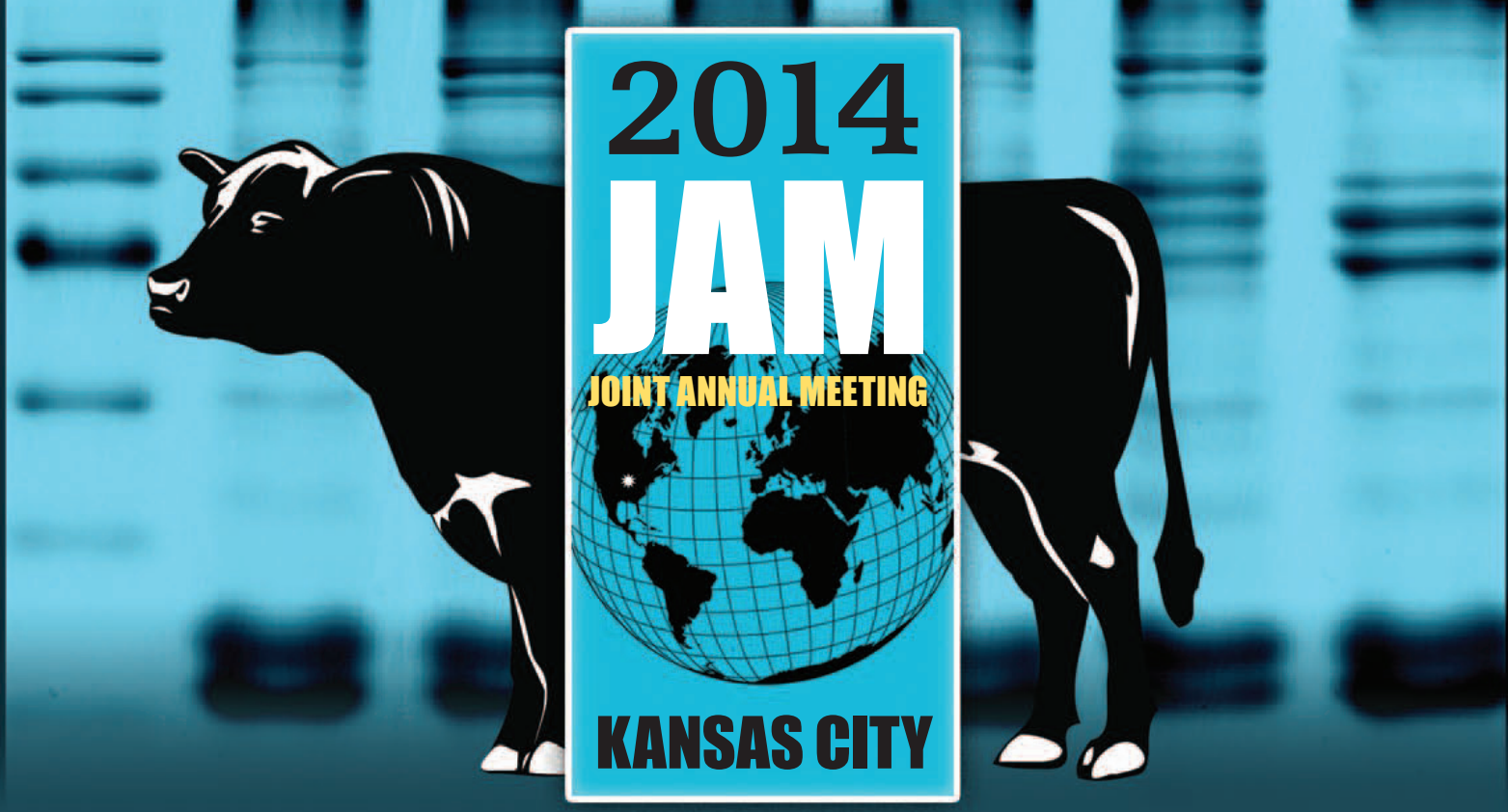
Estimated energy balance of ewes grazing in rangelands

Eliel González García, Dagiale Tagliatella, Magali Jouven Pouderoux Jouven, Francois Bocquier



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PHYSIOLOGY AND ENDOCRINOLOGY III

1429 (W189) Estimated energy balance of periparturient ewes grazing in rangelands. E. González-García[*1], D. Tagliatella[2], M. Jouven[3], and F. Bocquier[3], *[1]INRA UMR868 Systèmes d'Elevage Méditerranées et Tropicaux (SELMET), Montpellier, France, [2]Universidade Estadual de Londrina (UEL), Rodovia Celso Garcia Cid, Campus Universitário, Londrina, Brazil, [3]Montpellier Supagro, Sciences Animales, UMR868 Systèmes d'Elevage Méditerranées et Tropicaux (SELMET), Montpellier, France.*

