684 White blood cell populations in goat kids and lambs during the first four days of life, with special reference to CD4 and CD8. A. Arguello*[1], L. E. Hernandez-Castellano[1], A. Morales-delaNuez[1], I. Moreno-Indias[1], J. Capote[2], and N. Castro[1], [1]*Universidad de Las Palmas de Gran Canaria, Arucas, Las Palmas, Spain,* [2]*Instituto Canario de Investigaciones Agrarias, La Laguna, Tenerife, Spain.*

To investigate the white blood cell populations (including CD4 and CD8) in goat kids and lambs, 10 goat kids (Majorera dairy breed) and 10 lambs (Canaria dairy breed) were used. Blood samples were obtained at birth, and at 2 and 4 d of life in Lithium heparin containers. Immediately after collection, 50 µL of unclothed blood were added with 5 µL of CD4 (FITC) and 5 µL of CD8 (RPE) monoclonal antibodies (Serotec, Dusseldorf, Germany) and the reaction ran for 15 min at room temperature. After that, 50 µL of Optilyse (Beckman Coulter, Brea, CA) were added and the reaction ran for 15 min at room temperature to lyses red blood cells. Subsequently, 150 µL of saline serum were added to clarify the solution. Fifteen minutes later, the samples were redden using an FC500 flow cytometry device (Beckman Coulter, Brea, CA). An ANOVA (with repeated measures) procedure from SAS was used. Two white blood cell populations were observed clearly, lymphocytes plus macrophages (L+M) and polymorphonuclear (PMN), in both species at all tested times. L+M population was higher ($P \leq 0.05$) in goat kids than in lambs at all tested times (75.5, 63.5 and 74.0% in goat kids and 53.2, 45.7 and 59.5%, at birth, 2 and 4 d of life respectively). Concomitantly, the PMN population was greater ($P \leq 0.05$) in lambs than in goat kids. Goat kids CD4 population (expressed as a L+M percentage) was lower ($P \leq 0.05$) than in lambs at all tested times (29.3, 30.4 and 22.6 for goat kids and 53.7, 41.4 and 40.2 for lambs at birth, 2 and 4 d of life, respectively). No significant differences were observed for CD8 between species (ranged from 9.8 to 18.1% of L+M). There was no breed effect on CD4/CD8 ratio but a trend was observed, being goat kid CD4/CD8 ratio lower than lamb ratio (2.7, 2.1 and 2.4 for goat kids and 3.7, 3.0 and 2.8 for lambs at birth, 2 and 4 d of life, respectively). In conclusion, goat kids and lambs are different in the innate immune system during the first days of life.

Key words: goat kid, lamb, CD4 CD8

685 Immune status of goat kids fed cow's milk with an exogenous source of DHA. I. Moreno-Indias*[1], L. E. Hernández-Castellano[1], A. Morales-delaNuez[1], A. Torres[2], D. Sánchez-Macías[1], N. Castro[1], and A. Argüello[1], [1]*Universidad de las Palmas de Gran Canaria, Arucas, Las Palmas, Spain,* [2]*Instituto Canario de Ciencias Agrarias, La Laguna, Santa Cruz de Tenerife, Spain.*

