

THE EFFECT OF USE OF MAHONI (*Swietenia mahagoni*) SOURCE PLANT ON METHANE PRODUCTION AND METHANOGENIC BACTERIA DIVERSITY IN RUMENT FERMENTATION *IN VITRO*

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ABSTRACT

This study aims to determine the effect of the use of plant sources of tannins namely mahogany (*Swietenia mahagoni*) on methane production, gas production kinetics and diversity of methanogenic bacteria in rumen fermentation *in vitro*. *Swietenia mahagoni* was given to substituted the elephant grass at levels of 0, 25, and 50%, with 3 replications for each level. Fermentation was carried out by *in vitro* gas production technique according to Menke and Steingass for analysis of kinetics of gas production. Kinetics of gas production was measured at hours 0, 1, 2, 4, 6, 8, 12, 24, 36, and 48. The end of the gas sample fermentation was taken to analyze methane production. Analysis of methane production with gas chromatography (GC) method. The other method of *in vitro* according to Theodorou gas was used on determination of the diversity of methanogenic bacteria using the terminal restriction fragment length polymorphism (TRFLP). The result of fragments analysis with AB13100 genetic analysis system (applied biosystem). The TRF pattern was compared with the results of *in silico* hydrolyzed with MICA 3 software. Methane production and gas production kinetics were analyzed using Completely Randomized Design (CRD) one way design. The results were significantly different, tested by DMRT, while the diversity of methanogenic bacteria was analyzed by description. The result used of *Swietenia mahagoni* leaves with level 50% reduced methane production by 39,26% ($P=0,08$). The used of *Swietenia mahagoni* leaves 50% to value (b) was decreased 47,23% from control. Level 50% was dominated by Uncultured methanoculles sp. 36.35% with *Mspl*, while Uncultured euryarchaeote clone is 80.24% MCR-F1SP-1 with *TaqI*. In conclusion, used of *Swietenia mahagoni* can decrease methane production, gas production from potential degraded fractions and diversity of methanogenic bacteria.

Keywords: Tannin, *Swietenia mahagoni*, Methane, Bacteria Diversity