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 biadegradation of some tree legumes by rumen microbes has been conducted. The legumes of Pteracarpus indicus (PI), Sesbania grodiflora (SG), Gliricidia sepium (GS), Callyandra callatyrsus (CC) and Leucoena leucocepholo (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), phasphorus (P), magnesium (Mg) and sulfur (S)) solubilities were determined using atomic absorption spectraphotometer (AAS). The gas production was measured using Hohenheim 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 biodegrodation 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 siginificantly 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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