
Acute puerpertal metritis (APM) in dairy cows is often treated with antibiotics. An increasing antibiotic resistance is well documented and associated with decreasing clinical efficacy, animal welfare and economic consequences. Hence, there is a significant need to encourage prudent use of antibiotics and alternative therapies to antibiotics. The objective of this study was to compare the efficacies of ketoprofen and cefiotrif for the treatment of APM. Between June 2013 and February 2015, a total of 610 dairy cows from 6 farms in Germany were enrolled. Inclusion criteria was a rectal temperature (RT) ≥ 39.5°C and a reddish-brown fetid vaginal discharge within the first 10 DIM. Cows meeting the inclusion criteria were randomly allocated to treatment with ketoprofen (3 mg/kg of BW, n = 300) or treatment with cefiotruf (1 mg/kg of BW, n = 310), both on 3 consecutive days. Rectal temperature was recorded daily for a period of 7 d after enrollment. Cows that showed RT ≥39.5°C on d 4 to 7 after inclusion received an extended treatment with cefiotruf for 3 (ketoprofen group) or 2 (ceftiofur group) more days. Between 21 and 34 DIM, cows were examined with the Metrichеч device and vaginal discharge was categorized on a 5-point scale according to the presence of pus. A total of 51 cows (34 from ketoprofen group, 17 from cefiotruf group) were excluded from analysis due to concurrent disease (n = 15), additional medication of APM (n = 11), and due to missing protocol compliance (n = 25). Cows of the ketoprofen group (54%) received an extended treatment more often than cows of the cefiotruf group (30%; P < 0.01). Occurrence of purulent vaginal discharge was similar for both treatment groups (ketoprofen: 57.8%, cefiotruf: 55.3%, P = 0.62). More than half of the cows initially treated with ketoprofen needed cefiotruf treatment. However, there is potential of reducing antibiotic use by utilizing ketoprofen for the treatment of APM as up to 46% of cows treated with ketoprofen did not need extended treatment. Animal welfare and economic aspect need to be considered.

Key Words: acute metritis, treatment, antibiotic

Intrauterine cephapirin infusion is associated with better reproduction performance in cows with purulent vaginal discharge and cytological endometritis. José Denis-Robichaud*1 and Jocelyn Dubuc2, 1Department of Population Medicine, University of Guelph, Guelph, Ontario, Canada, 2Faculté de Médecine Vétérinaire, Université de Montréal, Saint-Hyacinthe, Québec, Canada.

The objectives of this study were to quantify the effect of an intrauterine infusion of cephapirin on the reproductive performance at first service of postpartum dairy cows affected by purulent vaginal discharge (PVD) or cytological endometritis (ENDO) using different diagnostic strategies and to determine if the presence of prolonged anovulation would influence the magnitude of treatment benefit. A total of 2,259 Holstein cows in 28 herds were enrolled in a randomized clinical trial. At 35 (±7) DIM, cows were diagnosed for PVD (purulent vaginal discharge or worse using the metrichеч device) and ENDO (≥6% polymorphonuclear cells using the cytobrush technique or at least small amounts of leukocytes using the leukocyte esterase colorimetric test). Regardless of reproductive tract disease status, cows were randomly assigned to receive an intrauterine cephapirin infusion or no treatment. Serum progesterone was measured at 35 and 49 (±7) DIM (14 d apart); cows were considered to have prolonged anovulation if progesterone was <1 ng/mL at both times. Statistical analyses were conducted using multivariable mixed logistic regression models adjusted for confounders and herd clustering effect. Intrauterine cephapirin treatment was associated with an increased first service pregnancy risk in cows diagnosed with PVD (no treatment: 15.4%; treatment: 31.4%; P < 0.005) and ENDO (cytobrush: no treatment: 16.2%; treatment: 24.4%; P < 0.05; leukocyte esterase: no treatment: 15.8%; treatment: 25.1%; P < 0.05), but not in cows unaffected by any form of reproductive tract disease (no treatment: 34.8%; treatment: 32.6%; P = 0.5). The effect of cephapirin treatment in anovular cows (no treatment: 21.0%; treatment: 26.4%; P = 0.26) was numerically lower than in cyclic cows (no treatment: 22.7%; treatment: 34.1%; P < 0.05).

