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In Vitro Rumen Degradation of Selected Tropical Legumes In South Sumatra, Indonesia

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Abstract

This experiment was conducted to evaluate the chemical composition, rumen degradability and *in vitro* gas production of five selected tropical legumes, namely *Loblab purpureus*, *Centrosema pubescens*, *Leucaena leucocephala*, *Desmanthus virgatus* and *Pennisetum macrophylla*. These grasses were grown under the same management and harvested at the first cutting period. Rumen degradability of dry matter and fiber components (NDF, ADF and Cellulose) were determined by *in vitro* techniques at 12, 24, 36, 48 and 72 hours incubation periods. Gas production were measured on each incubation times. Degradation kinetics were calculated by fitting the degradation values to the exponential equation $p = a + b(1 - e^{-ct})$. *In vitro* gas production of the legumes was measured at the same time with *in vitro* incubation periods and the characteristics of gas production were determined using the equation $p = b(1 - e^{-ct})$. Data on chemical composition showed that *Centrosema pubescens* contained highest crude protein (22.0%), while the lowest value was noted for *Loblab purpureus* (18.9%). NDF content ranged from 29.4% (*Loblab purpureus*) to 63.2% (*Desmanthus virgatus*), ADF from 14.8% (*Loblab purpureus*) to 42.0% (*Desmanthus virgatus*) and lignin content varied from 3.6% (*Leucaena leucocephala*) to 6.3% (*Desmanthus virgatus*). *In vitro* rumen dry matter degradability and fiber fractions were varied among species. These findings were also consistent with the result of *in vitro* gas production, in which *Leucaena leucocephala* produced the highest gas fermentation (20.37 ml/200 mg DM) followed by *Centrosema pubescens* (10.04 ml/200 mg). Based on these findings, it could be concluded that *Leucaena leucocephala* followed *Centrosema pubescens* had higher nutritive value compared to the other observed legumes.

Key Words: Tropical legumes, *in vitro* digestion, gas production