2415V Cryptosprodiosis treatments in naturally infected dairy calves. E. Miqueo[1,2], L. Fazzio[3], G. Mattioli[3], D. Moore[1,2], and A. Relling*[4], [1]*Universidad Nacional de Mar del Plata, Balcarce, Buenos Aires Argentina,* [2]*Consejo Nacional de Investigaciones Científicas y Técnicas, Balcarce, Buenos Aires Argentina,* [3]*Universidad Nacional de La Plata, La Plata, Buenos Aires Argentina,* [4]*The Ohio State University, Wooster, OH.*

Our objective was to evaluate therapeutic alternatives on body weight (BW), days (d) until diarrhea onset, and duration of the diarrhea episodes in Holstein calves naturally infected with Cryptosporidium parvum (confirmed by Kinyoun stain). Dairy calves (n = 87) from eutocic calvings were included in this experiment. Calves were fed 4 L of colostrum within 4 h of birth, after which they were individually housed with free access to water and starter and fed 6 L of whole milk daily in 2 meals. In the 8th week of life, they were abruptly weaned. Calves were blocked according to dam parity number and calving date, and distributed in the following treatments (n = 29 per treatment): 1. Calves treated orally with halofuginone lactate 0.5% from d 2 to 9 of life (HL; orally 100 µg/kg BW; Halocur MSD); 2. Calves supplemented at birth, 21 and 56 d, with a commercial injectable solution of microelements and vitamins (MV; copper, zinc, manganese, selenium, vitamin A and E; subcutaneous 1mL/50kg BW of each one, ADAPTADOR MIN / ADAPTADORVIT, Biogenesis Bagó); 3. Control group (CTL). Daily milk and starter intake was recorded. Visual appraisal fecal score (from 1 to 5; where a score = 3 was considered diarrhea) was registered every day since birth. Weekly, and before the morning feeding, calves were weighed until the 9th week of life. Data were analyzed as a randomized complete-block design using a mixed model. There was a tendency (P = 0.09) on when the first episode of diarrhea was observed (9.6, 8.3, and 7.7 ± 0.58 d for HL, MV, and CTL, respectively). The duration of first episode of diarrhea was shorter in HL group (4.5, 6.7, and 8.7 ± 1.17 d for HL, MV and CTL, respectively; $P < 0.01$). However, HL group had a greater number of total episodes (3.3, 1.9, and 2.2 ± 0.3 episodes for HL, MV, and CTL, respectively; $P < 0.01$) although of shorter duration than in the other treatments (3.4, 6.8, and 5.3 ± 0.48 d for HL, MV, and CTL, respectively; $P < 0.01$). Feed intake was greater for HL calves (1.16, 1.05, and 1.1 ± 0.07 kg/d for HL, MV, and CTL, respectively; $P = 0.04$). Although BW was not influenced by treatment ($P = 0.25$). Treating calves with HL can improve some fecal parameters and improve some growing features during the milk-feeding period.

Key Words: *Cryptosporidium*, minerals and vitamins, halofuginone

2416V 15-F_{2t}-Isoprostane favors an anti-inflammatory macrophage phenotype during endotoxin challenge. A. Putman* and G. A. Contreras, *Michigan State University, East Lansing, MI.*

Dysregulated inflammation is a major underlying component of several economically important diseases of dairy cattle. Macrophages are critical effector cells in immune responses, functioning to progress and resolve inflammation during such diseases. These mononuclear cells regulate inflammatory responses by exhibiting a range of phenotypes. Furthermore, macrophages are a primary source of isoprostanes (IsoP), a nonenzymatic by-product of lipid peroxidation during inflammation. As highly sensitive and specific indicators of lipid damage, IsoP are the gold standard biomarker of oxidative stress. However, the physiological role of IsoP during inflammation is currently not well established. This study determined how IsoP affect macrophage phenotype during lipopolysaccharide (LPS) challenge. RAW 264.7 macrophages (n = 7) were challenged with 5 ng/mL LPS or untreated media for 8 h, followed with or without 500 nM 15-F_{2t}-IsoP for 1 h. Macrophage phenotype was determined using metabolic, transcriptomic, and proteomic markers. Phenotypic markers assessed included ATP production; proinflammatory *iNOS*, *IL1β*, and IL6; and anti-inflammatory *IL10,* IL10, G-CSF, and IL17. Statistical analyses included a one-way ANOVA followed by Tukey's posthoc test ($P < 0.05$). In combination with LPS, 15-F_{2t}-IsoP increased ATP production 37% relative to LPS-only treated cells. Additionally, gene expression of *iNOS* and *IL1β* were decreased while *IL10* was increased. Cytokine expression of IL6 was decreased 12% and IL10, G-CSF, and IL17 were increased 13, 38, and 7%, respectively. Collectively, these results provide evidence that 15-F_{2t}-IsoP promotes an anti-inflammatory macrophage phenotype during LPS challenge. These data support a novel physiological role of IsoP, where these lipid mediators may participate in healing pathways during late-stage inflammation when they are elevated. Additionally, the promotion of an anti-inflammatory macrophage phenotype may be beneficial to cow health and wellbeing. Future studies should be directed toward defining the mechanisms in which IsoP exert their action on macrophages, such as receptor interactions and downstream signaling pathways.

Key Words: inflammation, isoprostane

2417V Exogenous galectins activate innate and adaptive immune response gene expression in cow blood. M. Worku* and H. Ismail, *North Carolina A&T State University, Greensboro, NC.*

Galectins (Gals) are a family of animal lectins that bind β-galactosides through a carbohydrate recognition domain. At least 15 gal are secreted intracellularly and extracellularly. They are involved in cell adhesion, migration, activation, proliferation, apoptosis, and they modulate pathological processes such as inflammation. Little is currently known about the effect of secreted Gals on gene expression in cow blood. The objective of this study was to evaluate the transcriptional effects of structurally different Gals 1(Prototype), Gal 3 (chimera type) and Gal 9 (tandem-repeat type) on immune response genes transcription in cow blood. Blood was collected aseptically from Holstein-Friesian cows (n = 3) from the North Carolina A&T State University Dairy Unit. Blood was treated with 50µg/ml of recombinant galectin(rGal) 1, 3 and 9, or PBS as control and incubated (37°C, 5% CO2 for 30 min). Total RNA was extracted, reverse transcribed, and RT-qPCR was performed using the RT^2 Profiler Human Innate & Adaptive Immune Responses Array with 84 genes. Gene expression was analyzed based on the fold change (FC) using the PBS treated sample as a reference (FC > 2 and $P < 0.05$ is considered significant). Exogenous rGal differentially impacted immune response gene expression in cow blood. Treatment with rGAL1, rGAL3, and rGAL9 changed transcription of 4 genes (all downregulated), 10 genes (2 up and 8 down) and 14 genes (6 up and 8 down) respectively. Structurally distinct Gal modulate unique and overlapping targets in the immune response. Treating bovine blood cells with rGal (1, 3 and 9) differentially modulated immune gene expression. Further studies on functional implications for animal health are warranted.

Key Words: galectin, immunity, cow

2418V The effects of administration of acetylsalicylic acid to dairy cows after calving on milk yield and health performance.