In a previous work we demonstrated that efficiency in body reserves (BR) mobilization/accretion was affected by parity [multiparous (MULT) ewes being more flexible than primiparous], litter size and physiological stage (peaks of BR mobilization attained around lambing and 1 mo after mating). The objective of this study was to estimate the dynamic individual energy balance of periparturient MULT Romane grazing ewes, from 15 d before until 15 d after lambing. A group of MULT ewes (n = 20), allocated according to litter size (lambing and suckling singletons, SING-n = 10-, or twins, TWIN-n = 10) was used. Details on management and feeding were reported by González-García et al. (2014). At late pregnancy, ewes were in rotational grazing of native rangeland and supplemented with 0.7, 2.0 and 0.8 kg/d of hay (*Dactylus glomerata* and alfalfa), silage (*Lolium perenne* and alfalfa) and barley, respectively. After lambing, ewes were fed on fertilized paddocks without supplementation. Individual progression of BW, BCS, plasma NEFA as well as ADG of lambs was considered for energy balance interpretation. Some estimation is established based on NRC (2007) recommendations. Data were analyzed using the PROC MIXED of SAS (2007) with repeated measures. During the last 4 wk of gestation, one 50 kg ewe from this flock is estimated to display a daily consumption of around 1.6 kg of DM (3.2% BW) to support around 180 g of BW gain, requiring 3.4 mcal of ME. During the first 6–8 wk lactation, feed intake is affected by litter size (NRC, 2007; 2.1 or 2.4 kg of DM/d for ewes suckling SING or TWIN; 4.2 or 4.8% BW, respectively) with an increase in energy requirement of 4.9 or 5.6 mcal of ME for SING or TWIN, respectively. At late pregnancy, a positive energy balance of > 1.1 mcal/d was observed (4.7 mcal of ME vs. 3.6 of ME requirements) due to the advantageous supplementation regime established in the farm. Paradoxically, at this stage (late pregnancy) NEFA values showed a peak in BR mobilization. After lambing, ewes suckling SING and TWIN were both required to mobilize their BR to meet energy requirement despite the high quality of the fertilized paddocks and the BW increase. More precise and targeted studies are required to better address the combined anabolic and catabolic phases experimented under the conditions of this experiment in periparturient ewes. Reference: González-García E. et al. (2014). Domestic Animal Endocrinology 46:37–48.

Key Words: periparturient ewes, rangelands, energy balance, body reserves

1430 (W190) Effects of adsorbent on milk aflatoxin M1 and lactation performance of dairy cows exposed to long-term challenge of aflatoxin B1. J. L. Xiong[1], Y. M. Wang[*2], W. M. Huang[1], Y. Zhang[1], H. M. Guo[1], and J. X. Liu[3], *[1]Institute of Dairy Science, Zhejiang University, Hangzhou, China, [2]Novus International Trading Co., Ltd, Shanghai, China, [3]Zhejiang University, Hangzhou, China.*

The objective of the study was to evaluate the effects of adsorbent on milk aflatoxin (AF) M1 and lactation performance of dairy cows exposed to long-term challenge of AFB1. Forty dairy cows were blocked based on days in milk (33 ± 7; mean ± SD) and milk production (33.9 ± 3.1 kg; mean ± SD), and were randomly assigned to one of four treatments in a 2 × 2 factorial arrangements with AFB1 (0 or 20 μg/kgDM) and Solis Mos (Novus International Inc., 0 or 0.25% of DM). The experiment lasted 9 wk, with the first week for adaptation. Milk yield and milk composition were recorded weekly, and serum concentrations of biochemical and antioxidant variables were analyzed in the first and the last week of the experiment. Milk AFM1 was analyzed by HPLC-MS/MS. Variables of data were analyzed using the PROC MIXED of SAS. Dry matter intake, milk yield, contents of milk protein and milk fat, and linear somatic cell count averaged 23.9 kg/d, 35.5 kg/d, 2.9%, 3.6%, and 5.1, respectively and were not affected (P > 0.05) by either AFB1 or Solis Mos supplement. Addition of Solis Mos in AFB1-contaminated diet significantly reduced (P < 0.01) milk AFM1 concentration (0.19 vs. 0.13 μg/kg) and transfer rates (1.38 vs. 0.89%). Dairy cows fed AFB1-contaminated diet had lower level of superoxide dismutase activity, total antioxidant capacity, glutathione peroxidase, IgG and IgA (P < 0.05), and higher level of malondialdehyde in plasma (P < 0.05). Inclusion of Solis Mos into diets increased the plasma superoxide dismutase activity, total antioxidant capacity, and IgG, while deceased malondialdehyde (P < 0.05). Neither AFB1 nor Solis Mos affected (P > 0.05) the plasma levels of alanine transaminase, aspartate aminotransferase, and alkaline phosphatase and IgM. It is concluded that inclusion of Solis Mos did not affect lactation performance, but reduced milk AFM1 concentration and transfer rate, and increased antioxidant capacity and immunity in early-lactating dairy cows exposed to long-term challenge of AFB1.

Key Words: adsorbent, aflatoxin, transfer