M37 Functional capacities of blood neutrophils are influenced by both acute and chronic dexamethasone stress models in beef steers. Michael A. Ballou*[1], Jeff A. Carroll[2], Nicole C. Burdick Sanchez[2], Nathan D. May[3], Shelby L. Roberts[3], Heather D. Hughes[3], Paul R. Broadway[2], Kate P. Sharon[1,2], and John T. Richeson[3], *[1]Department of Animal and Food Sciences, Texas Tech University, Lubbock, TX, [2]USDA-ARS, Lubbock, TX, [3]Department of Agricultural Sciences, West Texas A&M University, Canyon, TX.*

This study investigated the effects of acute and chronic stress models on the functional capacity of blood neutrophils in beef steers. Steers (n = 32; 209 ± 8 kg) were blocked by BW and assigned to 1 of 3 treatments: (1) Control (CON), no dexamethasone (DEX); (2) Chronic stress (CHR), 0.5 mg/kg BW DEX administered i.v. at 1000 h on d 3 to 6; or (3) Acute stress (ACU), 0.5 mg/kg BW DEX administered i.v. at 1000 h on d 6 only. Multiple blood samples were collected from jugular catheters to profile hematology. A blood sample collected at 2 h after the 4th DEX injection in the CHR treatment and 2 h after the only DEX injection in the ACU treatment was analyzed for functional capacities of neutrophils, which included surface expression of L-selectin (CD62-L) and the phagocytic and oxidative burst capabilities to an environmental *Escherichia coli*. There was a treatment × time interaction ($P \leq 0.001$) for neutrophil concentrations in peripheral circulation. The concentration of neutrophils increased 24 h after the 1st DEX injection among the CHR steers when compared with CON (10.6 vs. $2.8 \pm 0.62 \times 10^6$/mL; $P \leq 0.001$) and remained greater until 72 h after the 4th DEX injection. Neutrophil concentrations also increased rapidly, within 2 h of the DEX, in the ACU steers. Treatment influenced ($P \leq 0.001$) the expression of L-selectin on the surface of neutrophils (119^a, 138^b, and $61^c \pm 5.2$ MFI) for CON, ACU, and CHR steers, respectively. The percentages of neutrophils phagocytizing and producing an oxidative burst were suppressed ($P \leq 0.001$) among the CHR steers only (72^a, 71^a, and $55^b \pm 4.2\%$), whereas the intensity of the oxidative burst was suppressed *(P* ≤0.001) for both ACU and CHR steers (170^a, 131^b, $63^c \pm 11.7$ MFI) for CON, ACU, and CHR steers, respectively. In contrast, the intensity of neutrophil phagocytosis was not influenced by treatment ($P = 0.439$). These data indicate that chronic DEX suppresses neutrophil L-selectin as well as neutrophil phagocytosis and oxidative burst, whereas the acute DEX may initially prime neutrophil L-selectin expression although the oxidative burst intensity was already partially suppressed.

Key Words: immunity, neutrophil, stress

M38 Transcriptome profiling of the endometrium of healthy beef cows postpartum. Robmay Garcia*, Dianelys Gonzalez-Pena, and Sandra L. Rodriguez-Zas, *University of Illinois at Urbana-Champaign, Urbana, IL.*

