

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

Idat Galih Permana¹ and Despal

Abstract

A research to study about macromineral solubilities and biodegradation of some tree legumes by rumen microbes has been conducted. The legumes of *Pterocarpus indicus* (PI), *Sesbania grandiflora* (SG), *Gliricidia sepium* (GS), *Calyandara callatyrus* (CC) and *Leucoena 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 Hohenheim method. The ruminant 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 biodegradation 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 NH₃ than other tree legumes. Ca was more soluble than other macrominerals. The Ca and Mg solubility of LL were significantly 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,

¹ Department of Animal Nutrition and Feed Technology
Faculty of Animal Husbandry, Bogor Agricultural University,
Jl. Agatis Kampus IPB Darmaga, Bogor 16680 Indonesia
Tel. 0251.626877 Email: permana@ipb.ac.id