Overall, an intrauterine infusion of cephapirin improved first service pregnancy risk in cows with postpartum reproductive tract disease and this effect was influenced by postpartum anovulation status.

Key Words: dairy cows, endometritis, treatment

Potential role of lactic acid bacteria in the regulation of Escherichia coli infection and inflammation of the bovine endometrium. Sandra Genís*1, Àlex Bach1,2, Francesc Fàbregas1, Marta Terré1, and Anna Aris1, 1Department of Ruminant Production, Institut de Recerca i Tecnologia Agroalimentàries (IRTA), Torre Marimon, Caldes de Montbui, Barcelona, Spain, 2Institució Catalana de Recerca i Estudis Avançats (ICREA), Barcelona, Spain.

About 40% of dairy cattle develop uterine disease at postpartum, causing infertility. Some studies indicate that uterine infection, predominantly by Escherichia coli in the first week postpartum, is associated with metritis. Metritis is an inflammation of the uterus in which the cow fails to completely clear bacterial contaminants and reducing postpartum inflammatory processes. The aim of this study was to evaluate the potential role of 4 lactic acid bacteria (LAB; Lactobacillus rhamnosus, Pediococcus acidilactici, Lactobacillus reuteri, and Lactobacillus sakei) in the modulation of Escherichia coli infection and its respective inflammatory response by endometrial cells. Primary endometrial epithelial cells were isolated from a fresh endometrium of a healthy cow and cultured at 8 × 104 cells/well in 24-well plates to evaluate the effects of LAB at 3 different doses. Cell extracts were obtained with TriZol. Pro-inflammatory status was assessed by qPCR quantification of IL8, IL1β, TNFa, and IL6 gene expression. Internalization of Escherichia coli was determined by direct enumeration on MacConkey agar plates. Data were normalized and analyzed by an ANOVA. Lactobacillus sakei and Lactobacillus reuteri had a positive effect preventing E. coli infection (87% and 78% respectively, P < 0.001) but were associated with a dose-variable effect on tissue inflammatory that could further exacerbate the pro-inflammatory status of the endometrium. Pediococcus acidilactici clearly decreased (P < 0.001) E. coli internalization up to an 83% reduction and slightly reduced the inflammation (up to 3.2-fold in IL1β expression, P < 0.001). However, the pro-inflammatory cytokines IL8 and IL1β decreased significantly (P < 0.001) up to 85.1 and 5.2 folds, respectively, in the presence of L. rhamnosus. In conclusion, these results demonstrate a clear beneficial effect of P. acidilactici and L. rhamnosus in the modulation of endometrial infection and inflammation in cattle.

Key Words: Escherichia coli, LAB bacteria, metritis
Uterine microbiota from calving until establishment of metritis in dairy cows. Soo Jin Jeon1,2, Achilles Vieira-Neto1, Mohanathas Gobikrishnan2,3, Rodolfo Daet2, Rodolfo Mingoti1, Ana Carolina Parize2, Sabrina Freitas2, Antonio Nelson da Costa2, Rodrigo Bicalho3, Svetlana Lima1, Kwang C. Jeong1,4, and Klibs N. Galvão1,2, †Department of Animal Sciences, University of Florida, Gainesville, FL, 2Department of Large Animal Clinical Sciences, University of Florida, Gainesville, FL, 3Department of Population Medicine and Diagnostic Sciences, Cornell University, Ithaca, NY, 4Emerging Pathogens Institute, University of Florida, Gainesville, FL, 5Departamento de Zootecnia, Universidade Federal do Ceará, Fortaleza, Ceará, Brazil, 6Department of Agricultural, Food and Nutritional Science, University of Alberta, Alberta, Canada.

