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CONSTRUINDO SABERES, FORMANDO PESSOAS E TRANSFORMANDO A PRODUÇÃO ANIMAL

CONCENTRATIONS AND MOLAR RATIOS OF SHORT CHAIN FATTY ACIDS FROM BOVINE RUMINAL FLUID RECEIVING CELLULOLYTIC ENZYME

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Cellulolytic enzymes are characterized by concentrated enzymatic extract produced by fungal or bacterial fermentation, in order to improve the efficiency of synthesis and utilization of food. This study was carried out to determine the influence of cellulolytic enzymes in diets based on sugarcane or corn silage for dairy heifers. Eight Jersey heifers [8.2 mo and 160 ± 15 kg live weight (LW)], distributed randomly in 2 4x4 latin square, balanced and contemporary, in a 2 X 2 factorial arrangement. Experimental diets consisted of Sugarcane Silage (SCS); Sugarcane Silage + Fibrozyme® (SCF); Corn Silage (CS); and Corn silage with Fibrozyme® (CSF). The animals received 20g Fibrozyme® (xylanase activity 600 IU g⁻¹) / day. Concentrate consisted of ground corn (549,6 g kg⁻¹ DM), whole raw soybean (163,90 g kg⁻¹ DM), urea (23,4 g kg⁻¹ DM), and a mineral mixture (24,4 g kg⁻¹ DM). Ruminal digesta samples (from five different sites in the rumen) were collected on day 20 of each experimental period 4h relative to concentrate provision. Ruminal digesta samples were composited and strained in four layers cheesecloth. Aliquots (1600 µL) of these samples were mixed with methanoic acid (400 µL; 98–100% H₂CO₂), being centrifuged at 7000 × g for 15 min at 4 °C, and the supernatant of each sample was frozen for posterior short-chain fatty acid (SCFA) analysis. Ruminal SCFA concentrations were measured using a gas chromatograph. Data of ruminal fermentation was submitted to analyses of variance using the MIXED procedure of SAS 9.2. (SAS Inst. Inc., Cary, NC). There was no effect for acetic acid (mean = 61.52 mmol). There was effect for silage and the animal feeded with corn silage (23.28 x 19.58 mmol) presents a higher value for propionic acid (P=0.012). The Cellulolytic enzymes presents no effect for total concentration of short chain fatty acids (mean = 95.46 mmol) and acetic, propionic ratio (mean = 2.89). Higher propionate concentration in ruminal liquid for heifers fed corn silage may be associated to high starch content compared to sugarcane silage, and the higher non-fiber carbohydrate (NFC) intake of heifers fed with corn silage. Cellulolytic enzyme (Fibrozyme®) not influenced the concentrations and molar ratios of short chain fatty acids from bovine ruminal fluid, but the corn silage presents higher concentrations of propionic acid.

Keywords: dairy heifers; fiber; ruminal fermentation; sugarcane silage; xylanase

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