The uterine cervix remains open for 7 to 10 d postpartum, which facilitates bacterial infection resulting in $650M in losses to the US dairy industry. Understanding the molecular profiles of healthy endometrial involution and regeneration can help understand bacterial clearance and inflammation resolution mechanisms. The objective of this study is to characterize the endometrium transcriptome of beef cows at 15d and 30d postpartum. Individual paired-end reads libraries were mapped to the *Bos taurus* reference genome (Btau_4.6.1) using Tophat v2.0.12. In total 8,282 isoform transcripts pertaining to 8,124 genes were identified and 1002 isoform transcripts pertaining to 995 genes were found to be differentially expressed (false discovery rate-adjusted *P*-value <0.05) between 15d and 30d using Cufflinks v2.2.1. Among the top 50 differentially abundant transcripts T-Box 21 (TBX21), T cell receptor associated transmembrane adaptor 1 (TRAT1) and indoleamine 2,3-dioxygenase (IDO) were overexpressed at 15d relative to 30d. TBX21 controls the expression of the hallmark Th1 cytokine interferon-gamma IFNG. TRAT1 Stabilizes the TCR T-cell antigen receptor / CD3 complex at the surface of T-cells and IDO play a role in processes such as antimicrobial defense and immunoregulation. Functional analysis of the differentially expressed genes using DAVID identified 10 enriched (enrichment score >2) functional category clusters including the Gene Ontology molecular functions for regulation of cell death and apoptosis, cytokine and chemokine activity, inflammatory response; Gene Ontology biological processes of immune system development, leukocyte activation, proliferation and differentiation, among associated immunological. These categories confirm that endometrial involution elicits changes associated with the inflammatory response and immunological activation. Our results offer insights on the transcriptome changes during normal endometrium involution.

Key Words: endometrium, involution, transcriptome

M39 Cardiac damage assessment in beef cattle receiving different dosages of monensin in finishing diets as measured by Creatine-Kinase Myocardic kit. Ariel O. Miranda*[1], Oscar Frances[2], Hernan Romero Harry[1], and Anibal J. Pordomingo[1], *[1]INTA, Anguil, La Pampa, Argentina, [2]Fac. Cs. Vet. Gral Pico, Gral Pico, La Pampa, Argentina.*

Monensin (MN) has affinity for monovalent cations such as Na and disruption of Na dynamics in tissues could affect the permeability of cardiac muscle cells. High or continued doses of MN have been suggested to result in cardiac myopathy, blood stasis and interstitial pulmonary edema. The objective of this study was to evaluate cardiac damage, not clinically detected, using a Creatine-Kinase Myocardic (CK-MB) commercial kit. Thirty Angus × Hereford steers, (BW = 205 ± 12 kg) were used to evaluate the effect of 2 doses of dietary MN during finishing in feedlot. Steers were randomly allotted into 3 groups of 10 each for a feedlot period of 168 d. Group 1: un-supplemented MN (G1: Control, CO), group 2: supplemented with 1 mg of MN/kg of body weight (BW) (G2: 1 mg/kg) and group 3, supplemented with MN 1.5 mg of MN/kg of BW (G3: 1.5 mg/kg). Steers were weighed on d 0, 63, 98, 126 and 168, with blood sampling at each time. Steers that received MN were 25 and 30 kg heavier ($P < 0.05$) than the controls (G2 and G3, respectively). Concentration of CK-MB increased linearly ($P < 0.05$) for the 3 groups (Table 1). Treatment effects were not that evident. Concentration of CK-MB was greater for G3 than G1 and G2 on sampling at d 63 and 168 ($P < 0.05$). No macroscopic lesions either on lungs or cardiac muscle were observed at harvest.

Contd.

Table 1 (Abstr. M39). Concentration means and standard deviations for CK-MB throughout the trial

Group	Day 1	Day 63	Day 98	Day 126	Day 168
G1: Control	25.1 ± 10.0^{A}	40.4 ± 22.4^{A}	68.2 ± 9.0^{B}	89.6 ± 18.3^{B}	72.9 ± 20.3^{A}
G2: 1 mg/kg BW	32.1 ± 6.3^{A}	40.4 ± 14.7^{A}	49.0 ± 13.7^{A}	62.1 ± 22.5^{A}	61.2 ± 23.9^{A}
G3: 1.5 mg/kg BW	26.8 ± 13.1^{A}	61.7 ± 21.4^{B}	57.0 ± 11.3^{A}	76.4 ± 25.0^{A}	92.6 ± 18.4^{B}

^{A,B} Treatment means followed by different letters denote statistical differences at $P \leq 0.05$.

Key Words: beef, monensin toxicity, respiratory symptomatology.