Objective was to characterize the progression of uterine microbiota from calving until establishment of metritis. Uterine swabs were collected at 0 (20 min from calving), 2, 4, 6, and 8 d postpartum (DPP) from 92 cows. Twelve cows were diagnosed with metritis at 4, 6, or 8 DPP (6 ± 2 DPP), and 12 healthy cows were selected for comparison. Swabs (n = 72) collected at 0, 2, and 6 ± 2 DPP were used for metagenomic sequencing of 16S rRNA gene on the Illumina MiSeq platform. A heat map showed that uterine microbiota was established in cows shortly after calving. The microbiota changed rapidly from 0 to 6 ± 2 DPP by decreasing the abundance of Proteobacteria and increasing the abundance of Bacteroidetes and Fusobacteria. At 6 ± 2 DPP, abundance of Bacteroides and Fusobacterium was significantly higher in metritic cows than healthy cows (P < 0.01). Although most genera were shared, healthy and metritic cows could be discriminated based on relative abundance at 0, 2, and 6 ± 2 DPP using discriminant analysis (P < 0.01). Also, discriminant analysis showed that Bacteroides, Filifactor, Porphyromonas, Fusobacterium, and Arcanobacterium/Truperella were important predictors of metritis. Furthermore, Bacteroides and Fusobacterium were significantly correlated with uterine discharge score (r = 0.51 and r = 0.49, respectively; P = 0.02). Likewise, at species level, Bacteroides heparinolyticus and Fusobacterium necrophorum were the main bacteria for the development of metritis because they were both prevalent (16.8% and 20.2% in metritic cows; 7.0% and 15.8% in healthy cows) and correlated with uterine discharge score (r = 0.42 and r = 0.42, respectively; P ≤ 0.05). In addition, there was a second (Fusobacterium gonidiaformans, Helcococcus ovis, and Filifactor villosus) and third (Bacteroides pyogenes, Porphyromonas levii and others) line of bacteria that acted synergistically with the main bacteria causing metritis.

Key Words: dairy cow, metritis, 16S metagenomics

Association among health and fertility and survival of high-producing dairy cows in three geographic regions of Chile. Pablo Pinedo1,2, Pedro Melendez3, Sushil Paudyal1, Felipe Arias3, Ricardo Krauss4, Hernando Lopez5, Alejandro Luco6, Cristian Vega7,8, †Texas A&M AgriLife Research, Amarillo, TX, 2Department of Veterinary Pathobiology, College of Veterinary Medicine & Biomedical Sciences, Texas A&M University System, College Station, TX, 3Department of Veterinary Medicine and Surgery, College of Veterinary Medicine, University of Missouri-Columbia, Columbia, MO, 4West Texas A&M University, Canyon, TX, 5ABS Chile Ltda., Santiago, Chile, 6ABS Global Inc., DeForest, WI.

The objective was to analyze the association between disease occurrence during early lactation and reproductive performance and survival of dairy cows in high-producing herds, under different management practices in 3 geographic regions of Chile. Data included 30,157 lactation records of cows calving between January, 2013 and June 2014, maintained under different production systems: Dry lot (DL; n = 3,881 cows in 6 herds); freestall (FS; n = 21,421 cows in 13 herds); grazing (G; n = 1,211 cows in 3 herds); and freestall/grazing (FG; n = 4,244 cows in 5 herds). Cows were also classified according to geographic location: central area (C, n = 6,375 cows); south-central area (SC, n = 17,073 cows); and south area (S, n = 7,309 cows). Logistic regression and ANOVA were used for the analyses (PROC GLIMMIX and PROC GLM, SAS), considering cow as the experimental unit. Covariates offered to the models included lactation number, cow, and herd milk yield. Average milk yield (305 ME) per cow was 11,793, 12,632, and 6,876 kg for C, SC, and S regions, respectively and 10,603, 12,270, 6,899, and 9,261 kg for DL, FS, G, and FG systems. The odds (95% CI) of pregnancy at 150 DIM (P150) and the odds of survival until 150 DIM (S150) for cows that had at least 1 disease event within 50 DIM were 0.82 (0.77–0.88) times the odds of pregnancy and 0.21 (0.17–0.26) times the odds of survival for healthy cows. The odds (95% CI) of P150 for P150 for cows under grazing systems were 1.48 (1.24–1.77), 1.07 (0.9–1.28), and 1.29 (1.09–1.52) times the odds of P150 for cows under DL, FG, and F systems, respectively. The odds (95% CI) of S150 for S150 for cows under grazing were 3.15 (3.0–3.8), 3.18 (1.88–5.40), and 2.0 (1.19–3.33) times the odds of S150 for cows under DL, FG, and F systems. The odds (95% CI) of P150 and S150 for cows located in the S area were 1.03 (0.95–1.1), and 1.11 (1.03–1.19) times the odds of P150 for cows in C, and SC areas and 1.42 (1.23–1.66), and 1.37 (1.20–1.60) times the odds of S150 for cows in C, and SC areas. Data suggested that cow’s health status, geographic location, and production system had a significant association with reproductive performance and survival in this population of Chilean high-producing cows.

