

PERBEDAAN PENAMBAHAN PELET PROTEIN TERPROTEKSI DENGAN PELET PROTEIN-LEMAK TERPROTEKSI DALAM RANSUM TERHADAP PARAMETER FERMENTASI RUMEN SECARA *IN VITRO*

Aulia Fitria Indriani
20/459669/PT/08495

INTISARI

Penelitian ini bertujuan untuk mengetahui perbedaan penambahan pelet protein terproteksi dengan pelet protein-lemak terproteksi dalam ransum terhadap parameter fermentasi rumen secara *in vitro* yang meliputi nilai derajat keasaman (pH), kadar amonia (NH₃), protein mikroba, dan *volatile fatty acid* (VFA). Penelitian ini dilakukan untuk meningkatkan sumber energi ternak yang mempunyai produksi tinggi. Penelitian ini dilaksanakan di Laboratorium Teknologi Makanan Ternak, Laboratorium Biokimia Nutrisi, Fakultas Peternakan, serta Laboratorium Kimia Organik, Fakultas Matematika dan Ilmu Pengetahuan Alam, UGM, Yogyakarta. Penelitian ini menggunakan cairan rumen sapi Bali berfistula. Pakan yang diberikan berupa hijauan dan konsentrat dengan perbandingan 60:40 dalam bahan kering. Hijauan yang digunakan adalah rumput gajah cv. Gama Umami, sedangkan konsentrat yang digunakan adalah *wheat pollard*, pelet kontrol terproteksi, dan pelet perlakuan terproteksi. Perlakuan penelitian ini terbagi menjadi dua, yaitu kelompok kontrol dengan penambahan pelet protein terproteksi dan kelompok perlakuan dengan penambahan pelet protein-lemak terproteksi. Penelitian ini menggunakan metode *in vitro* Menke dan Steingass dengan empat kali pengulangan setiap perlakuan. Variabel yang diamati, yaitu nilai pH, kadar amonia, protein mikroba, dan total VFA. Data yang diperoleh dianalisis dengan uji *Independent Sample T-test*. Hasil penelitian menunjukkan bahwa penambahan pelet protein-lemak terproteksi dalam ransum tidak berpengaruh terhadap nilai pH, kadar amonia, protein mikroba, dan total VFA ($P > 0,05$). Nilai rata-rata masing-masing kelompok adalah nilai pH $6,86 \pm 0,02$ vs. $6,87 \pm 0,2$; kadar amonia $28,98 \pm 2,26$ vs. $25,03 \pm 1,43$ mg/100 mL; protein mikroba $18,68 \pm 7,21$ vs. $17,98 \pm 1,78$ mg/mL; dan total VFA $91,79 \pm 6,19$ vs. $96,67 \pm 7,77$ mMol. Disimpulkan bahwa penambahan pelet protein-lemak terproteksi dalam ransum tidak berpengaruh terhadap parameter fermentasi rumen secara *in vitro* yang meliputi nilai pH, kadar amonia, protein mikroba, dan *volatile fatty acid* (VFA).

Kata kunci: *In Vitro*, Parameter Fermentasi, Pelet, Protein Terproteksi, Protein-Lemak Terproteksi.

**THE DIFFERENCE OF ADDED PROTECTED PROTEIN PELLETS
WITH PROTECTED PROTEIN-FAT PELLETS IN DIETARY
ON RUMEN FERMENTATION PARAMETERS
IN VITRO**

**Aulia Fitria Indriani
20/459669/PT/08495**

ABSTRACT

This study aims to determine the difference between the addition of protected protein pellets and protected protein-fat pellets in rations on in vitro rumen fermentation parameters including pH value, ammonia (NH₃) levels, microbial protein, and volatile fatty acid (VFA). This research was conducted to increase the energy sources of livestock that have high production. This research was carried out at the Laboratory of Animal Food Technology, Laboratory of Biochemistry Nutrition, Faculty of Animal Science, and Laboratory of Organic Chemistry, Faculty of Mathematics and Natural Sciences, UGM, Yogyakarta. This study used rumen fluid of fistula Bali cattle. The feed given was forage and concentrate with a ratio of 60:40 in dry matter. The forage used was Napier grass cv. Gama Umami, while the concentrates used were wheat pollard, protected control pellets, and protected treatment pellets. The treatment of this study was divided into two groups, the control group with the addition of protected protein pellets and the treatment group with addition of protected protein-fat pellets. This study used the Menke and Steingass in vitro method with four repetitions of each treatment. The variables observed were pH value, ammonia, microbial protein, and total VFA. The data obtained were analyzed by Independent Sample T-test. The results showed that the addition of protected protein-fat pellets in the ration had no effect on pH value, ammonia, microbial protein, and total VFA ($P > 0,05$). The mean values of each group were pH $6,86 \pm 0,02$ vs. $6,87 \pm 0,02$; ammonia $28,98 \pm 2,26$ vs. $25,03 \pm 1,43$ mg/100 mL; microbial protein $18,68 \pm 7,21$ vs. $17,98 \pm 1,78$ mg/mL; and total VFA $91,79 \pm 6,19$ vs. $96,67 \pm 7,77$ mMol. It was concluded that the addition of protected protein-fat pellets in the ration had no effect on in vitro rumen fermentation parameters including pH value, ammonia (NH₃), microbial protein, and volatile fatty acid (VFA) levels.

Keywords: In Vitro, Fermentation Parameters, Pellets, Protected Protein, Protein-Fat Protected.