

KAJIAN KECERNAAN DAN KARAKTERISTIK FERMENTASI BUNGKIL BIJI MALAPARI (*Pongamia pinnata*) SEBAGAI PAKAN INKONVENSIONAL SECARA *IN VITRO*

Fauzan Aldi Satriyo
21/482332/PT/09084

INTISARI

Bungkil biji malapari (*Pongamia pinnata*) merupakan produk samping dari ekstraksi minyak yang berpotensi sebagai pakan ternak. Penelitian ini bertujuan mengevaluasi pencernaan dan karakteristik fermentasi rumen dari bungkil biji malapari secara *in vitro* sebagai pakan inkonvensional. Sebagai pembanding, digunakan bahan pakan konvensional lain dengan komposisi kimia serupa, yaitu bungkil inti sawit dan tepung daun gamal. Uji pencernaan dilakukan menggunakan metode Tilley and Terry tahap pertama dengan tiga replikasi. Kadar amonia (NH_3) dianalisis menggunakan spektrofotometri, sedangkan *volatile fatty acid* (VFA) dianalisis dengan metode gas *chromatography-mass spectrometry* (GC-MS). Cairan rumen diperoleh dari sapi Bali betina berumur 10 tahun dan berbobot 300 kg sebelum pemberian pakan pagi. Parameter yang diamati meliputi pencernaan bahan kering (KcBK), pencernaan bahan organik (KcBO), pH, kadar NH_3 , dan kadar VFA. Data dianalisis menggunakan *One-way ANOVA*, dan dilanjutkan dengan uji Tukey jika ditemukan perbedaan yang signifikan. Hasil menunjukkan bahwa nilai KcBK, KcBO, pH, kadar NH_3 , VFA total, dan proporsi asetat serta propionat berbeda signifikan ($P < 0,05$) antara bahan pakan, sedangkan proporsi butirat tidak berbeda signifikan ($P > 0,05$). Bungkil biji malapari memiliki nilai KcBK, KcBO, dan proporsi propionat tertinggi (74,32%, 75,95%, dan 29,48 mMol, berurutan), namun memiliki nilai pH dan kadar NH_3 terendah (6,84 dan 9,98 mg/100 mL, berurutan). Nilai VFA total dan proporsi asetat serta butirat masing-masing sebesar 113,08 mMol, 71,59 mMol, dan 12,01 mMol. Berdasarkan hasil penelitian, dapat disimpulkan bahwa bahan pakan bungkil biji malapari memiliki pencernaan tinggi dan karakteristik fermentasi rumen yang mendukung, sehingga berpotensi sebagai bahan pakan inkonvensional bagi ternak ruminansia.

Kata kunci : Amonia, bungkil biji malapari, karakteristik fermentasi rumen, pencernaan *in vitro*, pakan inkonvensional, *volatile fatty acid*

STUDY OF DIGESTIBILITY AND FERMENTATION CHARACTERISTICS OF PONGAMIA (*PONGAMIA PINNATA*) KERNEL CAKE AS AN UNCONVENTIONAL FEED THROUGH IN VITRO

Fauzan Aldi Satriyo
21/482332/PT/09084

ABSTRACT

Pongamia kernel cake (*Pongamia pinnata*) was a by-product of oil extraction with potential as animal feed. This study aimed to evaluate the digestibility and rumen fermentation characteristics of *pongamia* kernel cake *in vitro* as an unconventional feed ingredient. For comparison, conventional feed ingredients with similar chemical compositions, namely palm kernel cake and *Gliricidia* leaf meal, were used. Digestibility tests were carried out using the first stage of the Tilley and Terry method with three replications. Ammonia (NH₃) levels were analyzed using spectrophotometry, while volatile fatty acid (VFA) were analyzed using gas chromatography-mass spectrometry (GC-MS). Rumen fluid was obtained from a 10 year old, 300 kg female Bali cow before morning feeding. Observed parameters included dry matter digestibility (DMD), organic matter digestibility (OMD), pH, NH₃ levels, and VFA levels. Data were analyzed using one-way ANOVA, followed by Tukey's test when significant differences were found. The results showed that DMD, OMD, pH, NH₃ concentration, total VFA, and the proportions of acetate and propionate differed significantly ($P < 0,05$) among the feed ingredients, while the proportion of butyrate did not differ significantly ($P > 0,05$). *Pongamia* kernel cake had the highest DMD, OMD, and propionate values (74,32%, 75,95%, and 29,48 mMol, respectively), however had the lowest pH and NH₃ concentrations (6,84 and 9,98 mg/100 mL, respectively). Total VFA, acetate, and butyrate were 113,08 mMol, 71,59 mMol, and 12,01 mMol, respectively. Based on the results, it was concluded that *pongamia* kernel cake had high digestibility and favorable rumen fermentation characteristics, indicating it's potential as an unconventional feed ingredient for ruminant livestock.

Keywords: Ammonia, in vitro digestibility, *pongamia* kernel cake, rumen fermentation characteristics, unconventional feed, volatile fatty acid