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Work area: Nutrition and production of ruminants

Blood metabolites profile of lambs fed a diet based on Spineless cactus Orelha de Elefante Mexicana with increasing levels of urea.

Hiasmyn Millena Demesio de Souza*¹, Fábio dos Santos Nascimento¹, Bruna Cristina Nascimento Silva¹, Deborah Heloíse Santos da Silva¹, Maria Eduarda da Cruz Moura¹, Maria Vitória Gomes da Silva¹

¹Universidade Federal Rural de Pernambuco, Recife/Pernambuco, Brasil; *souzahiasmyn@gmail.com

The spineless cactus is widely used as a forage source in ruminant feeding. It has high moisture content and elevated concentrations of non-fibrous carbohydrates, but low levels of fiber and protein. This makes it a viable alternative for urea supplementation in ruminant diets, promoting increased protein content while reducing costs by decreasing the need for commodities such as soybean meal. With the reduced feeding costs, efforts are directed towards achieving similar results to large-scale commercial operations through diagnostics, such as blood analyses assessing the nutritional balance of herds. The objective was to evaluate the effect of diets based on spineless cactus with increasing levels of urea replacing soybean meal on the blood metabolites of confined lambs. For the evaluation of blood metabolic profile, blood samples were collected from all animals on the 58th day of the data collection period, four hours after the morning feeding, by jugular venipuncture into Vacutainer® tubes with and without anticoagulant. The energetic, protein, and enzymatic metabolites determined in the blood were: glucose, total cholesterol, triglycerides, lactate, urea, albumin, creatinine, uric acid, total proteins, alanine aminotransferase (ALT), gamma-glutamyltransferase (GGT), aspartate aminotransferase (AST), alkaline phosphatase (ALP), and lipase. Among the evaluated blood parameters, plasma glucose and total cholesterol concentrations were not influenced ($P > 0.05$) by the increasing levels of urea in palm-based diets, but it quadratically influenced ($P = 0.0033$) serum triglyceride concentration with maximum and minimum values (22.4 and 16.4 mg/dL) at urea levels of 14.6 and 0.0, respectively, and linearly increased ($P < 0.0001$) lactate concentrations. Total protein, creatinine, urea, and uric acid concentrations were not influenced ($P > 0.05$) by palm-based diets with increasing urea levels, while albumin concentration was quadratically influenced ($P = 0.0148$) with a higher concentration (2.9 g/dL) in animals that did not receive urea-containing treatment. Hepatic enzymes AST, ALT, and lipase were not influenced ($P > 0.05$) by urea levels, while GGT and ALP increased linearly ($P < 0.05$) and were quadratically influenced ($P < 0.05$), with the highest concentrations observed in animals fed at the urea level (21.9 g/kg DM). Therefore, it is concluded that increasing levels of urea in spineless cactus based diets can partially or fully replace soybean meal in the diet of confined lambs without altering and maintaining the blood metabolite profile within or close to reference intervals for sheep.

Keywords: urea, native sheep breed, *Opuntia stricta*, feedlot

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Experimental procedures were approved by the Ethics Committee on Animal Use (CEUA, UFRPE, number 142/2018).