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“Bridging the gap between increasing knowledge and decreasing resources”

Nutritional Value of two Native Shrub Species That Grow in the Tamaulipan Thornscrub from Mexico

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Abstract

Due to the dynamic nature of vegetation and the provision of adequate forage for grazing, small ruminants and wildlife experience periods of varying food availability, which affect the ruminant productivity. However, available data on nutritive value of plants and shrubby forages from hot arid climates are not sufficient. The aims of this study were to determine the chemical composition and fermentation kinetics of two native shrubby species (*Acacia amentacea*, and *Parkinsonia texana*) and to determine whether the species can meet the maintenance requirements of ruminants in extensive systems. Samples were collected from three undisturbed grazing sites (China, Linares and Los Ramones) of the state of Nuevo Leon, Mexico. Monthly sample recollection of mature leaves through 2009 was undertaken at browsing height (1.5 m) from five individual, randomly selected plants of each species. Forage quality determinations included neutral detergent fiber (NDF), condensed tannins (CT), crude protein (CP), *in vitro* true organic matter digestibility (IVTOMD), metabolisable energy (ME) and gross energy losses (GEL %, as methane production). The fermentation parameters evaluated were the total gas volume A, the rate constant of gas production c, lag phase L, purines and partitioning factor (PF); all fermentation parameters were estimated with and without PEG (6000). Data were analysed using a one-way analysis of variance with a tri-factorial arrangement, being the factors the sites (3), months (12) and shrub species (2). Values for *A. amentacea* were higher for NDF (42%), CT (19%), purines (9 μ mol), PF (6.1) and GEL (6.7%), whilst *P. texana* was higher in CP (18%), IVTOMD (82%), ME (2.1 Mcal kg⁻¹ DM), A (183 ml), c fraction (0.071 /h) and L (0.868 h). Addition of PEG increased the ME values, A, c and L; on the contrary, values of purines and PF diminished. Although the content of CT and GEL are higher in *A. amentacea*, their values of purines and PF lead to higher microbial protein synthesis. Thus, data suggest that both species could be a good combination for supplying the nutritional requirements for adult small ruminant and wildlife, managed in the Tamaulipan thornscrub.

Keywords: Chemical composition, fermentation parameters