

PENGGUNAAN PELET CAMPURAN DAUN AKASIA (*Acacia mangium* Willd) MAHONI (*Swietenia mahagoni*) DAN NANGKA (*Artocarpus heterophyllus*) SEBAGAI SUMBER TANIN UNTUK MENURUNKAN PRODUKSI METANA SECARA *IN VITRO*

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INTISARI

Mitigasi emisi metana dan peningkatan efisiensi penggunaan protein pakan dengan senyawa bioaktif tanaman secara ekstensif telah dipelajari dan diterapkan sebagai suplemen dan pakan aditif. Penelitian ini bertujuan untuk mengetahui pengaruh pelet campuran tiga jenis daun (*Acacia mangium* Willd, *Swietenia mahagoni*, dan *Artocarpus heterophyllus*) sebagai sumber tanin terhadap produksi gas metana dan parameter fermentasi rumen secara *in vitro* dengan menggunakan substrat hijauan dan konsentrat (60:40). Tiga perlakuan dalam penelitian ini adalah substitusi konsentrat dengan pelet yang mengandung tanin level 0%, 1%, dan 2% berdasarkan presentase bahan kering (BK). Metode produksi gas Menke dan Steingass digunakan dalam penelitian ini dengan masa inkubasi selama 48 jam. Parameter yang diamati adalah pH cairan produk fermentasi, kadar ammonia (NH₃), kadar protein mikroba, kadar asam lemak terbang (*Volatile Fatty Acids/VFA*), jumlah protozoa, produksi gas CO₂, dan metana (CH₄). Data yang diperoleh dianalisis dengan analisis variansi pola searah (*One Way ANOVA*) dan dilanjutkan uji *Duncan's Multiple Range Test* (DMRT). Hasil penelitian menunjukkan bahwa pelet campuran tiga daun sumber tanin hingga level 2% mampu menurunkan kadar metana, amonia, protein mikroba, populasi protozoa, dan rasio asetat dan propionat ($P < 0,05$) namun tidak berpengaruh terhadap produksi CO₂ dan VFA ($P > 0,05$). Berdasarkan hasil penelitian dapat disimpulkan bahwa pelet daun sumber tanin hingga level 2% mampu menurunkan produksi metana dan tidak berpengaruh negatif terhadap produksi VFA.

Kata kunci: Tanin, Mitigasi Metana, Pelet, Akasia, Mahoni, Nangka.

UTILIZATION OF PELLET FEED CONTAIN THREE LEAVES MIXTURES OF *Acacia mangium* Willd, *Swietenia mahagoni* AND *Artocarpus heterophyllus* AS TANNIN SOURCE TO REDUCE METHANE PRODUCTION BY *IN VITRO*

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ABSTRACT

The mitigation effort to reduce methane emissions and the improvement of feed efficiency using plant bioactive compounds has been extensively studied and applied as feed supplements and additives. The objective of this study was to investigate the effect of feed pellet containing three leaves mixtures as tannin source (*Acacia mangium* Willd, *Swietenia mahagoni*, and *Artocarpus heterophyllus*) on *in vitro* methane production. Pelleted leaves were applied to substitute the use of concentrate in the diet (grass:concentrate, 60:40) with three substitution levels equal to tannin concentration at 0%, 1%, and 2% based on dry matter (DM). All dietary treatments were used as substrate for *in vitro* fermentation by Menke and Steingass gas production method for 48 hours of incubation. The methane production and ruminal fermentation parameters were measured at the end of incubation. Obtained data were analyzed by oneway analysis of variance (ANOVA) and continued by *Duncan's Multiple Range Test* (DMRT). The result of this study presented that the application of pelleted leaves feeds up to 2% could reduce methane production, ammonia and microbial protein concentrations, protozoa's population and the proportion of C2:C3 ($P < 0.05$), but it did not affect the production of CO₂ and VFA ($P > 0.05$). As the result of this study could be concluded that substitution of concentrate with pelleted leaves as tannin source up to 2% could decrease *in vitro* methane production without giving a negative effect to VFA production.

Key words: Tannin, Methane Mitigation, Pellet Feed, Acacia, Mahogany, Jackfruit.