

PENGARUH PROTEKSI PELET BUNGKIL KEDELAI MENGGUNAKAN FORMALDEHID TERHADAP PRODUKSI GAS METAN DAN KECERNAAN BAHAN KERING DAN ORGANIK RUMEN SECARA *IN VITRO*

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INTISARI

Mitigasi emisi gas metan (CH_4) dan peningkatan efisiensi penggunaan protein pakan secara ekstensif telah dipelajari dan diterapkan sebagai suplemen pakan. Penelitian ini bertujuan untuk mengetahui pengaruh proteksi bungkil kedelai berbentuk pelet dalam ransum terhadap produksi gas CH_4 , pencernaan bahan kering (BK), dan pencernaan bahan organik (BO) secara *in vitro*. Ransum yang diberikan terdiri dari hijauan dan konsentrat dengan perbandingan 60:40 dalam BK, serta pelet bungkil kedelai non proteksi dan pelet bungkil kedelai terproteksi. Penelitian ini terbagi menjadi dua perlakuan, yaitu kelompok bungkil kedelai dan bungkil kedelai terproteksi. Bungkil kedelai diproteksi dengan menggunakan formaldehid. Formaldehid yang digunakan sebanyak 0,8 mL untuk 1 kg bahan kering. Penelitian ini menggunakan metode produksi gas Menke dan Steingass dengan masa inkubasi selama 48 jam. Parameter yang diamati adalah produksi gas CH_4 , produksi gas karbondioksida (CO_2), jumlah protozoa, pencernaan BK, dan pencernaan BO. Data yang diperoleh dianalisis menggunakan uji *Independent Sample T-test*. Hasil penelitian menunjukkan bahwa penambahan pelet bungkil kedelai terproteksi mampu menurunkan pencernaan BK ($P < 0,01$), pencernaan BO ($P < 0,01$), dan jumlah protozoa ($P < 0,05$), namun tidak berpengaruh terhadap produksi gas CH_4 dan CO_2 ($P > 0,05$). Berdasarkan hasil penelitian dapat diambil kesimpulan bahwa proteksi bungkil kedelai berbentuk pelet efektif mampu memproteksi nutrisi pakan, akan tetapi tidak berpengaruh nyata dalam menurunkan produksi gas CH_4 .

Kata kunci: Bungkil kedelai, Formaldehid, *In vitro*, Pencernaan nutrisi, Metan, Pelet.

THE EFFECT OF PROTECTED SOYBEAN MEAL PELLET BY FORMALDEHYDE ON METHANE PRODUCTION AND DEGRADATION OF DRY MATTER AND ORGANIC MATTER IN THE RUMEN IN VITRO

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ABSTRACT

The mitigation effort to reduce methane emissions and the improvement of feed efficiency has been extensively studied and applied as feed supplements. This research aimed to determine the effect of protected soybean meal in rations on methane production, dry matter digestibility, and organic matter digestibility in vitro. The rations consist of grass and concentrate (60:40) on dry materials, also protected soybean meal pellet and unprotected soybean meal pellet. This research is divided into two treatments, namely the group with protected soybean meal pellet and the group with unprotected soybean meal pellet. Rumen undegraded protein pellet containing soybean meal that is protected by formaldehyde. The formaldehyde used was 0,8 mL for 1 kg of dry matter. All dietary treatments were used as a substrate for in vitro fermentation by Menke and Steingass gas production method for 48 hours of incubation. Parameters measured were methane production, CO₂ production, protozoa population, dry matter digestibility, and organic matter digestibility. Obtained data were analysed by Independent Sample t-test. The result of this study presented that protected soybean meal pellet could reduce dry matter digestibility ($P < 0,01$), organic matter digestibility ($P < 0,01$), and protozoa population ($P < 0,05$), but it did not affect the production of methane (CH₄) and CO₂ ($P > 0,05$). As the result of this study could be concluded that protected soybean meal pellet can effectively protect nutrients without disturbing degradation of feed substrate in the rumen, but has no significant effect in reducing methane production.

Keyword: Soybean meal, Formaldehyde, In vitro, Nutrient digestibility, Methane, Pellet.