M40 Estimating glucose requirements of an activated immune system in Holstein steers. Sara K. Stoakes*, Erin A. Nolan, David J. Valko, Mohannad Abuajamieh, Maria V. Sanz Fernandez, and Lance H. Baumgard, *Iowa State University, Ames, IA.*

Activated immune cells are obligate glucose utilizers and a large lipopolysaccharide (LPS) IV dose causes severe hypoglycemia. Therefore, study objectives were to use the quantity of glucose needed to maintain euglycemia during an IV bolus endotoxin challenge as a proxy for the immune system's glucose requirement. Fasting growing Holstein steers (148 ± 9 kg) were jugular catheterized bilaterally and assigned to 1 of 3 treatments: control (CON; 3 mL sterile saline; n = 5), LPS-infused (LPS; *E. coli* 055:B5; 1.5 μg/kg BW; n = 5), and LPS + euglycemic clamp (LPS-Eu; 1.5 μg/kg BW; 50% dextrose infusion to maintain euglycemia; n = 5). Following infusion, blood glucose was determined every 10 min and dextrose infusion rates were adjusted in LPS-Eu calves to maintain euglycemia for 12 h. Plasma samples were obtained 3, 6, 9, and 12 h relative to bolus infusion for further analysis. All calves survived the LPS challenge. Rectal temperature was increased in LPS (0.6°C, $P = 0.03$) and tended to be increased in LPS-Eu (0.5°C, $P = 0.06$) relative to CON calves. LPS and LPS-Eu calves were hyperglycemic for 3 h post-bolus, likely due to hepatic glycogenolysis. Thereafter, blood glucose was markedly decreased in LPS relative to both CON and LPS-Eu calves (30%, $P < 0.01$). Blood lymphocytes, and platelets were increased in LPS and LPS-Eu calves relative to CON (53 and 56%, respectively; $P < 0.01$). Ionized calcium was decreased in both LPS and LPS-Eu calves relative to CON (18%, $P < 0.01$). White blood cells decreased or tended to decrease in LPS-Eu and LPS (59%, $P = 0.03$; 44%, $P = 0.06$; respectively) relative to CON. During the 12 h, 516 ± 65 g of infused glucose was required to maintain euglycemia. If the amount of glucose required to maintain euglycemia can be used as a proxy, then the glucose requirements of an activated immune system are approximately 43 g/h in growing ruminants.

Key Words: lipopolysaccharide, immune challenge, glucose homeostasis

M41 A comparison of rumen bacterial communities in bloated and non-bloated cattle grazing alfalfa. Elnaz Azad*[1], Robert Forster[2], Surya Acharya[2], Tim McAllister[2], and Ehsan Khafipour[1], *[1]Department of Animal Science, University of Manitoba, Winnipeg, Manitoba, [2]Agriculture and Agri-Food Canada, Lethbridge Research Centre, Lethbridge, Alberta, Canada.*

To study bacterial shifts during the bloat process, 2 dietary interventions for alleviating the severity of bloat on rumen bacterial composition were studied in 12 rumen-cannulated cattle in a 3-phase crossover study. Cattle were subjected to 1 of 3 treatments: (1) pure alfalfa pasture (PA), (2) pure alfalfa pasture supplemented with Alfasure (AA), and (3) alfalfa/sainfoin mixed pasture (AS). A 7-d washout interval was provided between phases during which cattle received a baseline diet. Rumen liquid and solid fractions were collected from non-bloated (NB; bloat score = 0) and bloated (B; bloat scores = 1–3) cattle within each treatment group and subjected to genomic DNA extraction and Illumina sequencing of the V3-V4 regions of bacterial 16S rRNA gene. On average, 47,211 high-quality sequences were generated per sample. Taxonomic classification revealed the presence of 20 different bacterial phyla among which Bacteroidetes followed by Firmicutes, Fibrobacteres, Cyanobacteria, and Spirochaetes were identified as predominant (>1% of population) members of rumen microbiota. The PERMANOVA analysis of UniFrac distances revealed distinct ($P < 0.05$) clustering patterns when comparing PA(B), AA(NB) and AS(NB)-associated microbiota. Statistical analysis (LEfSe) of phylogenetic data for rumen liquid and solid fractions also revealed significant associations between several members of microbiota and treatment groups ($P < 0.05$; Table 1). Further investigation can focus on manipulation of rumen microbiota in favor of increased bloat-resistant functional properties.

