

**PENGARUH PENAMBAHAN TAMANU (*CALOPHYLLUM INOPHYLLUM* L.)
CRUDE OIL SEBAGAI ADITIF PADA RANSUM LOW ENERGY TERHADAP
KARAKTERISTIK FERMENTASI RUMEN SECARA *IN VITRO***

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INTISARI

Penelitian ini bertujuan untuk mengetahui pengaruh penggunaan *tamanu* (*Calophyllum inophyllum* L.) *crude oil* atau minyak biji tamanu (MBT) pada ransum *low energy* terhadap pencernaan, karakteristik fermentasi rumen, dan emisi gas metana (CH₄) secara *in vitro*. Substrat pakan yang digunakan berupa rumput gajah (*Pennisetum purpureum*) dan konsentrat komersial, perbandingan hijauan dan konsentrat adalah 7:3 berdasarkan bahan kering dengan kadar protein kasar sebesar 8,18% dan *total digestible nutrient* sebesar 53,44%. Pada tahap preparasi, MBT dilarutkan dalam pelarut lemak berupa *petroleum benzene*. Perlakuan terdiri dari penambahan MBT pada level 0 ppm (T0) dan 10 ppm (T1) ke dalam ransum. Masing-masing perlakuan dilakukan tiga kali replikasi selama dua periode inkubasi. Pada setiap periode *in vitro* menggunakan blanko sebanyak 2 botol dan standar rumput pangola sebanyak 2 botol. Sampel diinkubasi dengan Metode *Tiley and Terry* selama 48 jam pada suhu 39°C dengan perlakuan penggojokan setiap 8 jam sekali. Hasil penelitian menunjukkan bahwa penambahan MBT tidak berpengaruh secara nyata terhadap pencernaan bahan kering dan bahan organik. Selain itu, terjadi penurunan nilai pH rumen pasca inkubasi ($P=0,025$; $7,22\pm0,006$ vs. $7,13\pm0,04$) tetapi tidak diikuti dengan perubahan amonia, *volatile fatty acid* total, dan CH₄ yang menunjukkan penambahan MBT hanya berpengaruh terhadap perubahan nilai pH tanpa berpengaruh nyata terhadap karakteristik fermentasi lain di dalam rumen seperti pencernaan, amonia, *volatile fatty acid* total, dan produksi gas CH₄.

Kata kunci : *in vitro*, MBT, metana, ransum *low energy*, rumen

THE EFFECT OF TAMANU (*CALOPHYLLUM INOPHYLLUM* L.) CRUDE OIL ADDITION AS AN ADDITIVE IN LOW ENERGY DIETS ON IN VITRO RUMEN FERMENTATION CHARACTERISTICS

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ABSTRACT

This study aims to determine the effect of using tamanu (*Calophyllum inophyllum* L.) crude oil (MBT) in low energy rations on digestibility, rumen fermentation characteristics, and methane (CH₄) emissions in vitro. The feed substrate used consisted of *Pennisetum purpureum* and commercial concentrate, with a forage-to-concentrate ratio of 7:3 based on dry matter, containing 8.18% crude protein and 53.44% total digestible nutrients. In the preparation stage, the tamanu crude oil (MBT) was dissolved in a fat solvent, petroleum benzene. The treatment consisted of adding MBT at levels of 0 ppm (T₀) and 10 ppm (T₁) into the feed. Each treatment was replicated three times over two incubation periods. In each in vitro period, 2 bottles of blanks and 2 bottles of pangola grass standard were used. Samples were incubated using the Tiley and Terry Method for 48 hours at 39°C with shaking treatment every 8 hours. The research results show that the addition of MBT does not have a significant effect on the digestibility of dry matter and organic matter. Additionally, there was a decrease in rumen pH post-incubation ($P=0.025$; 7.22 ± 0.006 vs. 7.13 ± 0.04) but no changes in ammonia, total volatile fatty acids, and CH₄, indicating that the addition of MBT only affected the pH value without significantly impacting other fermentation characteristics in the rumen such as digestibility, ammonia, total volatile fatty acids, and CH₄ gas production.

Keywords: in vitro, MBT, methane, low-energy diet, rumen