

**PENAMBAHAN CAMPURAN DAUN MAHONI (*Swietenia mahagoni*),
JATI (*Tectona grandis*), DAN NANGKA (*Artocarpus heterophyllus*)
SEBAGAI SUMBER TANIN UNTUK MENURUNKAN PRODUKSI
METHAN PADA FERMENTASI RUMEN SECARA *IN VITRO***

**Danawira Dipta
16/399104/PT/07222**

INTISARI

Penelitian ini bertujuan untuk mengetahui pengaruh pemberian sumber tanin berupa campuran daun mahoni (*Swietenia mahagoni*), jati (*Tectona grandis*), dan nangka (*Artocarpus heterophyllus*) terhadap produksi metan secara *in vitro*. Proporsi campuran tersebut adalah 35% daun mahoni, 45% daun jati, dan 20% daun nangka. Campuran sumber tanin diberikan secara berlevel yaitu 0%, 1,5%, dan 3%. Cairan rumen yang digunakan untuk uji *in vitro* diambil dari sapi bali yang dilengkapi dengan fistula rumen di kandang ternak Fakultas Peternakan. Pakan yang diberikan kepada ternak terdiri hijauan yang berupa rumput gajah (*Pennisetum purpureum*) dengan proporsi 70% dan konsentrat dengan proporsi 30%. Pemberian pakan dilakukan dua kali sehari pada pagi hari dan sore hari, sedangkan minum diberikan secara *ad libitum*. Konsentrat yang diberikan pada ternak yaitu pollard dan bungkil kedelai dengan perbandingan 65:35. Fermentasi rumen secara *in vitro* dengan metode produksi gas *Menke and Steingass* selama 48 jam. Parameter yang diamati yaitu pH rumen, kadar amonia, protein mikrobial, protozoa, dan VFA (*Volatile Fatty Acids*) serta produksi metan (CH₄). Data yang diperoleh dianalisis variansi pola searah dan uji lanjut dengan uji *Duncan's Multiple Range Test* (DMRT) apabila terdapat perbedaan nilai rerata. Hasil penelitian yang diperoleh menunjukkan penambahan campuran daun sumber tanin level 3% cenderung menurunkan produksi metan sebesar 27,59 % apabila dinyatakan per berat bahan kering tercerna ($P=0,07$) dan sebesar 34,45% apabila dinyatakan per berat bahan organik tercerna ($P=0,11$). Penambahan campuran daun sumber tanin secara nyata ($P<0,05$) menurunkan jumlah protein mikrobial, NH₃, dan jumlah protozoa, namun penambahan ini tidak berpengaruh secara nyata terhadap parameter fermentasi rumen lainnya yang meliputi pH, kadar VFA (asetat, butirat, dan propionat), dan total VFA. Kesimpulan yang didapat adalah penambahan campuran sumber tanin 3% cenderung menurunkan produksi metan (ml/mg BKT) dan metan (ml/mg BOT), namun tidak mempengaruhi produksi VFA.

Kata kunci: Pakan sumber tanin, produksi gas metan, fermentasi *in vitro*

SUPPLEMENTATION OF MAHAGONI LEAVES (*SWIETENIA MAHAGONI*), TEAK (*TECTONA GRANDIS*), AND JACKFRUIT (*ARTOCARPUS HETEROPHYLLUS*) AS TANNIN SOURCES TO REDUCE METHANE PRODUCTION WITH IN VITRO

Danawira Dipta
16/399104/PT/07222

ABSTRACT

This study aims to determine the effect of a mixture of mahogany leaves (*Swietenia mahagoni*), teak (*Tectona grandis*), and jackfruit (*Artocarpus heterophyllus*) as tannin source on in vitro methane production. The proportions of the mixture are 35% mahogany leaves, 45% teak leaves, and 20% jackfruit leaves. The mixture was added at the level of 0%, 1.5%, and 3%. The rumen liquor used for the *in vitro* test was taken from balinese cattle donor in the Faculty of Animal Husbandry's cowshep. The feed given to livestock consists of forage in the form of grass (*Pennisetum purpureum*) with a proportion of 65% and concentrates with a proportion of 35%. Feeding is done twice a day in the morning and evening, while drinking is given *ad libitum*. Concentrates given to the cattle were pollard and soybean meal with ratio 65:35. In vitro rumen fermentation used the Menke and Steingass gas production method for 48 hours. The parameters observed were rumen pH, ammonia levels, microbial protein, protozoa, and VFA (Volatile Fatty Acids) as well as methane production (CH_4). Obtained datas were analyzed for unidirectional pattern variance and further tests with Duncan's Multiple Range Test (DMRT) if there was a difference in the mean value. The results showed that the addition of a mixture of leaf sources of tannins at a level of 3% tends to reduce methane production by 27.59% if expressed per weight of digested dry matter ($P = 0.07$) and by 34.45% if expressed per weight of digested organic matter ($P = 0.07$) $P=0.11$). The addition of a mixture of leaf sources of tannins significantly ($P<0.05$) decreased the amount of microbial protein, NH_3 , and the number of protozoa, but this addition did not significantly affect other rumen fermentation parameters including pH, levels of VFA (acetate, butyrate, and propionate), and the total VFA. The conclusion of the study is that the addition of a mixture of 3% tannin sources tends to reduce the production of methane (ml/mg DDM) and methane (ml/mg DOM), but does not affect the production of VFA.

Key words: Feed tannins, methane gas production, *in vitro* fermentation