The Solubilization of Macrominerals and Ruminal Degradation of Selected Tropical Tree Legumes

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Abstract

A research to study about macromineral solubilities and biodegradation of some tree legumes by rumen microbes has been canducted. The legumes of Pterocarpus indicus (PI), Sesbania gradiflara (SG). Gliricidia sepium (GS). Callyandra callotyrsus (CC) and Leucaena leucocephala (LL) were used in this experiment. The oven dried (60°C) and ground samples of the legumes were measured of their in vitro macrominerals solubilities, biodegradation, bioavailability, and fermentation products. The macrominerals (Calcium (Ca), phosphorus (P), magnesium (Mg) and sulfur (S)) solubilities were determined using atomic absorption spectrophotometer (AAS). The gas production was measured using Hahenheim method. The ruminal DM degradation and gas productions rates were calculated using formula $y = a + b(1-e^{-ct})$ according to Ørskov and McDonald (1979). The results showed that biadegradation and cumulative gas production of selected tree legume were relatively the same. However, the gas production rate of SG and GS were significantly higher. There was no difference on VFA production, but SG produced more NH_3 than other tree legumes. Ca was more soluble than other macrominerals. The Ca and Mg solubility of LL were siginificontly higher, while PI was a good soluble P source. GS is a good protein source and can be mixed with other legume as mineral supplement.

Key Words: tree legume, solubility, macrominerals, degradation,

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