Key Words: dairy, health, fertility

Bovine viral diarrhea diagnostic testing results in the Intermountain West—Comparison between test methods, age, sex and beef versus dairy breeds. David J. Wilson1, Thomas J. Baldwin, E. Jane Kelly, Arnaud VanWettere, and Gordon Hullinger, Utah State University, Logan, UT.

Bovine viral diarrhea (BVD) is an important cause of respiratory, gastrointestinal, and reproductive disease in cattle. The objectives were to calculate prevalence of BVD (“detected” test results) among all bovine samples tested for BVD at the Utah Veterinary Diagnostic Laboratory from 2009 to 2013, and to compare results by sex, age, dairy vs. beef breeds (if provided) of the cattle, and BVD test methods. For necropsied animals, most were tested by Ag capture ELISA, but fetuses were usually tested by PCR. Cattle were mainly from Utah, but also from surrounding states in the Intermountain West of the United States. This was not a planned experiment, but Chi-squared was used to test for significant differences in BVD prevalence between age, sex, breed and test methods. BVD was detected in 105/8,975 samples (1.2%), including 22/180 necropsies (12.2%). Test methods and results are given in Table 1. There were no significant differences in BVD detection by age or sex. Dairy breeds (P = 0.07), all necropsied animals, and those tested with PCR were significantly more likely to test as “detected” with BVD. The overall prevalence of >1% and the 8% prevalence in aborted fetuses demonstrates that despite the low reported prevalence of persistently infected cattle, BVD remains an important bovine disease.
Table 1 (Abstr. 26). Results by BVD test method, by age, sex, or breed, and by dairy versus beef breeds

<table>
<thead>
<tr>
<th>Item</th>
<th>Tested, no.</th>
<th>BVD detected, no. (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>BVD test method</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ag Capture ELISA</td>
<td>7,692</td>
<td>79 (1.0)</td>
</tr>
<tr>
<td>Serum ELISA</td>
<td>1,195</td>
<td>19 (1.6)</td>
</tr>
<tr>
<td>PCR</td>
<td>88</td>
<td>7 (8.0)*</td>
</tr>
<tr>
<td>Necropsy (all methods)</td>
<td>180</td>
<td>22 (12.2)*</td>
</tr>
<tr>
<td>Age, sex or breed</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>215</td>
<td>5 (2.3)</td>
</tr>
<tr>
<td>Female</td>
<td>382</td>
<td>9 (2.4)</td>
</tr>
<tr>
<td>Fetus</td>
<td>36</td>
<td>3 (8.3)*</td>
</tr>
<tr>
<td>Calf</td>
<td>579</td>
<td>29 (5.0)*</td>
</tr>
<tr>
<td>Immature</td>
<td>183</td>
<td>4 (2.2)</td>
</tr>
<tr>
<td>Adult</td>
<td>75</td>
<td>4 (5.3)</td>
</tr>
<tr>
<td>Dairy†</td>
<td>754</td>
<td>25 (3.3)†</td>
</tr>
<tr>
<td>Beef†</td>
<td>1,600</td>
<td>26 (1.6)†</td>
</tr>
</tbody>
</table>

†Subset of above 3 categories.
‡NSD among sex, age, or by test method within sex, age or breed.
§All 3 by PCR at necropsy.
∗Twenty-seven by Ag Capture ELISA, including 16 of 114 necropsies (14.0%).
†Three by serum ELISA, 1 by Ag Capture ELISA, of 6 necropsies (16.7%).
§Two by serum ELISA, 2 by Ag Capture ELISA, of 24 necropsies (8.3%).
∥95.0% Holsteins, 3.8% Jerseys.
60.0% Angus, 22.8% “Beef.”
*Higher prevalence of “BVD detected” results, P < 0.0001.
†P = 0.07.

