

CONSTRUINDO SABERES, FORMANDO PESSOAS E TRANSFORMANDO A PRODUÇÃO ANIMAL

RUMINAL FERMENTATION OF DAIRY HEIFERS SUPPLEMENTED WITH RICINOLEIC ACID AND CASHEW NUT SHELL LIQUID

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The ricinoleic acid and cashew nut shell liquid are functional oils used to modulate ruminal fermentation. This study aimed to evaluate the effects of the inclusion of functional oils on Jersey heifers on ruminal fermentation. Eight heifers aged 12 ± 1.5 months with an average weight of 286.75 ± 34.61 kg were used. The animals were randomly distributed into 2 latin squares design 4x4, balanced and contemporary, 2x2 factorial arrangement. The experimental period was 19 days, and 14 days for the adaptation to the experimental diet and 5 days for data collection. Experimental diets were: 1-Control (**CON**) no additives; 2-Ricinoleic Acid (**RA**) inclusion $2\text{g kg}^{-1}\text{DM}$; 3-Technical Cashew Nut Shell Liquid (**CNSL**) inclusion $2\text{g kg}^{-1}\text{DM}$; 4-Ricinoleic Acid + Cashew Nut Shell Liquid (**RA+CNSL**) inclusion of $1\text{g kg}^{-1}\text{DM}$ of each. Diets were formulated to daily gain of 800.0 g d^{-1} , isonitrogenous and same neutral detergent fiber concentration. On day 19 of each period, ruminal fluid was collected using an esophageal gavage discarding the first 250 ml of fluid to avoid saliva contamination into the sample. Ruminal fluid pH was measured using a pHmeter (PH 1500, Instrutherm, Sao Paulo, Brazil). Aliquots (1600 μl) of ruminal fluid samples were mixed with methanoic acid (400 μl), centrifuged at $7,000 \times g$ for 15 min (4°C), and the supernatant was frozen for further short-chain fatty acid (SCFA) analysis. Ammonia N was determined by the colorimetric phenol-hypochlorite method (Broderick and Kang, 1980). Ruminal SCFA concentrations were measured using a gas chromatograph (model GC-2104, Shimadzu, Tokyo, Japan). Data were submitted to analysis of variance using the PROC MIXED by SAS, version 9.0. The pH and N-NH_3 (mg dL^{-1}) were not influenced by the functional oils used in the diets. Heifers supplemented with **CNSL** (49.13 mmol L^{-1}) presented lower acetate concentration and animals supplemented with **RA** (54.06 mmol L^{-1}) had higher concentrations. Heifers supplemented with **RA+CNSL** had higher concentrations of propionate (20.07 mmol L^{-1}) and total fatty acids (81.32 mmol L^{-1}). The **RA+CNSL** diet positively influenced the ruminal fermentation of dairy heifers. It is recommended the use of 1g kg DM^{-1} of **AR** and **CNSL** in the diets of growing dairy heifers.

Keywords: antibiotics free, functional oils, metabolism, ruminal modulation

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