Table 1 (Abstr. M41). Association of bacterial genera with treatment groups[1]

Genus	Phylum	Treatment group[2]
Rumen liquid fraction		
Succinivibrio	Proteobacteria	PA(B)
Succiniclasticum	Firmicutes	PA(B)
Butyrivibrio	Firmicutes	AS(NB)
Coprococcus	Firmicutes	AS(NB)
Fibrobacter	Fibrobacteres	AA(NB)
Ruminococcus	Firmicutes	AA(NB)
Rumen solid fraction		
Butyrivibrio	Firmicutes	PA(B)
Streptococcus	Firmicutes	PA(B)
Prevotella	Bacteroidetes	AS(NB)
Fibrobacter	Fibrobacteres	AA(NB)

[1]Linear discriminant analysis effect size (LEfSe) was used to test for significant associations ($P < 0.05$, and >3 log fold increase in the relative abundance).
[2]PA(B) = pure alfalfa (bloated); AS(NB) = alfalfa-sainfoin (non-bloated); AA(NB) = alfalfa-Alfasure (non-bloated).

Key Words: frothy bloat, alfalfa, rumen microbiota

M42 Efficacy of dosing toltrazuril 5% as a coccidiostatic for cattle. Rafahel C. Souza[1], Rogério C. Souza[1], Renato O. Santos[1], Sérvio V. G. Ribeiro[1], Andre B. D. Pereira*[3], Thiago M. Soares[2], and Maria I. V. Melo[1], *[1]Pontifícia Universidade Católica de Minas Gerais, Betim, MG, Brazil, [2]Ourofino Agronegocios, Cravinhos, SP, Brazil, [3]University of New Hampshire, Durham, NH.*

Coccidiosis is a protozoan disease that negatively affects animal production and can result in economic losses. *Eimeria* spp. is the most common parasite. Infection occurs mainly in young cattle and can lead to gastrointestinal problems and clinical signs as bloody diarrhea and hemorrhagic enteritis. The objective of this study was to evaluate fecal infestation and average daily gain of 100 Nelore heifers (Average weight of 191.22 kg) randomly distributed, as a completely randomized design, in 1 of 2 treatments: (1) Control (C, no coccidiostat), and (2) Treatment (T, dosage of 15 mg/kg of toltrazuril 5%, dosed once at weaning, 210 d after birth). The experiment was conducted in the Arrojo Farm (Teófilo Otoni, MG, Brazil). Animals were weighed in the first day of the experiment and then 30 and 60 d after. Fecal samples were collected

for laboratory analysis in the first and last days of the experiment, for counting oocysts per gram of feces (OOPG). Data were analyzed using the MIXED procedure of SAS and Tukey as post hoc tests for separation of means. Friedman nonparametric test was done for repeated analysis and count of OOPG. There was no difference between treatments for average daily gain (596 g/d for C and 656 g/d for T, $P > 0.05$). However, presence of OOPG was lower for cattle in the treatment group after 60 d when compared with samples from the beginning of the experiment ($P = 0.01$), which did not happen with the control group ($P = 0.86$). Results of this experiment suggest that toltrazuril 5% in the dose of 15 mg/kg can reduce parasite infestation in the gastrointestinal tract. Infestation in the beginning of the experiment was not deleterious enough to cause changes in average daily gain.

Table 1 (Abstr. 42). Effects of dosing 15 mg/kg of toltrazuril 5% to cattle

	Group			
Item	Control	Treatment	SEM	*P*-value
ADG, g/d[1]	596[a]	656[a]	247.67	NS
Oocysts per gram of feces, d 1	982.76[a,A]	988.89[a,B]	108.94	0.91
Oocysts per gram of feces, d 60	786.21[a,A]	730.56[a,A]	113.34	0.30

[a,b, A,B]Values with lowercase letters indicate differences between treatments; those with uppercase letters indicate difference between d 1 and 60 (Friedman nonparametric test).
[1]Tukey post hoc test.