Key Words: BVD, bovine, prevalence

27 Preweaning plane of nutrition and Mannheimia haemolytica dose influence inflammatory responses to a combined bovine herpesvirus-1 and Mannheimia haemolytica challenge in postweaned Holstein calves. K. P. Sharon1,2, Y. L. Liang1, N. C. Burdick Sanchez2, J. A. Carroll2, P. R. Broadway2, and M. A. Ballou1, 1Department of Animal and Food Sciences, Texas Tech University, Lubbock, TX, 2USDA-ARS, Livestock Issues Research Unit, Lubbock, TX.

To determine whether preweaned plane of milk replacer nutrition (PON) and M. haemolytica (MH) dose influences inflammatory responses to a combined viral-bacterial respiratory challenge, Holstein calves (1d of age; n = 30) were assigned to treatments in a 2 × 3 factorial with preweaned PON and dose of MH as main effects (n = 5/treatment). Calves were fed either a low (LPN; n = 15) or a high PON (HPN; n = 15) from weaned PON and dose of MH as main effects (n = 5/treatment). Calves were fed either a low (LPN; n = 15) or a high PON (HPN; n = 15) from weaned PON and dose of MH as main effects (n = 5/treatment).

The variable innate immune response between animals can be due to a variable cause of causes. Infections during the neonatal period could affect an animal’s innate response phenotype. Ten Holstein calves were used to investigate the sustained effects of neonatal LPS exposure on the innate immune system. At 8d of age, 5 calves received an IV infusion of LPS (0.5 µg/kg), while the remaining 5 received saline. A subsequent dose of

28 Plasma leptin concentrations are increased during a vaccine-induced acute-phase response in beef cattle. Rodrigo Marques1, Reinaldo Cooke2, Murilo Rodrigues3, Bruno Cappellozza1, Sergio Arispe3, and David Bohnert1, EOARC, Oregon State University, Burns, OR, 1Malheur County Extension, Oregon State University, Ontario, OR.

The objective of this experiment was to evaluate if a vaccine-induced acute-phase reaction also results in increased plasma leptin concentration, which would explain a potential DMI decrease in vaccinated beef cattle. Eighteen yearling Angus × Hereford heifers were ranked by BW and allocated to 2 groups, which were randomly assigned to a crossover design containing 2 periods of 7 d and the following treatments on d 0 of each period: (1) vaccination against Mannheimia haemolytica, bovine rhinotracheitis virus, and bovine viral diarrhea Types 1 and 2 viruses (VAC; BoviShield One Shot; Zoetis, Florham Park, NJ), or (2) saline-injected control (CON). Heifers were maintained in individual pens, offered grass hay for ad libitum consumption, in addition to 3.5 kg/d (DM basis) of a corn-based supplement. During Period 1, hay and concentrate intake were evaluated daily. During Period 2, blood samples were collected before (−2 and 0 h) and at 2, 4, 6, 8, 12, 16, 24, 36, 48, 60, 72, 96, 120, 144, and 168 h after treatment administration. All samples were analyzed for plasma haptoglobin concentration. Samples collected from 0 to 48 h were also analyzed for plasma cortisol, insulin and leptin concentrations. Plasma variables were analyzed using the mean result from samples collected at −2 and 0 h as covariate. Treatment × day interactions were detected (P < 0.01) for hay and total DMI, given that these parameters were reduced (P ≤ 0.05) in VAC compared with CON from d 0 and 1. Treatment × hour interactions were detected (P ≤ 0.02) for all plasma variables. Plasma cortisol concentrations were greater (P ≤ 0.05) in VAC compared with CON from 2 to 16 h. Plasma insulin concentrations were greater (P ≤ 0.05) in VAC compared with CON from 4 and 16 h. Plasma leptin concentrations were greater (P ≤ 0.03) in VAC compared with CON from 6 to 16 h. Plasma haptoglobin concentrations were greater (P ≤ 0.02) in VAC compared with CON from 16 to 120 h. In conclusion, plasma leptin concentration was increased during a vaccine-induced acute-phase reaction, which may explain the decrease in DMI observed herein in vaccinated cattle.

