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Área do trabalho: Nutrição e Produção de Não-Ruminantes

Gas production curve of Tifton 85 hay at two stages of maturity by equids

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In vitro incubations must adhere to the transit time of food in the animals' gastrointestinal tract. Thus, the volume of gas produced *in vitro* is a result of the incubation time of the food. In this regard, the objective was to verify if Nordestino donkeys are more efficient than horses in fermenting Tifton 85 hay at different maturity stages. Four adult females of each species were used. The experimental design was completely randomized in a 2 x 2 factorial scheme, involving two species (horses and donkeys) and Tifton 85 hay at two maturity stages (Hay 1, higher quality, and Hay 2, lower quality). The experiment was divided into two periods of 29 days each, totaling 58 days, during which the animals were confined and received an exclusive diet of Tifton 85 hay (*Cynodon* spp.). At the end of each period, feces were collected directly from the rectal ampulla, identified, and stored in pre-heated containers at 38°C. The semi-automated cumulative gas production technique was used for *in vitro* fermentation. There were 40 replicates per treatment, with 10 repetitions per animal. The samples were ground, and 1 g was inserted into each bottle. Then, 90 mL of nutrient solution was added 12 hours before the inoculation process and the start of *in vitro* fermentation, with samples kept in freezer at 4°C to prevent pre-fermentation. After 12 hours, the bottles were heated in water bath at 38°C. Then, 40 g of feces were weighed, mixed with 360 mL of distilled water at 38°C, and processed in blender for 1 minute, with CO_2 sparging. The material was filtered through eight layers of gauze, and 10 mL was inserted into the fermentation bottles, sealed with rubber stoppers and aluminum caps. After inoculation, a needle was inserted into each bottle to release any existing pressure inside the bottle, marking the zero-time point or the start of the process. The bottles were kept in a ventilated oven at 38°C, and gas production was measured using a pressure transducer (LOGGER AG100 - Agricer) over 96 hours at intervals of 2, 4, 6, 8, 10, 12, 15, 18, 21, 24, 30, 36, 42, 48, 72, and 96 hours, totaling 16 observations. Using the pressure data in psi (pounds per square inch) and the gas volume (mL), an equation was generated using PROC REG of SAS (2002). Data were subjected to variance analysis, and means were compared by Tukey's test ($P<0.05$). Interaction ($P = 0.0030$) between equid species and the two types of hay was observed. Regarding the higher quality hay (Hay 1), horses showed higher gas production, with an average of 25.17 $mL.g^{-1}$ of DM, than donkeys, with an average of 22.27 $mL.g^{-1}$ of DM. For the lower quality hay (Hay 2), gas production by donkeys exceeded that of horses, with averages of 12.95 and 16.01 $mL.g^{-1}$ of DM, respectively. It was concluded that the microorganisms present in the digestive tract of donkeys may be more efficient in utilizing lower quality fiber than horses.

Keywords: Fecal inoculum, Fermentation, *in vitro*, Nordestino Ecotype.

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