Key Words: toltrazuril, coccidiosis, oocysts per gram of feces

M43 In vitro evaluation of the antimicrobial activity of plant extracts from *Ruta graveolens* and *Annona muricata*. Yadileiny Portilla[1], María Dolores Carro[2], Grethel Milián[1], Conrado Camacho[1], Aymara Valdivia[1], Alexey Díaz[3,4], Cristina Saro[3], Iván Mateos[3], and María José Ranilla*[3,4], *[1]Center for Biotechnological Studies, University of Matanzas, Matanzas, Cuba, [2]Agriculture Production Department. Technical University of Madrid, Madrid, Spain, [3]Animal Production Department. University of León, León, Spain, [4]4IGM (CSIC-ULE). Finca Marzanas s/n, Grulleros, León, Spa.*

Resistance of microorganisms to commercial drugs is increasing worldwide, and therefore the search for new antimicrobial agents is a key issue. The aim of this study was to identify the potential of plant extracts from *Ruta graveolens* and *Annona muricata* as candidates for the development of new antimicrobials. Plant extracts were obtained by the Soxhlet method and their biological evaluation was carried out by the agar diffusion method, with 4 doses assayed (6.25, 25, 50 and 100 mg/mL) and 4 replicates per dose. Eight bacterial strains from American Type Culture Collection (ATCC) were tested: *Escherichia coli* O157 (ATCC 43894), *Streptoccocus agalactiae* (ATCC 13813), *Salmonella enteritidis* (ATCC BBA664), *Enterobacter aerogenes (*ATCC 13048), *Staphylococcus aureus* (ATTC 13565), *Klebsiella pneumoniae* (ATCC 4352), *Proteus mirabilis* (ATCC 14153) and *Proteus vulgaris* (ATCC 9484). Extracts from both plants showed antibacterial activity against all bacteria tested, with the exception of *A. muricata* extract against *S. enteritidis*. Minimum inhibitory concentration for both extracts was 6.25 mg/mL for *E. aerogenes*, *S. agalactiae*, *S. aureus*, and *K. pneumoniae*, 25 mg/mL for *E. coli*, *P. mirabilis*, and *P. vulgaris*, and 50 mg/mL of *R. graveolens* for *Salmonella enteritidis*. There were no differences between extracts in their antibacterial activity against *P. vulgaris* ($P = 0.91$) and *K. pneumoniae* ($P = 0.37$), but *R. graveolens* extract showed greater ($P < 0.001$) antibacterial activity against *E. coli* and *S. agalactiae* than *A. muricata* extract, and a trend was also observed for *E. aerogenes* ($P = 0.064$). In contrast, *A. muricata* extract tended to have greater ($P = 0.094$) antibacterial activity against *P. mirabilis* compared with *R. graveolens* extract. The results suggest that these extracts have active ingredients that could help to develop new antimicrobial products for the improvement of animal production and health.

Key Words: *Ruta graveolens*, *Annona muricata*, gram-positive

M44 OmniGen-AF affects expression of immune-related genes in whole blood of healthy Angus heifers. S. A. Armstrong*[1,2], D. J. McLean[1], T. H. Schell[1,2], G. Bobe[2], and M. Bionaz[2], *[1]Phibro Animal Health, Corvallis, OR, [2]Department of Animal and Rangeland Sciences, Oregon State University, Corvallis, OR.*