Key Words: cattle, acute-phase reaction, leptin

29 Effect of an early-life LPS challenge on a subsequent LPS challenge in Holstein bull calves. Aimee L. Benjamin1, Filiz T. Korkmaz1, Theodore Elssasser2, and David E. Kerr1, 1University of Vermont, Burlington, VT, 2USDA-ARS, Beltsville, MD.

The variable innate immune response between animals can be due to a variability of causes. Infections during the neonatal period could affect an animal’s innate response phenotype. Ten Holstein calves were used to investigate the sustained effects of neonatal LPS exposure on the innate immune system. At 8d of age, 5 calves received an IV infusion of LPS (0.5 µg/kg), while the remaining 5 received saline. A subsequent dose of
LPS (0.25 μg/kg) was given to all 10 calves at 30 d of age to determine if there was any lasting effects from the first LPS challenge. Skin biopsies were collected from all calves at 22 d of age to isolate dermal fibroblasts for a cell model to explore genetic and/or epigenetic changes that may have resulted from the early life LPS treatment. Two hours after the first challenge, LPS-treated calves had greater (P < 0.05) plasma IL-6 (14.4 ± 2.8 vs. 0.6 ± 0.3 ng/mL) and TNF-α (3.2 ± 1.0 vs. 0.2 ± 0.1 ng/mL) compared to calves that had received saline, respectively. Response curves of these plasma cytokines from measurements at 0, 1, 2, 3, 5, and 7 h following the second LPS challenge were similar (P > 0.05) between groups. Rectal temperatures were not significantly different between the treatment groups in either challenge. Dermal fibroblasts isolated from LPS- or saline-treated calves produced similar (P > 0.05) levels of IL-6 (318.4 ± 96.8 vs. 359.3 ± 54.6 pg/mL) and IL-8 (183.6 ± 33.8 vs. 157.1 ± 11.7 pg/mL), respectively, in response to a 24 h LPS challenge (500 ng/mL). Although the fibroblasts produced much greater levels of IL-6 (5178.6 ± 637.9 vs. 5353.4 ± 853.1 pg/mL) and IL-8 (1554.2 ± 96.8 vs. 1596.9 ± 93.4 pg/mL), respectively, in response to a 24 h LPS challenge with IL-1β (10 ng/mL), there was no early-life treatment effect. There was substantial inter-animal variation in clinical symptoms following the LPS challenges, but the early-life exposure to LPS at 8d of age did not clearly influence the response to a subsequent LPS challenge in 30-d-old calves, or affect the ability of fibroblasts to respond in vitro to LPS or IL-1β. More work is needed to determine how early-life exposure to infection may influence an animal’s innate immune response.

**Key Words:** neonatal, variation

30 ACTH-test reactivity affect disposition for storage of fat depots in dairy cows during the transition period. Lena Ruda1, Claudia Raschka1, Lea Fiegl1, Asako Kinoshita1, Anja Schacht1, Marion Piechotta1, Korinna Huber2, Akos Kenez2, Ulrich Meyer3, Sven Dänicke4, and Juergen Rehage*, 1Clinic for Agriculture, University of Veterinary Medicine Hannover, Hannover, Germany; 2Department of Physiology, University of Veterinary Medicine Hannover, Hannover, Germany; 3Institute of Animal Nutrition, Friedrich-Loeffler-Institute, Braunschweig, Germany.

