

Nitrogen Balance in Goats Fed Saltbush Hay, Spineless Cactus and Concentrate.

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Abstract

Resumo:

The saltbush (*Atriplex nummularia* L.) is a halophyte plant with high DM yield and CP content in leaves. It has been used as dietary ingredient of ruminant diets in arid and semi-arid regions. However, its roots and leaves have a high salt content, which can cause metabolic problems; for example, alter the excretion of some metabolites through body fluids such as urine. The determination of nitrogen balance (NB) under controlled conditions provides a quantification of N metabolism and demonstrates whether the body is losing or gaining N. Thus, the objective of this study was to determine the effect of adding saltbush hay on NB and N use by ½ blood Boer goats. Twenty four male goats, castrated, with average BW of 20.28 kg were used in a randomized complete block design. And housed in metabolic cages. The experimental diets consisted of 8.4, 18.8, 31.2, and 48.3% of saltbush hay, together with spineless cactus (*Opuntia ficus* l.). Urea and concentrate (ground corn and soybean meal) were used to balance the isonitrogenous and isocaloric diets. The trial lasted for 20 days: 15 for adaptation and 5 for sample collection. Plastic bags were used for the collection of feces and buckets, under the cages, for the collection of urine. In the collection buckets, 100 mL of 10% H₂SO₄ were added in order to avoid bacterial growth. The total nitrogen (N) present in feces and urine were analyzed using methods described by El Snazly (1958). The addition of saltbush hay had a quadratic response on DM intake ($P < 0.01$), with intakes of 0.48, 0.80, 0.96, and 0.92 kg.day⁻¹ for diets containing 8.4, 18.8, 31.2 and 48.3% of hay, respectively. The diets had similar N concentrations; hence, the quadratic effect observed for N consumption (10.05, 16.81, 20.62 and 17.32 g.day⁻¹) was attributed to the quadratic effect observed for DM intake. Faecal excretion also showed a quadratic response ($P < 0.05$) but no significant difference on the excretion of N in urine, which averaged 0.03 g.day⁻¹ of N. The low excretion of N associated with its consumption and absorption indicates that there was an adequate utilization of nitrogen fraction by ruminants. The NB was positive in all treatments and showed a quadratic behavior, which demonstrates the absorption and utilization of N consumed. Although a drop in consumption and excretion of N was observed on diets with more than 32.1% of hay, the liquid use of N was increased linearly ($P < 0.01$). The highest liquid use of N (82.9%) was found on the diet with 48.3% of hay and the lowest use on the 8.4% hay diet (75.3%). Thus, diets with spineless cactus had a better absorption and utilization of N when saltbush hay was added. Saltbush hay proved to be a plant with forage potential, since its use up to 48.3% in complete diets for ½ Boer goats promoted positive NB and increased N use by animals.