

Effects of feeding goats with *Leucaena leucocephala* and *Manihot esculenta* leaves supplemented diets on rumen fermentation profiles, urinary purine derivatives and rumen microbial population

ABSTRACT

The effects of different levels of *Leucaena leucocephala* and *Manihot esculenta* leaves' supplementation on in vitro gas production, rumen fermentation and microbial populations and urinary purine derivatives (PD) were investigated. Seven treatment groups – T1:C/rice straw (RS) (40:60) (Control); T2:C/RS/*leucaena* leaves (40:45:15); T3:C/RS/*leucaena* leaves (40:30:30); T4: C/RS/*leucaena* leaves (40:15:45); T5:C/RS/cassava leaves (40:45:15); T6:C/RS/cassava leaves (40:30:30) and T7:C/RS/cassava leaves (40:15:45) – were used in this experiment. In the in vitro study, acetate, propionate, butyrate and total VFA were found to increase significantly in T7. No significant difference was observed in in vitro gas production except the control diet although in vitro dry matter digestibility (IVDMD) was recorded significantly decreased. Determination of urinary PD, rumen fermentation and microbial population were done using 21 local Boer goats. Rumen NH₃-N, acetic and total VFA production were found to improve ($P < .05$) in all supplemented group. Significant ($P < .05$) reduction was noted in the urinary allantoin production and total PD at T7. The populations of total protozoa and *Ruminococcus flavefacien* had significantly increased ($P < .05$) while *Ruminococcus albus*, and *Fibrobacter succinogenes* were significantly reduced ($P < .05$) in supplemented group. In conclusion, the result from the present study suggested that 25% of *L. leucocephala* leaves diet and 50% of *M. esculenta* leaves diet can be incorporated in the goat diet so as to improve the nutritive value of poor quality diet.

Keyword: *L. leucocephala*; *M. esculenta*; Urinary purine derivatives; Real-time PCR; Goats; Rumen fermentation profiles