARIATE of SAS. The Pearson correlation coefficient was determined using the PROC CORR of SAS. These correlations were categorized according to Schober & Schwarte, (2018) as follows: negligible ($r < 0.30$); low ($r = 0.30$ to 0.49); moderate ($r = 0.50$ to 0.69); high ($r = 0.70$ to 0.89); or very high ($r \geq 0.90$). Statistical significance was set as $P \leq 0.05$. All the results are presented as Mean ± Deviation. The findings showed that IgG concentration remained unaffected by the storage method ($P = 0.995$). However, BRIX degrees tended to be influenced by the storage method ($P = 0.086$). A strong correlation between IgG concentration and BRIX degrees was observed in fresh colostrum ($r = 0.80$), whereas no significant correlation was found in refrigerated, frozen, or refrozen colostrum ($r = 0.11$, $r = 0.33$, $r = 0.29$, respectively). In conclusion, while a digital refractometer is an effective tool for assessing the quality of fresh colostrum, it is not reliable for evaluating colostrum stored under refrigeration or freezing conditions. These findings enhance the understanding of the chemical changes occurring in stored colostrum and set the path for future research in this field.

Ceramide Dynamics in Periparturient Ewes: Metabolic Adaptations to Nutrient Restriction

M. J. Farricker[1], P. Deme[2], N. J. Haughey[2], J. W. Mcfadden[1], A. N. Davis[3]
[1] Cornell University, Department of Animal Science, 507 Tower Rd, Ithaca, NY, United States, [2] Tulane University School of Medicine, Department of Physiology, 1430 Tulane Ave, New Orleans, LA, United States, [3] State University New York, Cortland, Biological Sciences Department, 22 Graham Ave, Cortland, NY, United States

The peripartal period in ruminants is marked by maternal insulin resistance to support fetal development and the onset of milk synthesis. While ceramide (Cer) metabolism is well-characterized in dairy cows, its role in transition ewes remains unclear. This study examined plasma and milk Cer profiles in 20 ewes subject to either ad libitum (AL) feeding or two 5-d 50% nutrient restriction (NR) periods: late gestation (GNR; d-6 to -2 relative to parturition) and early lactation (LNR; d11 to 15). Plasma and milk samples were collected on d-7, -1, 1, 10, and 16 and analyzed via LC-MS/MS. Following GNR, AL ewes showed a mild accrual of plasma C22:0-dihydroCer (DHCer; fold change [FC]: 1.14, $P < 0.05$). Conversely, plasma C26:1-monohexosylCer (HexCer) and C20:0-dihexosylCer (Hex2Cer) rose in NR (FC: 1.34 and 1.27, $P < 0.05$), suggesting GNR redirected Cer metabolism toward more complex glycosphingolipids. Upon parturition, AL ewes exhibited transient increases in total plasma Cer while NR ewes showed suppression ($P < 0.05$). However, NR enhanced glycosylation, reflected in higher C22:0- and C22:1-HexCer (FC: 1.59 and 1.77, $P < 0.05$). By d10, NR ewes sustained increases in plasma Cer, HexCer, and Hex2Cer, especially C18:1-Cer and HexCer (FC: 4.30 and 3.46, $P < 0.05$), indicating prolonged metabolic effects of GNR. Following LNR, AL ewes showed increased plasma Cer, HexCer, and Hex2Cer, most notably for C18:1-Cer and HexCer, and C20:0-Cer (FC: 4.13, 3.33, and 2.38, $P < 0.05$), while NR maintained elevated glycosylation markers (C16:0- and C20:1-Hex2Cer; FC: 1.81 and 1.60, $P < 0.05$). Plasma C18:0-DHCer increased in AL but decreased in NR (FC: 1.17 and 0.82, $P < 0.05$), while C16:0-HexDHCer decreased in AL but increased in NR (FC: 0.61 and 2.01, $P < 0.05$), reinforcing a shift toward glycosylation under NR. Milk Cer showed opposing trends to plasma Cer, however, glycosylation trends were similar. At d10, milk C20:0-Cer was higher in NR (FC: 1.87, $P < 0.05$), while AL favored glycosylation (C20:1-HexCer; FC: 1.54, $P < 0.05$). By d16, milk C20:1-Hex2Cer increased in NR (FC: 1.56, $P < 0.05$), suggesting compensatory glycosphingolipid secretion post-LNR. Transition ewe plasma was enriched in C24:0, C22:0-, and C22:1-Cer (54.7, 16.2, and 6.7%), while milk was enriched in C24:0-, C24:1-, and C18:0-Cer (58.6, 17.1, and 8.8%). This aligns with the prominence of C24:0-Cer across tissues and plasma in both cows and ewes but newly highlights the metabolic significance of C18:0- to C22:1-Cer species in transition ewes. Despite uniform AL feeding from d-1 to 10, NR ewes displayed prolonged metabolic alterations, reinforcing the need for optimized periparturient nutrition to support metabolic resilience.