PENGARUH PENGGUNAAN BUNGKIL PALA (*Myristica fragrans* Houtt.) DALAM RANSUM TERHADAP PARAMETER FERMENTASI DAN KERAGAMAN BAKTERI METANOGENIK RUMEN SECARA *IN VITRO*

Muhammad Anang Aprianto
16/399149./PT/07267

INTISARI

Penelitian ini bertujuan untuk mengetahui pengaruh penggunaan bungkil pala (*Mysristica fragrans* Houtt.) dalam ransum terhadap parameter fermentasi dan keragaman bakteri metanogenik rumen secara *in vitro*. Substrat pakan terdiri atas rumput odot, bungkil kedelai, *wheat pollard,* dan bungkil pala dengan perbandingan 40:10:50:0 sebagai kontrol, 40:10:35:15, 40:10:20:30 dan 40:10:5:45 dengan ulangan 3 *batch* fermentasi. Fermentasi rumen secara *in vitro* dilakukan dengan metode produksi gas. Parameter yang diamati adalah kadar amonia (NH_3), *volatile fatty acids* (VFA), dan protein mikroba, produksi metan (CH_4) serta analisis keragaman metanogen menggunakan *metode terminal restriction fragment length polymorphism* (TRFLP). Analisis statistik data parameter fermentasi dan produksi gas metan dilakukan dengan analisis ANOVA, kemudian bila ada perbedaan nyata dilanjutkan dengan uji *duncan's new multiple range test* DMRT, sedangkan keragaman bakteri metanogenik dianalisis secara deskriptif. Hasil penelitian menunjukkan penggunaan bungkil pala dalam ransum paling optimal sampai level 15% yang tidak berbeda dengan kontrol (level 0%) dimana dihasilkan kadar NH_3 sebesar (54,38 vs 54,96 mg/100mL), total VFA sebesar (90.01 vs 90,03 mM), asam asetat sebesar (5,01 vs 49,60 mM), asam propionat sebesar (23,95 vs 24,43 mM), asam butirat sebesar (16,05 vs 16,00 mM), rasio asam asetat dan propionat sebesar (2,09 vs 2,03), kadar protein mikroba sebesar (0,69 vs 0,7 mg/mL) dan produksi CH_4/BKT sebesar (53,88 vs 53,09 mL/g). Penggunaan bungkil pala sampai level 15% juga tidak merubah keragaman dan kelimpahan bakteri metanogenik di dalam rumen. Kesimpulan yang dapat diambil dari penelitian ini yaitu penggunaan bungkil pala dalam ransum sampai level 15% tidak memberikan pengaruh negatif terhadap parameter fermentasi rumen, produksi metan dan keragaman bakteri metanogenik di dalam rumen secara *in vitro*.

Kata kunci: Bungkil pala, Parameter fermentasi, Keragaman bakteri metanogenik, Produksi metan

THE EFFECT OF NUTMEG MEAL (*Myristica fragrans* Houtt.) IN RATIONS ON RUMEN FERMENTATION PARAMETERS AND METHANOGENIC BACTERIA DIVERSITY *IN VITRO*

Muhammad Anang Aprianto
16/399149./PT/07267

ABSTRACT

This study aimed to determine the effect of nutmeg meal (*Myristica fragrans* Houtt.) in rations on fermentation parameters and methanogenic bacteria diversity in vitro rumen. Feed substrate consisted of dwarf elephant grass, soybean meal, wheat pollard and nutmeg meal in ratios of 40:10:50:0 as a control, 40:10:35:15, 40:10:20:30 and 40:10:5:45 with 3 replications for each treatment. Fermentation was carried out by in vitro gas production technique. The observed parameters were value of NH_3, VFA production, microbial protein, methane (CH_4) production, and methanogenic bacterial diversity, which were analyzed using terminal restriction fragment length polymorphism (TRFLP) method. Fermentation parameters and methane production were statistically analyzed using ANOVA, if there were differences between means followed by *duncan's new multiple range test* (DMRT) test, while the diversity of methanogenic bacterial diversity was analyzed by description. The result showed that the use of nutmeg meal in rations which most optimal level until 15% had no diffrent compared with control (0%) which the result showed NH_3 (54,38 vs 54,96 mg/100mL), total VFA (90.01vs 90,03 mM), acetic acid (5,01 vs 49,60 mM), propionic acid (23,95 vs 24,43 mM), butiric acid (16,05 vs 16,00 mM), ratio of acetic:propionic aicid (2,09 vs 2,03), microbial protein (0,69 vs 0,7mg/mL) and CH_4/BKT production (53,88 vs 53,09 mL/g). The used of nutmeg meal until 15% no changed in abudance and diversity of methanogenic bacterial. The conclusion that can be drawn from this study is the use nutmeg meal in rations until a level of 15% does not cause negative effect on rumen fermentation, methane production and methanogenic bacterial diversity in rumen fermentation in vitro.

Keywords: Nutmeg meal, Fermentation parameters, Methanogenic bacteria diversity, Methane production