Purebred Angus heifers were used to determine the effect of OmnniGen-AF (OG) supplementation on expression of cytokines, chemokines, and associated receptors involved in the inflammatory response in whole blood cells of healthy Angus heifers within the first 28 d of supplementation. Heifers were randomly assigned to control or supplemented daily with 56 g OG group (n = 4/group), and fed a diet including grass hay, alfalfa and ground corn. Heifers were housed in a freestall barn and fed via Calan Broadbent system. Blood was collected via jugular before the study started (0) and on d 3, 5, 10, 14, 21, and 28 of supplementation. The qRT-PCR was performed using the Cow Inflammatory Cytokines and Receptor qPCR array (Qiagen). Data were analyzed using LinReg software to account for efficiency of amplification and normalized by 3 internal control genes (*HPRT1*, *TBP*, and *YWHAZ*). qRT-PR data were log-transformed and the samples with Studentized residuals $t > 2$ removed. The final data set (82 genes) was subjected to ANOVA analysis with treatment, time, and treatment × time as main effect and animal as random using JMP Genomics of SAS. Significance was deemed with a false discovery rate-adjusted *P*-values < 0.10. Genes coding for chemokine receptors (*CX3CR1, CXCR1*), stress response (*NAMPT*), osteoclastogenesis (*TNFRSF11B*), and angiogenesis (*VEGFA*) were affected by treatment x time. Thirteen genes coding for interleukins and interleukin receptors (*IL1B*, *IL9, IL1RN*, *IL1R1, IL10RB*, *IL10RA*), chemokine ligand and receptors (*CCR2*, *CXCL2, CXCR1, CCL26, CCR1*), macrophage function (*CSF1*), and secondary immune response (*BMP2*) were downregulated and *CCL1* was upregulated by OG supplementation. Of the 23 receptors evaluated, 9 (39%) were influenced by OmniGen supplementation. Overall, the data suggest a transcriptional inhibition of genes related to inflammatory response by OG during the first 28 d of supplementation of healthy Angus heifers.

Key Words: OmniGen-AF, immune, cytokine

M45 Influence of hydrolysable tannin extract on nematode egg count in feces of receiving beef cattle. Melissa B. Corona[1], Eva X. Murillo[1], Billy J. Cervantes[2], Nohemi Castro[1], Javier A. Romo[1], Soila M. Gaxiola[1], and Rubén Barajas*[1], *[1]FMVZ-Universidad Autónoma de Sinaloa, Culiacán, Sinaloa, México, [2]Ganadera Los Migueles, S.A. de C.V., Culiacán, Sinaloa, México.*

The nematode parasites decline productivity of beef cattle. The nematode egg count is decreased in feces of cattle grazing plants with high hydrolysable tannin content. There is little information of effect of added tannins to the diet on nematodes presence in beef cattle. In this experiment 40 receiving bull-calves were involved to determine the influence of hydrolysable tannin extract on nematode egg count in feces of receiving beef cattle. Bull-calves were placed in 8 dirt-floor pens, and during 3 continuous days, fecal samples were taken from each. They were randomly assigned to treatments: (1) 70% roughage (16.1% CP; 1.27 Mcal NE_m/kg DM) corn silage-based diet (Control); (2) Control

plus 1.5% of hydrolysable tannin extract DM basis (HT). After 28 d on treatment diets, fecal samples were taken during 3 continuous days again, and nematode eggs per gram of feces (EGF) were counted. Before statistical analyses, data were normalized by transforming to $\log_{10} x + 17$ EGF. Results were analyzed by ANOVA for a completely randomized design. Additionally, both in Control and HT, EGF before and after treatments were compared using paired *t*-test. *Haemonchus* spp. and *Cooperia* spp. were most frequently genus found (82.5 and 75%, respectively). At start of experiment *Haemonchus* spp. EGF was similar (223 ± 77 EGF) between treatments ($P > 0.87$). After 28 d of receiving treatments, HT decreased 67.9% ($P = 0.02$) *Haemonchus* spp. EGF comparatively with Control (62 vs. 196 EGF). The paired *t*-test results indicated that *Haemonchus* spp. EGF were similar ($P = 0.47$) before and after in Control, but in HT were 70% lower ($P < 0.01$) after treatments (210 vs. 62 EGF). At arriving *Cooperia* spp. EGF was similar between treatments ($P = 0.94$), but after 28 d, EGF count was reduced 67.8% ($P = 0.04$) by HT relative to Control (39 *vs*. 122 EGF). The paired *t*-test indicated that in Control, EGF count was similar before and after 28 d ($P = 0.29$), but in HT EGF decreased ($P < 0.01$) 53% (64 vs. 136 EGF). Results suggest that HT addition in to the diet contributes to decrease fecal shedding of nematode eggs in receiving feedlot cattle.