It is generally recommended to adjust feeding requirements to avoid overconditioning of dairy cows at calving because high body condition is a major risk factor for ketosis in early lactation. However, beside feeding and environmental factors individual disposition for high body condition appears to have also a genetic and epigenetic background. The individual reactivity of the hypothalamic-pituitary-adrenal axis (HPA-axis) and the release of cortisol as tested in the ACTH-test varies considerably between cows. Thus, the aim of the study was to test the relationship between HPA-axis reactivity and body condition in dairy cows during the transition period. In 22 pluriparous German HF dairy cows, kept in freestalls with cubicles and fed a TMR based on grass and corn silage and concentrate, an ACTH challenge was performed on d 100 postpartum (pp). Before and after injection of ACTH (80μg) cortisol concentrations were measured in blood samples taken in short-term intervals from indwelling jugular vein catheters from which baseline and peak concentrations and AUC were assessed. Results were used in a regression analysis (SAS statistical package) and correlated with sonographically estimated subcutaneous fat mass (SC fat) assessed at d –42 before parturition, and at d 1, d 21, d 100 pp. Cows were also classified according the AUC cortisol results into high (HR; n = 7), intermediate (IR; n = 8), and low (LR; n = 7) responder and fat mass was tested for differences by ANOVA. Significant linear negative correlations were found between AUC and peak cortisol concentrations from ACTH challenge and SC fat at d –42, d 1, d 21 and d 100. In HR compared with LR cows in average SC fat was significantly less at d –42, d 1, d 21 and d 100 and gain before and loss of SC fat after parturition was lower. Cows with high reactivity of the HPA-axis are leaner during the whole transition period, gain less before and lose less SC fat after parturition. Dynamics in body condition appears to be closely related with HPA axis reactivity during the transition period in dairy cows. This work was funded by the German Research Foundation.

**Key Words:** ACTH-test, BCS, dairy cows

31 Use of an ex vivo/in vitro laminitis model to elucidate the role of endotoxins during equine and bovine laminitis. Nicole Reisinger*,1 Simone Schaumberger2, and Gerd Schatzmayr1, 1Biomin Research Center, Tulln, Austria, 2Biomin Holding GmbH, Herzogenburg, Austria.

Laminitis is one of the most common causes for lameness in horses and ruminants. The pathology of laminitis is still not fully understood. As it is a multifactorial disease, several substances and toxins such as endotoxins are discussed as possible trigger factors. The aim of our study was to test the influence of endotoxins on the lamellar integrity of hoof explants. Furthermore, the potential difference of effects of endotoxins on the lamellar integrity of hooves from horses and ruminants was investigated. Explants from hooves (n = 3) and claws (n = 3) were cultivated at 37°C and 5% CO2 with D-MEM as culture medium. Lipopolysaccharides (LPS) of Escherichia coli O55:B5 were added to the equine [0, 2.5, 10, 100 μg/mL] and bovine [0, 1, 10, 100 μg/mL] explants for 24 h. After incubation, explants were tested for their integrity by measuring the force (Newton), which is needed to separate the explants (= separation force). Therefore, the explants were connected to a force transducer with clamps. Viability of explants was tested with the water-soluble tetrazolium (WST-1) assay. There was no effect on separation force when equine explants were incubated with 2.5 μg/mL LPS. Separation force of equine explants incubated with 10 and 100 μg/mL LPS was significantly decreased (P < 0.005) by 45% and 49%, respectively, compared with control explants. Similar to equine explants, there was no effect on separation force when bovine explants were incubated with 1 μg/mL LPS. Separation force of bovine explants incubated with 10 and 100 μg/mL LPS was significantly decreased (P < 0.005) compared with control explants. A reduction by 50% and 65% for LPS was observed, respectively. All explants were viable after 24 h incubation. In our study a concentration dependent reduction of separation force of explants incubated with LPS was observed. Similar effects of LPS were observed in explants from both species. Although laminitis has never been induced by endotoxins alone in animal experiments, our data suggest that endotoxins might play an important role during the onset of laminitis. The presented model could be used to test other potential trigger factors of laminitis and the interaction between these factors.

**Key Words:** laminitis, endotoxins, in vitro