PENGARUH PENAMBAHAN DAUN KETEPENG CINA *(Cassia alata)* SEBAGAI SUMBER ANTRAKINON PADA FERMENTASI RUMPUT RAJA SECARA *IN VITRO*

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INTISARI

Penelitian ini dilakukan untuk mengetahui pengaruh penambahan daun Ketepeng Cina *(Cassia alata)* terhadap produksi gas metan, *volatile fatty acids* (VFA), aktivitas CMC-ase dan kadar protein mikrobia pada fermentasi rumput Raja oleh mikrobia rumen secara *in vitro*. Duabelas *syringe* 100 ml diisi dengan 300 mg rumput Raja sebagai substrat dan 30 ml medium fermentasi kemudian dibagi menjadi empat perlakuan dengan tiga ulangan yaitu : tanpa penambahan daun Ketepeng Cina (K0), penambahan daun Ketepeng Cina setara 0,5 ppm antrakinon (Kl), 1 ppm antrakinon (K2), dan 5 ppm antrakinon (K3). Blanko dibuat untuk koreksi sebanyak 2 *syringe*. Semua *syringe* diinkubasi pada *waterbath* dengan suhu 39ºC selama 72 jam. Variabel yang diukur adalah produksi gas metan, kadar VFA, aktivitas CMC-ase dan kadar protein mikrobia. Data yang diperoleh dianalisis dengan analisis variansi menurut Rancangan Acak Lengkap Pola Searah kemudian dilanjutkan uji *Duncan's Multiple Range Test* (DMRT) untuk rerata variabel yang menunjukkan perbedaan nyata. Hasil penelitian menunjukkan bahwa penambahan daun Ketepeng Cina cenderung menurunkan produksi gas metan. Penambahan setara 5 ppm antrakinon menurunkan produksi gas metan dari 98,41 ml menjadi 59,68 ml atau sebesar 39,36% ($P<0,05$). Perlakuan menyebabkan penurunan aktivitas enzim CMC-ase secara nyata ($P<0,05$) meski antar level penambahan tidak ada perbedaan. Namun demikian tidak berpengaruh nyata terhadap kadar asam propionat dan butirat. Penambahan daun Ketepeng Cina cenderung meningkatkan kadar asetat, namun secara nyata tidak menyebabkan peningkatan kadar total VFA. Kadar protein mikrobia terlihat meningkat namun peningkatan tersebut tidak nyata. Dari hasil penelitian dapat diambil kesimpulan bahwa penambahan daun Ketepeng Cina setara 5 ppm antrakinon memberikan hasil yang terbaik karena mampu menurunkan produksi gas metan tanpa menimbulkan efek negatif terhadap kadar VFA dan protein mikrobia.

(Kata kunci : Antrakinon, Ketepeng Cina, Gas metan, Volatile Fatty Acids, Protein mikrobia, *In Vitro*)

THE EFFECT OF *CASSIA ALATA* LEAVES AS A SOURCE OF ANTRAQINONE ON IN VITRO KING GRASS FERMENTATION

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ABSTRACT

This experiment was conducted to determine the effect of *Cassia alata* leaves on methane as well as volatile fatty acids (VFA) production, CMC-ase activities and microbial protein synthesis in the in vitro King grass fermentation by rumen microbes. Twelve 100 ml syringes were filled by 300 mg King grass and 30 ml medium of fermentation. The syringes were devided into four treatments with three replication namely K0: without addition of Cassia alata leaves, Kl, K2 and K3 addition of Cassia alata equal to 0,5, 1 and 5 ppm antraqinone. The syringes were incubated at 39ºC for 72 hours. The data of methane production, volatile fatty acids concentration, CMC-ase activities and microbial protein concentration were analysed by analyse of variance using Completely Randomized Design. The differences of mean values were analysed by Duncan's New Multiple Range Test (DMRT). The result showed that methane production tended to decrease by addition of Cassia alata. Addition of 5 ppm antraqinone decreased methane production significantly from 98,41 ml to 59,68 ml or 39,36% ($P<0,05$). CMC-ase activities decreased by addition of *Cassia alata* significantly ($P<0,05$). Addition of *Cassia alata* leaves had no effect in propionic and butiric acids concentration. Acetic acids concentration tended to increase by addition of *Cassia alata* leaves. Nevertheless the addition of *Cassia alata* had no effect on VFA and microbial protein synthesis. It could be concluded that addition of *Cassia alata* leaves equal 5 ppm antraqinone decreased methane production without negatif effect on the VFA concentration and microbial protein synthesis.

(Key words : Antraqinone, *Cassia alata*, Methane, Volatile Fatty Acids, Microbial protein synthesis, In *Vitro*)