As the main role of dairy goat farming is to yield marketable milk, artificial rearing is closely linked to the intensification of these farms. Therefore, the use of milk replacers has been suggested. Classic works did not recommend the use of cow's milk to feed goat kids, due mainly to problems with diarrhea. Recently, the benefits of the use of omega-3 fatty acids in nutrition such as the docosahexaenoic acid (DHA) have been presented. In this study different diets were supplied to 3 groups of goat kids: goat milk (GM), cow milk (CM) and cow milk with a supplemented source of DHA (DHA-gold) (CM-DHA). Animals were fed ad libitum twice a day. Blood samples were collected from the jugular vein until d 10 of life, and after that, each 5 d until animals weighed 8 kg (animals were weighed twice a week). IgG, IgM, total and alternative pathway complement system activity and chitotriosidase activity were measured to establish the immune status of goat kids. The MIXED procedure of SAS (version 9, SAS Institute Inc., Cary, NC) was used to evaluate the effects of the treatments on immune status of goat kids. When goat kids reached 8 kg, concentrations of IgG were 3.855, 4.002 and 3.662 mg/mL and concentrations of IgM were 0.802, 0.736 and 0.730 mg/mL for GM, CM and CM-DHA, respectively. Differences did not reach significance among treatments. When dairy kids weighed 8 kg, complement system activity did not show significant differences among treatments neither in total (GM: 58.54%, CM: 56.69% and CM-DHA: 55.09%) nor in the alternative pathway (GM: 37.94%, CM: 37.47% and CM-DHA: 34.91%). However, significant differences were found ($P = 0.03$) in the alternative pathway between GM (39.76%) and CM-DHA (23.30%) treatments when goat kids weighed 7 kg, although without continuity in the time. Finally, the chitotriosidase activity in goat kids at 8 kg did not differ significantly among treatments (GM: 1867.67 nmol/mL/h, CM: 1895.83 nmol/mL/h and CM-DHA: 1893.10 nmol/mL/h). In conclusion, CM is a good option to feed goat kids instead GM. However, DHA at this concentration did not show any effect on goat kid immune status.

Key words: DHA, milk replacer, cow milk

686 Effects of feeding sericea lespedeza as a natural anthelmintic for *Haemonchus contortus* in lactating does. J. L. Vest*[1], M. A. Brown[4], J. D. Kohler[1], M. D. Hudson[1], S. R. Nusz[5], J. M. Burke[3], J. E. Miller[2], C. T. Mackown[4], and E. L. Walker[1], [1]*Missouri State University, Springfield,* [2]*Louisiana State University, Baton Rouge,* [3]*Dale Bumpers Small Farms Research Center, USDA-ARS, Booneville, AR,* [4]*Grazinglands Research Laboratory, USDA-ARS, El Reno, OK,* [5]*Redlands Community College, El Reno, OK.*

In the United States, infection with the gastrointestinal nematode *Haemonchus contortus* is the leading cause of goat mortality. Use of alternative parasite control methods, including forages containing condensed tannins (CT), has been found to reduce the effect of gastrointestinal nematode parasites. During the last 30 d of gestation, 37 Boer-cross does kidding from April to June were randomly assigned to diets of alfalfa (*Medicago sativa*; 21% CP; n = 16) pellets (Alf) or sericea lespedeza (*Lespedeza cuneata*; 16% CP; n = 21) pellets (SL) and allowed to graze on 0.61 ha bermudagrass pasture. Does were fed pellets at a maximum of 3% of BW throughout the study. At parturition, BW and gender of kids was recorded. On d 7, 21, 35, 49, and 63 postkidding, doe fecal samples, BCS, blood samples, and measurements of milk yield and composition were obtained. To account for environmental changes during the 62 d kidding period, does were grouped in 2 kidding periods, early (those kidding from d 1 to d 31) and late (d 32 to d 62 of the trial). The climate during the later kidding period included increased rainfall and high humidity compared with the early period. The later kidding does had greater fecal egg counts (FEC) on d 7, 21, 35 and 49 ($P < 0.003$) and greater packed cell volume (PCV) on d 21, 49, and 63 ($P < 0.05$) compared with early kidding does. SL-fed does had lower FEC ($P < 0.05$) than the Alf does on d 35. On d 63, does with singles had lower FEC ($P \geq 0.03$) and greater PCV levels ($P \geq 0.006$) than does with twins. Doe FAMACHA scores gradually increased from d 7 to d 49 with an improvement by d 63 ($P < 0.0001$). Does with singles tended to have lower FAMACHA scores ($P = 0.08$) and greater BCS ($P = 0.0002$) than does with twins. Does raising twins produced more milk on d 7 and 21 becoming similar to single parity does by d 35 ($P = 0.0001$). Alf-fed, later kidding does had the lowest milk production ($P = 0.0089$). In conclusion, SL decreased FEC at d 35