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1649 Effect of ruminal inoculum from bison or cattle on in vitro gas production, feed digestibility, and responses to exogenous enzyme supplementation. Z. X. He^{1,2}, G. O. Ribeiro Jr.¹, V. Bremer³, K. A. Beauchemin¹, T. A. McAllister¹, and W. Z. Yang^{*1}, ¹Lethbridge Research and Development Centre, Agriculture and Agri-Food Canada, Lethbridge, Canada, ²Key Laboratory for Agro-Ecological Processes in Subtropical Region, Hunan Research Center, The Chinese Academy of Sciences, Changsha, China, ³Elanco Animal Health, Greenfield, IN.

The objective of this study was to evaluate the effects of increasing the proportion of inoculum from bison vs. cattle with and without feed enzyme (FE) supplementation on in vitro fermentation of barley straw (BS), alfalfa hay (AH), and wheat dried distillers grain with solubles (DG). Two batch culture runs were conducted for each substrate examined. Barley straw and AH were ground through a 1-mm screen and DG was incubated as-is. In run 1, inocula were prepared by combining rumen fluid (vol/vol) of cattle fed a diet containing 70% BS and 30% concentrate (DM basis) and bison rumen fluid (unknown diet) at ratios of 100:0, 67:33, 33:67, and 0:100, respectively. The substrates were incubated for 96 h to determine gas production (GP) kinetics with gas pressure recording at 3, 6, 9, 12, 24, 36, 48, 72, and 96 h. Additionally, DM disappearance (DMD) was determined in run 2. Each run was a completely randomized design without or with FE addition at a rate of 2.0 µL/g substrate DM. The FE was a xylanase–glucanase commercial blend. Asymptotic GP (ml/g DM) of BS (254) and AH (263) was not affected, whereas that of DG responded quadratically (244, 240, 238, and 260; $P < 0.04$) with increasing bison inoculum. Rate of GP (%/h) also responded quadratically for BS (1.6, 1.6, 1.2, and 1.7%/h; $P < 0.01$) and AH (3.0, 3.0, 2.7, and 3.0%/h; $P < 0.03$) with increasing bison inoculum. Lag time of GP linearly ($P < 0.01$) decreased for BS (0.58, 0.93, 0.22, and 0.07 h), AH (0.63, 0.61, 0.29, and 0 h) and DG (0.21, 0.64, 0.11, and 0 h) with increasing bison inoculum. A quadratic ($P < 0.02$) response of DMD (31, 36, 35, and 34%) of BS to increasing bison inoculum was observed, whereas DMD of AH (55, 54, 51, and 51%) and DG (59, 58, 56, and 56%) linearly ($P < 0.01$) decreased. Addition of FE improved ($P < 0.05$) DMD of DG. Compared to cattle inoculum, bison inoculum did not enhance in vitro GP or DMD of the substrates examined. However, the mixture of cattle and bison rumen inocula did appear to synergistically reduce the lag time of GP and improve the DMD of BS. It suggests that the cattle rumen inoculum may lack certain enzymes that were present in the bison inoculum to digest BS, and that these enzymes were not provided by the FE examined.

Key Words: gas production, in vitro digestion, rumen inocula

1650 Ruminal fermentation from Nellore steers supplemented with additives in the rainy season. E. E. Dalanttonia^{*1}, J. F. Lage², E. San Vito¹, P. D. S. Castagnino³, L. Maneck Delevatti⁴, R. A. Reis⁵, and T. T. Berchielli⁶, ¹Universidade Estadual Paulista Júlio de Mesquita Filho-UNESP, Jaboticabal, Brazil, ²Trouw Nutrition Brazil, Campinas, Brazil, ³UNESP JABOTICABAL, Jaboticabal, Brazil, ⁴UNESP, Jaboticabal, Brazil, ⁵Sao Paulo State University, Jaboticabal, Brazil, ⁶São Paulo State University-UNESP, Jaboticabal, Brazil.

This trial aimed to evaluate the ruminal parameters (pH, ammonia-N and the VFA production) from animals fed supplements with monensin (MON), virginiamycin (VM) or both associated, in the rainy season. Twelve steers cannulated in the rumen (518.42 ± 55.40 kg) were housed in 12 paddocks (one animal on each paddock) of *Brachiaria* cv. ‘Xaraés’ and supplemented daily in 0.3% of BW. The diets were: supplement without additives (SUP), with MON (SUPM- 80 mg/kg), with VM (SUPV- 150 mg/kg) and supplement with MON and VM (SUPMV- 80 and 150 mg/kg, respectively). There were four experimental periods of 28 d (27 d for adaptation and 1 d for sampling). Animals were housed continuously in the paddocks with animals used in a trial for performance evaluating. Ruminal pH, ammonia-N, and VFA were measured on samples taken over a 12 h on Day 28 of each experimental period. Ruminal content was obtained at 0, 2, 4, 6, 8, 10, and 12 h after the period of feeding (1000 am). Data were analyzed as a completely randomly design with three replicates by treatment on each period, using the MIXED procedure of SAS. The pH, ammonia-N and VFA were analyzed as a repeated measure. The means of least squares were generated and compared ($P < 0.05$) by Tukey test. The ruminal pH from animals supplemented with additives were greater than animals supplemented without additives ($P < 0.01$), already for the concentrations of ammonia was not significant effect ($P = 0.09$). The acetate ($P < 0.01$) and propionate concentrations ($P < 0.01$) were lower in animals supplement with additives than animals supplemented without additives. However, the A:P ratio did not change ($P = 0.13$) with the inclusions of additives in supplements. The inclusion of MON, VM or both associated in supplements to fed steers on pasture in the rainy season increases the ruminal pH, decreases the acetate and propionate concentrations without affect the A:P ratio.

Key Words: monensin, pasture, propionate, ruminal pH, virginiamycin