Key Words: bovine, nematode, tannin

M46 Effects of bambermycin or monensin on health and performance of receiving cattle. William Galyen*[1], Tom Hess[2], Don Hubbell[2], Shane Gadberry[3], Elizabeth Kegley[1], Matt Cravey[4], Jeremy Powell[1], Elizabeth Backes[1], Laura Meyers[1], and Paul Beck[5], *[1]University of Arkansas Department of Animal Science, Fayetteville, AR, [2]University of Arkansas LFRS, Batesville, AR, [3]University of Arkansas Cooperative Extension Service, Little Rock, AR, [4]Huvepharma, Inc, Amarillo, TX, [5]University of Arkansas SWREC, Hope, AR.*

Growing steers and bulls, were received in 3 blocks (Block 1, n = 150, BW = 208 ± 12.4 kg; Block 2, n = 99, BW = 213 ± 16.7 kg; Block 3, n = 149, BW = 219 ± 14.9 kg) to evaluate the effects of supplying 20 mg of bambermycin (Gainpro; Huvepharma, Inc., Sofia Bulgaria) or 0.77 mg/kg BW monensin (Rumensin; Elanco Animal Health, Indianapolis IN) in receiving supplements (20% CP and 78% TDN) compared with non-medicated supplements (Control) on cattle morbidity, performance, and coccidia infection. Upon receiving, bulls were castrated, and calves were weighed on 2 consecutive days. Calves were then stratified by BW and arrival castrate status and randomly allocated to receiving pens (n = 12–0.4 ha pens in Block 1 and n = 6 pens in Blocks 2 and 3). Calves received 0.9 kg of supplement daily and ad libitum access to moderate quality hay. Fecal samples were collected from 6 steers/pen on d 0, 14, and 28 to evaluate coccidia infection. Water in the Gainpro pens was treated from d 14 to d 19 with 10 mg/kg BW amprolium (Corid; Merial, Duluth GA). Steers remained on treatment for 56 to 84-d for Block 1, 49-d for Block 2 and 42-d for Block 3. Data were analyzed as a randomized complete block design using the mixed procedure of SAS (SAS Inst. Inc., Cary, NC). Cocci counts were log-transformed before analysis as a repeated measure in time. There were no differences ($P \leq 0.36$) in morbidity, mortality, or animals identified as chronically morbid. There was no treatment by day interaction ($P = 0.12$) for cocci oocysts counts, and monensin decreased coccidia ($P \leq 0.03$) compared with Control and bambermycin, which did not differ ($P = 0.85$). No cattle were observed with or treated for symptoms of coccidiosis (bloody scours and diarrhea). At the end of receiving, BW and ADG for Control (237 ± 5.1 kg/steer and 0.49 ± 0.272 kg/d, respectively) was less than ($P \leq 0.04$) bambermycin (243 ± 5.1 kg/steer and 0.60 ± 0.272 kg/d) and monensin (247 ± 5.1 kg/steer and 0.68 ± 0.272 kg/d), and monensin tended ($P \leq 0.10$) tended to be greater than bambermycin. The results of this experiment indicate both bambermycin and monensin increased receiving cattle gain performance compared with Control, and monensin also provided greater benefits in reduction of coccidia counts.

Key Words: bambermycin, monensin, receiving steers

M47 Influence of *Papaveraceae* plant preparation on nematode egg count in feces of receiving bull-calves. Rubén Barajas*[1], Melissa B. Corona[1], Eva X. Murillo[1], Billy J. Cervantes[2], Ingo Rogge[3], Nohemi Castro[1], and Luis E. Soto[4], *[1]FMVZ-Universidad Autónoma de Sinaloa, Culiacán, Sinaloa, México, [2]Ganadera Los Migueles, S.A. de C.V., Culiacán, Sinaloa, México, [3]Phytobiotics Futterzusatzstoffe GmbH, Eltville, Germany, [4]FA-Universidad Autónoma de Sinaloa, Culiacán, Sinaloa, México.*

