

Metabolisme Nitrogen, Sintesis Protein Mikroba dan Performa Sapi Madura yang Diberi Jerami Padi Amoniasi Fermentasi dan Konsentrat yang disuplementasi Tepung Daun Waru (*Hibiscus tiliaceus*)

ABSTRAK

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Abstrak. Penelitian ini bertujuan mengevaluasi kualitas pakan menggunakan jerami padi amoniasi fermentasi (JPAF) dan penambahan tepung daun waru (TDW) terhadap metabolisme nitrogen, sintesis protein mikroba (SPM) dan performa Sapi Madura. Digunakan 20 ekor Sapi Madura berumur rata-rata 3 tahun dipelihara selama 3 bulan. Rancangan acak lengkap (RAL) digunakan dalam penelitian dengan 4 perlakuan 5 ulangan. Perlakuan P0 = jerami padi + konsentrat, P1 = jerami padi amoniasi (JPA) + konsentrat, P2 = JPA + konsentrat + TDW 0,48%, dan P3 = JPAF + konsentrat + TDW 0,48%. Variabel yang diamati adalah pencernaan nutrisi, konsumsi nitrogen (N), pencernaan N, N feses, N urin, retensi N, *net nitrogen utilization* (NNU), *biological value* (BV), SPM, efisiensi SPM (ESPM), produksi protein mikroba, bahan organik tercerna rumen (BOTR), pertambahan bobot badan harian (PPBH) dan konversi pakan. Data yang diperoleh dianalisis dengan analisis variansi dan dilanjutkan uji beda nyata jujur. Hasil penelitian menunjukkan perlakuan berpengaruh sangat nyata ($P < 0,01$) terhadap pencernaan bahan kering (KcBK), pencernaan bahan organik (KcBO), pencernaan serat kasar (KcSK), pencernaan protein kasar (KcPK), N feses, pencernaan N, retensi N, NNU, SPM, PPM, PBBH dan konversi pakan, akan tetapi tidak berpengaruh ($P > 0,05$) pada pencernaan lemak kasar, konsumsi N, N urin, BV, ESPM dan BOTR. KcBK dan KcBO P0 sama dengan ($P > 0,05$) P1, akan tetapi lebih rendah dari P2 dan P3. Diantara P1, P2 dan P3 tidak berbeda ($P > 0,05$). KcSK dan KcPK pada P1, P2 dan P3 tidak berbeda ($P > 0,05$), namun lebih tinggi ($P < 0,01$) dari P0. N feses pada P1, P2 dan P3 tidak berbeda ($P > 0,05$), namun lebih rendah ($P < 0,01$) dari P0. Pencernaan N, retensi N dan NNU pada P1, P2 dan P3 tidak berbeda ($P > 0,05$), akan tetapi lebih tinggi ($P < 0,01$) dari P0. SPM dan PPM tertinggi ($P < 0,01$) dicapai pada P3 disusul berturut-turut ($P < 0,01$) P2, P1 dan P0. PBBH pada P0 sama ($P > 0,05$) dengan P1, namun lebih rendah ($P < 0,01$) dari P2 dan P3. Diantara P2 dan P3 tidak berbeda ($P > 0,05$). Konversi pakan terendah ($P < 0,01$) dicapai pada P2 dan P3 disusul berturut-turut ($P < 0,01$) P1 dan P0. Dapat disimpulkan bahwa penggunaan JPAF dengan suplementasi TDW dapat meningkatkan pencernaan nutrisi, metabolisme N, SPM dan performa Sapi Madura.

Kata kunci: flavonoid, retensi, nitrogen, pencernaan, rumen

**NITROGEN METABOLISM, MICROBIAL PROTEIN SYNTHESIS AND
PERFORMANCES OF MADURA CATTLE FED WITH AMMONIATION RICE STRAW
FERMENTED AND CONCENTRATE SUPPLEMENTED WITH WARU LEAF FLOUR
(*Hibiscus tiliaceus*)**

ABSTRACT

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Abstract. The objective of this research was to evaluate the quality of feed using fermented ammoniated rice straw (FARS) and the addition of waru leaf powder (WLP) on nitrogen metabolism, microbial protein synthesis (MPS) and performance of Madura cattle. Twenty of Madura cattle were used with an average age of 3 years old and kept in individual cage for 3 months. A completely randomized design (CRD) was used in the study with 4 treatments and each treatment replicated five times. The treatment were P0 = rice straw + concentrate, P1 = ammoniated rice straw (ARS) + concentrate, P2 = ARS + concentrate + WLP 0.48%, and T3 = FARS + concentrate + WLP 0.48%. The variables observed were nutrient digestibility, nitrogen consumption (N), N digestibility, feces N, urine N, N retention, net nitrogen utilization (NNU), biological value (BV), MPS, efficiency MPS (ESPM), microbial protein production, digestible organic matter in rumen (DOMR), average daily body weight gain (ADG) and feed conversion. Data were analysed with variance analysis and continued with honest significant difference test. The result showed that the treatment was a significant effect ($P < 0.01$) on dry matter digestibility (DMD), organic matter digestibility (DMO), crude fiber digestibility (DCF), crude protein digestibility (DCP), feces N, N digestibility, N retention, NNU, MPS, ESPM, ADG and feed conversion, but it was no effect ($P > 0.05$) on crude fat digestibility, consumption of N, urine N, BV, ESPM and DOMR. DMD and DMO P0 were the same as ($P > 0.05$) P1, but lower than P2 and P3. There is no difference between P1, P2 and P3 ($P > 0.05$). DCF and DCP at P1, P2 and P3 were not different ($P > 0.05$), but higher ($P < 0.01$) than P0. N feces at P1, P2 and P3 were not different ($P > 0.05$), but lower ($P < 0.01$) than P0. N digestibility, N retention and NNU at P1, P2 and P3 were not different ($P > 0.05$), but higher ($P < 0.01$) than P0. The highest MPS and MPP ($P < 0.01$) were achieved at P3 followed by ($P < 0.01$) respectively P2, P1 and P0. ADG at P0 was not different ($P > 0.05$) as P1, but it was lower ($P < 0.01$) than P2 and P3. There were no difference between P2 and P3 ($P > 0.05$). The lowest feed conversion ($P < 0.01$) was achieved at P2 and P3 followed by ($P < 0.01$) P1 and P0. It can be concluded that the use of FARS with WLP supplementation can improve nutrient digestibility, N metabolism, MPS and performance of Madura cattle.

Keywords: flavonoid, retention, nitrogen, digestibility, rumen.