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Work Area: Nutrition and production of ruminants

Performance of lambs fed a diet based on spineless cactus with increasing levels of urea.

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The spineless cactus presents high nutritional value with large water storage and intermediate energy value, but low concentrations of neutral detergent fiber and crude protein (CP). Therefore, formulating diets with spineless cactus requires supplementation with other ingredients to meet the deficiency of these nutrients. The low concentration of CP and high concentrations of soluble carbohydrates make it an important alternative for urea use. Soybean meal is the main protein ingredient in ruminant diets, but, due to its use in human consumption and non-ruminant diets, it becomes costly to be used in diet formulation. The objective is to evaluate diets based on spineless cactus with increasing levels of urea as a replacement for soybean meal in the performance of Santa Inês lambs in confinement. The experiment involved 40 non-castrated male Santa Inês lambs, four months old, with an initial body weight (BW) of 22.2 ± 2.1 kg. The animals were distributed in a completely randomized design. The ingredients used in the diet composition were: spineless cactus, Tifton-85 hay (*Cynodon* spp.), ground corn, soybean meal, sulfur flower urea, and mineral mixture. The four diets based on spineless cactus with increasing levels of urea (0; 7.3; 14.6; and 21.9 g/kg DM) were formulated to be isonitrogenous. For performance quantification, the animals were weighed at the beginning and end of the experimental period to determine the total weight gain (TWG) from the difference between the slaughter body weight (SBW) and BW: $TWG (Kg) = SBW - BW$, and the average daily gain (ADG) was calculated by the ratio between TWG and the total days of the performance period. Feed conversion (FC) was calculated by the ratio between dry matter intake and ADG. Increasing levels of urea in the diets influenced sheep performance ($P < 0.05$), reducing SBW, TWG, ADG, and increasing FC. The results may be related to the reduction of microbial protein synthesis and reduced amino acid flow to the small intestine, as crude protein content, rumen digestible protein (RDP), and RDP quality can affect microbial growth. When urea completely replaced soybean, it was observed that the performance reduction was more pronounced, which strengthens the hypothesis that the absence of a true protein source in the diet can limit metabolizable protein flow to the intestine and compromise sheep performance. Nutrient availability for body tissue deposition decreased when urea levels in the diet increased, negatively impacting performance. Increasing levels of urea in spineless cactus-based diets reduce the performance of confined lambs and result in less adequate FC. It is suggested that urea use under the research conditions be a strategy for animals with lower requirements for metabolizable protein.

Keywords: Opuntia stricta, confinement, Santa Inês breed, supplementation.

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