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Nutrient intake from diets composed of commercial concentrates with different crude protein contents for lactating cows

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The optimization of milk production is vital in livestock farming, given the increasing demand for quality dairy products. Therefore, dry matter intake (DMI) plays a crucial role in the diet of lactating cows, determining the amount of nutrients needed to ensure their maintenance and production. The aim was to evaluate the effect of using commercial concentrates with different protein contents in the diet of lactating Girolando cows on nutrient intake. Eight Girolando cows with an average live weight of 545 ± 50 kg, 110 ± 14 days of lactation at the beginning of the experiment, and an 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). The cows were housed in individual stalls, provided with individual feeders and waterers for ad libitum access to feed and water. The diet was provided twice a day, in the form of a complete mix, at 06:00 and 4pm. Before the morning feeding, leftovers were collected and weighed to adjust the offering to allow for approximately 10% leftovers. To determine the voluntary intake of DM (dry matter), organic matter (OM), neutral detergent fiber (NDF in kg/day and as %BW), total carbohydrates (TC), ether extract (EE), non-fibrous carbohydrates (NFC), and total digestible nutrients (TDN) were calculated by the difference between the amounts offered and the leftovers. The diets were formulated to meet the requirements for a production of 20 kg/day, with 3.5% fat. For the estimation of NFC, the equation $NFC = \%TC - \%NDF$ was used, and for TDN, the equation: $TDN = \text{digestible CP} + \text{digestible TC} + 2.25 (\text{digestible EE})$. $TDN (\%) = (TDN \text{ intake}/DM \text{ intake}) \times 100$. The intakes of DM (in kg/day, %BW, in g/kgBW^{0.75}), OM, NDF (in kg/day and as %BW), and TDN were higher for the animals that received T1 compared to T2. For treatments T3 and T4, intakes were similar to treatment T1. EE intake was lower for T4, and CP intake was not altered by the use of more protein-rich concentrates. Possibly, the lower DMI observed in animals receiving T2 was due to the high content of wheat bran, a feedstuff with higher water retention capacity compared to other concentrate ingredients, and consequently, the lower TDN intake for animals consuming T2 was due to lower DM intake. Concentrates with a higher percentage of CP in the diet of lactating Girolando cows alter nutrient intake.

Keywords: Feeding, intake, dry matter, nutrients

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