

**PENGARUH PENAMBAHAN MINYAK ATSIRI PALA (*Myristica fragrans*)
TERHADAP KINETIKA PRODUKSI GAS DAN KECEERNAAN BAHAN
KERING DAN ORGANIK RANSUM PAKAN SECARA IN VITRO**

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INTISARI

Penelitian ini bertujuan untuk mengetahui pengaruh penggunaan minyak pala terhadap kinetika produksi gas dan pencernaan bahan kering dan bahan organik pada ransum pakan. Penelitian diawali dengan evaluasi senyawa bioaktif dalam minyak atsiri pala dengan kromatogram GCMS. Perlakuan penggunaan minyak atsiri pala diberikan dengan level 0, 100, dan 200 $\mu\text{L/L}$ campuran medium dan cairan rumen. Fermentasi pakan dilakukan dengan teknik produksi gas *in vitro* selama 48 jam. Produksi gas hasil fermentasi diukur pada jam ke-1, 2, 4, 6, 8, 12, 36, dan 48. Hasil uji *in vitro* setelah fermentasi digunakan untuk menentukan pencernaan bahan kering dan bahan organik pada ransum pakan. Produksi gas hasil fermentasi digunakan untuk menentukan kinetika produksi gas. Data yang diperoleh dianalisis variansi pola searah, dan dilanjutkan dengan uji *Duncan's new multiple range test* bila berbeda nyata. Hasil penelitian menunjukkan bahwa kandungan fenol dalam minyak atsiri adalah 24,43% dengan senyawa bioaktif utama myristicin sebesar 7,26%. Penambahan minyak atsiri pala sebesar 200 $\mu\text{L/L}$ menurunkan pencernaan bahan kering ($P < 0,05$) dan pencernaan bahan organik cenderung menurun ($P = 0,148$). Produksi gas dari fraksi mudah larut (a) menurun secara nyata ($P < 0,05$) pada penambahan minyak atsiri pala 100 dan 200 $\mu\text{L/L}$. Produksi gas dari fraksi potensial terdegradasi (b), jumlah produksi gas (a+b), dan laju degradasi pakan (c) tidak terpengaruh oleh minyak atsiri. Kesimpulan dari penelitian ini adalah senyawa bioaktif sebanyak 256 senyawa dengan senyawa utama terpinene 4-ol, α -pinen, dan sabinen, penggunaan minyak atsiri pala dengan penambahan 200 $\mu\text{L/L}$ mampu menurunkan pencernaan bahan kering dan bahan organik sehingga meningkatkan efisiensi penggunaan pakan.

Kata kunci: Minyak atsiri pala, pencernaan bahan kering, pencernaan bahan organik, Kinetika produksi gas



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KECERNAAN BAHAN KERING DAN ORGANIK RANSUM PAKAN SECARAN IN VITRO

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EFFECT OF NUTMEG ESSENTIAL OIL ADDITION (*Myristica fragrans*) ON GAS PRODUCTION KINETICS AND DIGESTIBILITY OF DRY MATTER AND ORGANIC FEED RATIONS IN VITRO

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ABSTRACT

This research was aimed at identifying the use effect of nutmeg essential oil to gas production kinetic, dry matter digestibility and organic matter. The research was begun with the evaluation of bioactive compounds in nutmeg essential oil use CGMS chromatogram. The treatment of nutmeg essential oil was given with level of 0, 100, and 200. The in vitro technique within 48 hours is used for the treatment of feed fermentation (Menke and Steingass, 1979). The result of fermented gas production were measured at 1, 2, 4, 6, 8, 12, 36, 48 hours. The result of in vitro after fermentation was used determine dry matter digestibility and organic matter. The result of fermented gas production is used to determined gas production kinetic. The data were analyzed by variance of the unidirectional pattern and when the difference was significant continued with Duncan's New Multiple Range Test (DNMRT). The result of the research showed that phenol content in nutmeg essential oil is 24,43% with myristicin as major bioactive of 7,26%. The nutmeg essential oil of 200 was added decrease dry matter digestibility ($P < 0,05$) and the digestibility of organic matter tends to decrease ($P = 0.148$). Gas production of the easily soluble fraction (a) decreased markedly ($P < 0.05$) at the addition of nutmeg essential oils of 100 and 200 $\mu\text{L/L}$. Gas production of the degraded potential fraction (b), the amount of gas production (a+b), and the rate of feed degradation (c) were not affected by essential oils. The conclusion of this study is that bioactive compounds as many as 256 compounds with the main compounds terpinene 4-ol, α -pinen, and sabinen, the use of nutmeg essential oil with the addition of 200 $\mu\text{l} / \text{L}$ is able to reduce the digestibility of dry matter and organic matter so as to increase the efficiency of feed use.

Keywords: essential oil nutmeg, digestibility of dry matter, digestibility of organic matter , kinetics of gas production