Introduction

Legumes have a significant role in many farming systems of the tropics and subtropics through their contribution to enhance nutritive value of the animal diet; biological nitrogen fixation and landscape stability (Hwnphreys, 1995). The great potential of legumes to increase productivity of livestock is being related with their high content of nutrients, especially protein and other nutrients often deficient in grass or low quality bay diets for ruminants. In Indonesia, legumes are often used for replacement of costly concentrate in the ruminants dies. Norton and Poppi (1995) reported d quality of tropical legumes varies between and within species, bat is generally higher than that of tropical grasses. it is well known that the major factors limiting intake and digestibility are those associated with rate and extent of forage degradation by microbial and physical factors in the rumen, primarily the amount cell wall constituents and the extent of lignification. Association of polysaccha-rides of cell wall with lignin hinders attack by microbial enzymes and prevents the physical attachment of bacteria to the cell wall Menke et al (1979) reported that the amount of gas released when a feed is incubated *in vitro* in the ia- men fluid, is also closely related to digestibility of the feed and could be used to predict feed intake. There are very little information available on the rumen degradation characteristics and *in vitro* gas production of the tropical legumes. Ojectives of the present study were to assess differences *in vitro* degradation and gas production between five commonly used legumes in South Sumatra, Indonesia.

Methods

The legumes used in this study were selected based on their importance for ruminant feeding in Indonesia, i.e. *Centrosema pubescens (CP), Lablab purpureus (LP), Leucaena leucocephala (U), Desmanthus virgatus (DV) and Flemingia macrophylla (FM)*. Chemical composition of the samples were determined by standard method of the Association of Official Analytical Chemist (AOAC, (1984). Neutral detergent fibre (NDF), acid detergent fibre (ADF) and acid detergent lignin contents were analyzed by the procedure of Goering and VanSoest (1970). *In vitro* rumen degradation of. the samples were determined using the method described by Tilley and Terry (1963) and Goering and .Van Soest (1970). Approximately 1 g of each sample was incubated in the rumen fluid medium-mixture for 12,24,36,48 and 72 hr. The residues of fermentation then were analyzed for dry matter, NDF, ADF and cellulose. Degradation kinetics were calculated by fitting the degradation values to the exponential equation p a + b (l-e" "). In addition, the gas production from each fermentation of the samples was measured according to the method of Menke et al. (1979). Data of *in vitro* rumen degradation and gas production were analyzed by a one way analysis of variance. The Duncan's multiple range test (DMRT) was used to determine differences between the treat- meet means (Steel and Torrie, 1981).

Results and Discussion

Chemical composition of the legumes is given Table 1. The crude protein (CP) content varied from 18.9 % (*L. purpureus*) to 22.0% (*C. pubescens*). Results ci several studies reported by Skerman et al. (1988) showed that the CP content of *L. purpureus* ranged from 10 to 23.4 %, while *C. pubescens* contained 11.6 to 29.9% CP. *L. leucocephala* contained 20.2 % CP aid it had relatively low ADF (15.6) and lignin (3.6), while *D. virgatus* had the highest content of crude fiber (35.4), NDF (63.2), ADF (42.0) and lignin (6.3%).

Tabel 1. Chemical Composition of Five Tropical Legumes (% of DM)

Constituent	Legume Species				
	CP	LP	LL	DV	FM
Organic matter	94.5	92.7	96.1	92.5	96.7
Crude Protein	22.0	18.9	20.2	21.6	19.5
Crude Fiber	22.0	18.6	16.0	35.4	27.6
N F E	47.6	49.4	52.9	33.0	47.6
NDF	51.8	29.4	37.1	63.2	55.1
ADF	32.1	14.8	15.6	42.0	36.1
Cellulose	26.4	11.2	10.8	35.7	30.2
Lignin	5.7	4.3	3.6	6.3	5.9

Characteristics of *in vitro* rumen degradation of dry matter, NDF, ADF and cellulose are presented in Table while the patterns of their degradation are graphically shown in figures 1, 2, 3 aid 4, respectively. it is clear that dry matter degradation of *L. leucocephala* and *C pubescens* were significantly higher ($p<0.05$) than those of other legume species at almost all the incubation periods. At 72 hrs incubation period, the extent of dry matter degradation was highest for *L. leucocephala* (70.36 %) followed by *C. pubescens* (68.38 %). Consistent with this result, *L. leucocephala* had also the highest values of soluble fraction (a) (15.25 %) and potentially degradable fraction (a+b) (78.17 %). The differences in dry matter degradation could be due to differences in the physiological age of the legumes and the extent of lignification. it is possible that although the same age of maturity, each species has different proportions of leaf and stem; in which the leaf is more digestible than stem. The highest value of dry matter degradation of *L. leucocephala* reflected its low content of lignin (3.6 %) compared to those of other species.