

T11 Gastrointestinal nematode infection in Nelore and cross-bred cattle. M. C. S. Oliveira*¹, M. C. D. Beraldo², E. Nakandakari³, L. Boschini¹, M. M. Alencar¹, R. Giglioti⁴, A. C. S. Chagas¹, B. Rubert⁵, S. C. Bogni², and A. M. G. Ibelli⁵, ¹Embrapa Pecuária Sudeste, São Carlos, SP, Brazil, ²UNICEP, São Carlos, SP, Brazil, ³Uniará, Araquara, SP, Brazil, ⁴UNESP, Jaboticabal, SP, Brazil, ⁵UFSCAR, São Carlos, SP, Brasil.

Cattle nematodes in Brazil are mainly controlled through application of anthelmintics. However, this causes concern about the presence of drug residues in meat and dairy products, prompting studies of alternative control methods. Among these, the use of animals that are genetically resistant is a very promising complementary strategy. Resistance to gastrointestinal nematodes was compared in males and females Nelore (NI, n = 28) and a 3 breed cross, 1/2 Angus 1/4 Canchim (5/8 Charolais + 3/8 *Bos indicus*) + 1/4 Nelore (TC, n = 17) that were born from October to December 2008. The animals were kept without treatment, in rotational paddocks of Tanzania grass. Monthly collections were conducted totaling 810 observations (August 2009 to January 2011). The feces samples were collected from each animal for fecal cultures and determination of the number of eggs per gram of feces (EPG). Blood samples were collected monthly for packed cell volume determination (PCV) that was an indicator of animal health. The count data of EPG were submitted to log₁₀ (n+1) transformation. The data were analyzed using the MIXED procedure of SAS (2002–2003), according to a model considering repeated measures on the animal, structured with a compound symmetry variance matrix, and also included the effects of genetic group, sex, month/year of collection and 2-way interactions involving these 3 factors. The means of PCV were significantly higher ($P < 0.01$) for NI animals (40.6%) compared with TC (38.6%). No significant effects of genetic groups or interaction between the genetic groups and month/year of collection on the EPG were found, but there was a significant influence of the month/year of collection ($P < 0.01$). The following nematode genera were found in the coprocultures: *Haemonchus*, *Cooperia*, *Esophagostomum* and *Trichostrongylus*, the latter in smallest proportion. There was no significant difference between the genetic groups for averages of all parasites identified, except *Cooperia*, which were present in higher numbers in the animals of the NI group ($P < 0.05$). These data confirm previous findings that showed greater susceptibility of purebred Nelore animals to *Cooperia*.

Key words: nematodes, resistance, cattle

T12 Concentrations of haptoglobin in bovine plasma determined by ELISA or a colorimetric method based on peroxidase activity. R. F. Cooke*¹, B. I. Cappellozza¹, F. N. T. Cooke¹, D. W. Bohnert¹, and J. D. Arthington², ¹Oregon State University–Eastern Oregon Agricultural Research Center, Burns, ²University of Florida–Range Cattle Research and Education Center, Opa.

Our laboratory determines plasma concentrations of haptoglobin using a low-cost colorimetric procedure that measures haptoglobin-hemoglobin complexing by estimating differences in peroxidase activity (CPPA). Results are expressed as arbitrary units based on absorption readings, given that the CPPA method does not contain a standard curve. Conversely, commercially available ELISA methods generate results based on standards with known haptoglobin concentrations. Therefore, the objective of this study was to determine if the CPPA method generates results compatible with a commercial ELISA kit. Nine Angus steers were vaccinated against *Mannheimia haemolytica* (One Shot, 2 mL s.c) to stimulate an acute-phase response and blood samples were collected before vaccination (d 0), and on d 1, 3, 5, 7,

and 10. Plasma samples were frozen in triplicates at -80°C . One set of the triplicates was analyzed for haptoglobin concentrations using the CPPA procedure. A day effect was detected ($P < 0.01$) given that haptoglobin peaked on d 1, 3, and 7 relative to vaccination. A second set of the triplicates was analyzed using a commercial ELISA kit. A similar day effect ($P < 0.01$) was detected. When Pearson coefficients were calculated among results obtained from CPPA and ELISA methods, a strong correlation was detected ($r = 0.98$; $P < 0.01$). Based on the ELISA results, the plasma sample with the greatest haptoglobin concentration was serially diluted with PBS (1:1 through 1:32 dilution) and used as known reference to generate a standard curve for samples from the third set of triplicates analyzed with the CPPA method. A linear standard curve was generated ($r^2 = 0.99$) and a day effect ($P < 0.01$) was again detected. However, the values generated by the CPPA procedure with standard curve differed ($P < 0.01$) when compared with those generated by ELISA. In conclusion, assessing concentrations of haptoglobin in bovine plasma using the CPPA method yields results highly correlated to ELISA. Therefore, the CPPA method can be adopted to evaluate plasma haptoglobin concentrations in cattle when absolute values are not required.

Key words: bovine, haptoglobin, assay

T13 Feed and water restriction elicits an acute-phase protein response in beef cattle. B. I. Cappellozza*, R. F. Cooke, C. Trevisanuto, V. D. Tabacow, F. N. T. Cooke, and D. W. Bohnert, *Oregon State University–Eastern Oregon Agricultural Research Center, Burns.*

The acute-phase protein response is an important component of the innate immune system, but can be highly detrimental to cattle productivity. A comprehensive understanding of the causes and mechanisms that stimulate the bovine acute-phase protein response is required for development of management strategies to modulate this immune reaction. Therefore, the objective of this study was to determine if feed and water restriction stimulates an acute-phase protein response in overtly healthy beef steers. Nine Angus \times Hereford steers were ranked by initial BW (average 244 ± 8 kg) and assigned to 1 of 2 treatments: 1) CONT - ad libitum access to feed and water during the study (d 0 to d 10), and 2) RESTR - feed and water restriction for 24 h (d 0 to d 1 of the study) and subsequent ad libitum access to feed and water (d 1 to d 10). Blood samples were collected from all steers on d 0 (before restriction period), 1 (at the end of the restriction period), 3, 5, 7 and 10. Samples were harvested for plasma, and immediately stored at -80°C until analyzed for concentrations of haptoglobin and ceruloplasmin. Hay DMI was evaluated daily by measuring refusals. Results were analyzed with the MIXED procedure of SAS. Plasma haptoglobin concentrations tended to be greater ($P = 0.06$) for RESTR steers compared with CONT on d 3 of the study (6.35 vs. 4.62 absorbance at $450 \text{ nm} \times 100$, respectively). Plasma ceruloplasmin concentrations tended to be greater ($P = 0.15$) for RESTR steers compared with CONT on d 3 (18.0 vs. 14.4 mg/dL, respectively) and d 7 of the study (19.3 vs. 15.8 mg/dL, respectively). A treatment \times day interaction was detected ($P = 0.01$) for hay DMI because RESTR steers had greater ($P < 0.01$) hay DMI on d 1 (2.98 vs. 1.97% of BW, respectively) and tended to have greater ($P = 0.11$) hay DMI on d 2 (2.74 vs. 2.32% of BW, respectively) compared with CONT steers. Results from this study indicate that feed and water restriction elicits an acute-phase protein response in overtly healthy beef cattle, which may detriment subsequent health and productivity parameters.

Key words: acute-phase proteins, feed and water restriction, beef cattle