

**PENGARUH LAMA FERMENTASI KONSENTRAT BERBASIS
BUNGKIL NYAMPLUNG (*Calophyllum inophyllum* L.)
TERHADAP KECERNAAN *IN VITRO* DAN
KARAKTERISTIK FERMENTASI PAKAN**

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INTISARI

Penelitian ini bertujuan untuk mengetahui pengaruh perbedaan lama fermentasi konsentrat berbasis bungkil nyamplung (*Calophyllum inophyllum* L.) terhadap pencernaan nutrisi secara *in vitro*. Uji pencernaan pakan dilakukan dengan metode Tilley dan Terry tahap pertama dengan dua replikasi uji. Analisis kadar amonia (NH_3) dilakukan dengan metode spektrofotometri dan analisis produksi *volatile fatty acid* (VFA) diukur dengan metode *gas chromatography-mass spectrometry* (GC-MS). Penelitian ini menggunakan cairan rumen dari seekor sapi Bali betina berfistula dengan umur 10 tahun dan bobot 300 kg. Perlakuan pakan yang digunakan berupa konsentrat fermentasi berbasis bungkil nyamplung dengan lama fermentasi berbeda, yaitu 3 hari (P3), 7 hari (P7), dan 21 hari (P21) dengan kadar air sebesar 30% dan masing-masing direplikasi sebanyak 4 kali. Data yang diamati adalah pencernaan bahan kering (KcBK), pencernaan bahan organik (KcBO), dan karakteristik fermentasi pakan di dalam rumen seperti nilai pH, kadar NH_3 , serta kadar VFA. Data yang diperoleh dianalisis menggunakan analisis variansi (ANOVA) pola searah dan apabila hasil analisis ragam menunjukkan pengaruh yang nyata, maka akan dilakukan uji lanjut menggunakan uji Tukey. Hasil penelitian menunjukkan bahwa nilai KcBK dan KcBO memberikan pengaruh yang nyata ($P < 0,05$) antara tiap perlakuan, sedangkan nilai pH, kadar NH_3 , dan VFA total maupun parsial tidak memberikan pengaruh nyata ($P > 0,05$) antara tiap perlakuan. Hasil rerata nilai KcBK dan KcBO tertinggi pada lama fermentasi 7 hari (49,6% dan 66,66%, berurutan). Hasil rerata nilai pH dan NH_3 tertinggi pada lama fermentasi 21 hari (6,80 dan 20,2 mg/100 mL, berurutan), sementara hasil rerata nilai VFA total, asetat, propionat, dan butirrat tertinggi pada lama fermentasi 7 hari (24,8 mMol, 11,3 mMol, 8,78 mMol, dan 4,67 mMol, berurutan). Berdasarkan hasil penelitian, dapat disimpulkan bahwa lama fermentasi konsentrat berbasis bungkil nyamplung selama 7 hari efektif menghasilkan nilai KcBK dan KcBO yang paling optimal, akan tetapi tidak berpengaruh pada nilai pH, NH_3 , dan VFA.

Kata kunci: Amonia, bungkil nyamplung, fermentasi, *in vitro*, pencernaan, konsentrat fermentasi, lama fermentasi, nyamplung, pakan, *volatile fatty acid*

**THE EFFECT OF FERMENTATION TIME OF CONCENTRATE BASED
ON NYAMPLUNG PRESS CAKE (*Calophyllum inophyllum* L.)
ON IN VITRO DIGESTIBILITY AND CHARACTERISTICS
OF FEED FERMENTATION**

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ABSTRACT

This study was conducted to determine the effect of differences in the fermentation time of concentrate based on nyamplung press cake (*Calophyllum inophyllum* L.) on the level of digestibility in vitro. The feed digestibility test was conducted using the first stage of the Tilley and Terry method with two test replications. Analysis of ammonia (NH₃) levels by using the spectrophotometric method and analysis of volatile fatty acid (VFA) production was measured using the gas chromatography-mass spectrometry (GC-MS) method. This study used rumen fluid from a female Balinese cow with fistulas aged 10 years and weighing 300 kg. The feed treatment used was a fermented concentrate based on nyamplung press-cake with different fermentation times, namely 3 days (P3), 7 days (P7), and 21 days (P21) with a water content of 30%, and each replicated 4 times. The data observed were dry matter digestibility (KcBK), organic matter digestibility (KcBO), and characteristics of feed fermentation on rumen, such as pH values, NH₃ levels, and VFA levels. The data obtained was analyzed using unidirectional analysis of variance (ANOVA). If the analysis of variance shows a significant effect, then a further test will be carried out using the Tukey test. The results showed that the KcBK and KcBO values had a significant influence ($P < 0.05$) between each treatment, while the pH values, NH₃ levels, and total and partial VFA did not have a significant influence ($P > 0.05$) between each treatment. The highest mean KcBK and KcBO values were at a fermentation time of 7 days (49,6% and 66,66%, respectively). The mean results of pH and NH₃ values were highest at a fermentation time of 21 days (6,80 and 20,2 mg/100 mL, respectively), while the mean results of total VFA, acetate, propionate and butyrate were the highest at a fermentation time of 7 days (24,8 mMol, 11,3 mMol, 8,78 mMol, and 4,67 mMol, respectively). Based on the research results, it can be concluded that the fermentation time for concentrate based on nyamplung press-cake for 7 days is effective in producing the most optimal KcBK and KcBO values but has no effect on the pH, NH₃, and VFA values.

Keywords: Ammonia, digestibility, feed fermentation, fermentation concentrate, fermentation time, in vitro, nyamplung, nyamplung press cake, volatile fatty acids