Quaternary benzophenanthridine alkaloids and protopine alkaloids (QBA + PA) have systemic anti-inflammatory effects. However, its activity against nematode parasites of the gastro intestinal tract is not well documented. In the actual experiment, 20 receiving bull-calves 236 ± 4.12 kg were utilized to evaluate the influence of a standardized QBA + PA *Papaveraceae* family plant preparation named Sangrovit RS (SANG; Phytobiotics, Eltville, Germany) on fecal shedding of parasitic nematode eggs. In groups of 5, bull-calves were allotted in dirt-floor pens, fed with 70% roughage corn silage-diet. During 3 consecutive days fecal samples were taken from each animal and nematode eggs per gram of feces (EGF) were counted by McMaster method. Pens were randomly sorted to receive 10 g/d of Sangrovit RS (SANG) or not (Control) supplied on the feed bunk as top dressing. Once completed the 28 d period treatments, fecal samples were taken again during 3 consecutive days, and EGF count was performed. Results were analyzed by ANOVA for a completely randomized design. In fecal samples taken before applied treatments, the nematode EGF count was similar ($P > 0.30$) between treatments. After 28 d total nematode EGF was lower ($P = 0.04$) in the SANG group compared with the Control group (33 vs. 113 EGF). The amount of *Haemonchus* sp. EGF (an abomasum parasite) was lower ($P = 0.05$) in bull-calves fed SANG compared with Control group (12 vs. 48 EGF). The EGF count of *Cooperia* spp., a parasite of the small intestine, was inferior ($P = 0.03$) in SANG supplemented bull-calves in relationship to unsupplemented bull-calves (13 vs. 52 EGF). Results suggest that fed QBA + PA plant preparation contributes to decrease parasites nematode eggs shedding in receiving bull-calves.

Key Words: bovine, nematode, alkaloid

M48 Effect of Safeguard on fecal egg count and performance in received beef calves. Antonio Jose Neto*[1], Curt J. Bittner[1], Galen E. Erickson[1], and Brandon L. Nuttelman[2], *[1]Department of Animal Science; University of Nebraska, Lincoln, NE, [2]Merck Animal Health, De Soto, KS.*

Parasite infestations can reduce or limit feed intake and subsequently depress the performance due to decreased absorption of nutrients. Fenbendazole (Safeguard, Merck Animal Health) is indicated for use in cattle for removal and control of lungworms, stomach worms and intestinal worms. The objective of this study was to measure the effects of Safeguard on fecal egg count (FEC) and performance of newly received calves in the feedlot over the first 25 d. Treatments were applied to steers at arrival and were: Safeguard and Doramectin (Dectomax, Zoetis Animal Health) injectable (SG+DTX) or only Dectomax injectable (DTX). Three hundred sixty-eight (265 ± 20 kg) steers were used in a completely randomized design with 16 pens (8 replications per

treatment and 23 steers per pen). The basal diet consisted 30% dry-rolled corn, 36% sweet bran), 30% alfalfa hay, and 4% supplement. Steers were assigned to pen based on processing order, with every other steer assigned to either SG+DTX or DTX. Once a pen replicate was filled, new pen replicates were started until all steers were assigned. On d 1, steers were weighed, and individual fecal sample collected. On d 19, fecal samples were collected per pen (10 samples/pen). Fecal samples were analyzed for FEC at a commercial laboratory. At the end of the receiving period, steers were limit-fed a diet consisting of 50% sweet bran and 50% alfalfa hay at 2% of BW for 5 d before being weighed. Data were analyzed using the Proc MIXED of SAS, with pen as the experimental unit. There were no differences in initial BW ($P = 0.13$), ending BW ($P = 0.33$), DMI ($P = 0.41$), ADG ($P = 0.94$), and G:F ($P = 0.43$) between SG+DTX or DTX. No difference for initial FEC ($P = 0.45$) was observed between treatments and averaged 16.9 eggs per 3 g of feces. However, FEC on d 19 was lower ($P = 0.03$) for animals receiving SG+DTX (FEC = 0.06 eggs per 3 g feces) compared with DTX (FEC = 0.50 eggs per 3 g feces). A combination of Safeguard and Dectomax reduced FEC of newly received calves in feedlot.

Key Words: dewormer, fecal egg count, performance