

## EFEK SUPLEMENTASI PELET PROTEIN TERPROTEKSI DENGAN PELET PROTEIN DAN LEMAK TERPROTEKSI DALAM RANSUM TERHADAP PRODUKSI GAS DAN KECERNAAN NUTRIEN SECARA *IN VITRO*

Azizah Dewi Setyawati  
20/459670/ PT/08496

### INTISARI

Penelitian ini bertujuan untuk mengetahui efek suplementasi pelet protein terproteksi dengan suplementasi pelet protein dan lemak terproteksi dalam ransum terhadap produksi gas dan pencernaan nutrien secara *in vitro*. Penelitian ini dilaksanakan di Laboratorium Biokimia Nutrisi dan Laboratorium Teknologi Makanan Ternak, Fakultas Peternakan, Universitas Gadjah Mada, serta Laboratorium Balai Pengujian Standar Instrumen Lingkungan Pertanian, Kementerian Pertanian. Penelitian ini menggunakan cairan rumen dari sapi Bali berfistula. Ransum yang diberikan terdiri dari hijauan dan konsentrat dengan perbandingan 60:40. Bahan pakan yang digunakan berupa rumput gajah cv. Gama Umami, *wheat pollard*, pelet protein terproteksi, serta pelet protein dan lemak terproteksi. Penelitian terbagi menjadi dua kelompok, yaitu kelompok kontrol (ransum dengan suplementasi pelet protein terproteksi sebanyak 7.3%) dan kelompok perlakuan (ransum dengan suplementasi pelet protein dan lemak terproteksi sebanyak 7.3%) dengan empat replikasi di setiap kelompok. Penelitian ini dilakukan melalui fermentasi *in vitro* dengan metode Menke dan Steingass selama 48 jam. Parameter yang diamati berupa total produksi gas, produksi gas metan (CH<sub>4</sub>), gas karbon dioksida (CO<sub>2</sub>), pencernaan bahan kering (KcBK), pencernaan bahan organik (KcBO), dan pencernaan protein kasar (KcPK). Data yang diperoleh dianalisis statistik dengan uji *Independent Sample T-test* untuk membandingkan rata-rata nilai dari kedua kelompok sampel. Hasil penelitian menunjukkan bahwa suplementasi pelet protein dan lemak terproteksi dalam ransum tidak mempengaruhi produksi gas total, gas CH<sub>4</sub> dan CO<sub>2</sub>, serta KcBK, KcBO, dan KcPK. Berdasarkan hasil penelitian dapat disimpulkan bahwa suplementasi pelet protein dan lemak terproteksi dalam ransum tidak memberikan efek terhadap produksi gas dan pencernaan nutrien secara *in vitro*.

Kata kunci: *In vitro*, Pencernaan nutrien, Pelet terproteksi, Produksi gas, Ransum

**EFFECT OF PROTECTED PROTEIN PELLETS SUPPLEMENTATION WITH  
PROTECTED PROTEIN AND FAT PELLETS SUPPLEMENTATION  
IN DIETARY ON GAS PRODUCTION AND  
IN VITRO NUTRIENT DIGESTIBILITY**

**Azizah Dewi Setyawati**  
**20/459670/ PT/08496**

**ABSTRACT**

This study was aimed to determine the effects of supplementing protected protein pellets with protected protein and fat pellets in the diet on gas production and *in vitro* nutrient digestibility. This research was conducted at the Nutritional Biochemistry Laboratory and the Feed Technology Laboratory, Faculty of Animal Science, Universitas Gadjah Mada, as well as the Laboratory of Agricultural Environmental Instrument Standards Testing Center, Ministry of Agriculture. This research uses rumen fluid from fistulated Bali cattle. The diet given consists of forage and concentrate in a 60:40 ratio. The feed ingredients used were napier grass cv. Gama Umami, wheat pollard, protected protein pellets, as well as protected protein and fat pellets. The study was divided into two groups, namely the control group (ration with 7.3% protected protein pellets supplementation) and the treatment group (ration with 7.3% protected protein and fat pellets supplementation) with four replications in each group. This study was conducted through *in vitro* fermentation using the Menke and Steingass method for 48 hours. The observed parameters included total gas production, methane gas production (CH<sub>4</sub>), carbon dioxide gas production (CO<sub>2</sub>), dry matter digestibility (DMD), organic matter digestibility (OMD), and crude protein digestibility (CPD). The obtained data were analyzed using the Independent Sample T-test to compare the average values of the two sample groups. The research results show that the supplementation of protected protein and fat pellets in the diet does not affect the total gas production, CH<sub>4</sub> and CO<sub>2</sub> gas, as well as DMD, OMD, and CPD. Based on the research results, it can be concluded that the supplementation of protected protein and fat pellets in the feed does not affect gas production and *in vitro* nutrient digestibility.

**Keywords:** Diet, Gas production, *In vitro*, Nutrient digestibility, Protected pellets,