I-INTERNATIONAL MEETING OF ANIMAL SCIENCE IN SEMI-ARID REGIONS
Universidade Federal do Agreste de Pernambuco – UFAPE
July 03rd to 05th, 2024, Garanhuns-PE

Area of Work: Animal Nutrition

Digestibility in diets containing forage cactus (*Opuntia ficus-indica. Mill*) and concentrates with different protein contents for lactating cows

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Forage cactus has been used as a base in the feeding of dairy cows in the Northeast due to its local adaptation. Due to its high energy value and low protein content, it is possible to increase the roughage:concentrate ratio in ruminant diets, provided that the concentrate has more protein to compensate for the deficiencies of the roughage, and that this protein is usable by the animal. Attention to diet composition is crucial due to the high cost of protein and the synchrony between carbohydrates and rumen degradable protein, which is fundamental to supply the protein needs of animals. The objective was to evaluate the use of commercial concentrates with different Crude Protein (CP) levels in the diet of lactating Girolando cows and their effects on nutrient digestibility. Eight Girolando cows with an average live weight of 545 ± 50 kg, 110 ± 14 days of lactation, and average milk production of 20 ± 3.2 kg/day were used and distributed in two 4x4 Latin squares. The diets consisted of giant cactus, native pasture silage, and commercial concentrates with different protein levels (T1 = 32%, T2 = 39%, T3 = 45%, and T4 = 49% CP). Each experimental period lasted 15 days, with 10 days for animal adaptation and five days for collections. The diet was provided twice a day, at 6am and 4pm, as a complete mix. Leftovers were collected and weighed before the morning feeding to adjust the daily amount of consumption, allowing for approximately 10% leftovers. Food and feces were collected to determine the Apparent Digestibility Coefficient (ADC) of Dry Matter (DM), Organic Matter (OM), Neutral Detergent Fiber (NDF), Total Carbohydrates (TC). For the calculation of ADC, the equation described by Silva & Leão (1979) was used: ADC = ((nutrient ingested – nutrient excreted)/nutrient ingested) x 100. The diet of treatment T4 had higher DM digestibility compared to diet T2, even receiving less concentrate, due to the higher proportion of giant cactus in the diet. Diets T1 and T3 had similar digestibility to T4. The lower DM digestibility index in treatment T2 can be attributed to the high content of wheat bran in the concentrate, which requires more rumen retention time, demonstrating a linear reduction in apparent digestibility of DM, OM, CP, TC. The digestibility of NFC was not affected by the concentrate used, reflecting a rapid fermentation of these nutrients, with an increase in the percentage of protein in the concentrate, the amount of giant cactus in the diet, rich in pectin, which presents a fermentation pattern of NFC. The NFC intakes of the diets were very close, ranging from 6.31 to 5.67 for diets T1 and T2. The apparent digestibility of DM, OM, CP, NDF, TC was higher in treatment T4 compared to T3. It is concluded that the use of concentrates in diets with a high protein content promotes changes in nutrient digestibility.
Keywords: Feed, nutrients, nutritive value.

Financial support: CNPq.