THE USE OF POLYETHYLENE GLYCOL (PEG) TO INCREASE FERMENTAB1LITY OF *Acacia angustissima* AND *Acacia villosa*

A.S. Tjakradidjaja[1)] , K. G. Wiryawan[2)] , and D.E. Hermawnn[2)]
[1)] *Faculty of Animal Science Bogor Agricultural University, Bogor*
[2)] *Centre for Life Sciences Study Bogor Agricultural University, Bogor*

ABSTRACT

This experiment was carried om with an aim for increasing ferment ability and digestibility of ***Acacia*** *anguslissima* and *A, villosa* by using polyethylene glycol (PEG) at different levels. The levels of PEG Supplemented to each iegume were 0, 5 and 10% of dry weight sample. An increase in PEG level improved protein degradation of *Acacia* spp. without affecting VFA production and microbial population. However, the addition of PEG decreased DM and OM digestibilities although the effect on OM digestibility was not significant. The present result has not yet been able to demonstrate an optimum level of PEG as a supplement for reducing tannin effects in both *Acacia* spp. This study also indicated that protein of *A. anguslissima* was more degraded in the rumen than that of *A. villosa.* but nutrients of this species of *Acacia* was more digested in the post-ruminal digestive tract than those of *A. anguslissima.*

Keywords *: Acacia anguslissima, A. villosa, polyethylene glycol*

INTRODUCTION

Legumes and grasses are important feed sources in tropical and dry areas (Topps, 1992). The legumes are used as protein supplements to improve nutrient quality supplied by grass as a main feed in increasing animal production (Kaitho *el al.*, 1998[a]; Kaitho *et at.*, 1998[b]; Saarisalo *et al.*, 1999).

Acacia spp. can be used as protein supplements due to its high protein content (22--32%) and quality, its faster growth, its ability to adapt to the environment, and its ability to grow in poor quality of soil and its high leaf production (Praptiwi, 1985; Gutteridge, 1994, Wina and Tangendjaja, 2000; Soebroto and Priyosukmana, 1985). However, *Acacia* spp. varied in their protein solubilities and degradabilities in the rumen, as well as their digestibilities in the post-ruminal digestive tract (Kaitho *et al.*, 1998[b]). These variations were influenced by the presence of tannins and other antinuirients and their effects were determined by their concentrations (Ahn *el al.*, 1989; Provenza, 1995; Kaitho *et al.*. 1998[b]; Evans *el al.*, 1993, Wina and Tangendjaja, 2000; Praptiwi, 1985). High concentrations of tannin decreased feed palatability, reducing leed intake, reduced protein degradation in the rumen and decreasing protein availability in the lower digestive tract (Barry and Blaney, 1987; Butler and Rogler, 1992).

Supplementation with polyethylene glycol (PEG) is an alternative method for overcoming tannin problems due to its ability to exchange with protein from protein-tannin complex releasing protein (Jones and Mangan, 1977). The use of PEG was determined by factors such as tannin concentration in plant species and solubility or molecular weight of PEG, etc. (Makkar, 2000; Silanikove *et al.*, 1996[a]; Silanikove *el al.*, 1997) causing differences in the levels of PEG supplemented for a particular plant species. Therefore, this experiment was conducted with an aim for increasing fermentability and digestibility of *Acacia anguslissima* and *Acacia villosa* with PEG supplementation al different levels.