

## PENGARUH PENAMBAHAN *ESSENTIAL OIL* CENGKEH (*Syzygium aromaticum* L.) TERHADAP PARAMETER FERMENTASI DALAM RUMEN SAPI SECARA *IN VITRO*

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### INTISARI

Penelitian ini bertujuan untuk mengetahui pengaruh *essential oil* dari cengkeh (*Syzygium aromaticum* L.) terhadap parameter fermentasi rumen yang meliputi pH, populasi protozoa, kadar amonia, dan protein mikroba secara *in vitro*. Cairan rumen sebagai sumber mikroba rumen diperoleh dari rumen sapi *Peranakan Ongole*. Perlakuan pada *in vitro* fermentasi rumen adalah penambahan *essential oil* cengkeh dengan level pemberian 0, 25, 50, 75, dan 100 mg/L. Bahan pakan yang diberikan berupa rumput raja, pollard, dan bekatul dengan perbandingan 60:20:20 digunakan sebagai substrat. Fermentasi rumen dilakukan selama 24 jam, dengan ulangan sebanyak 3 kali. Data hasil penelitian dianalisis dengan rancangan acak lengkap pola searah. Perbedaan antar rata-rata diuji dengan uji *Duncan's multiple range test* (DMRT). Penambahan *essential oil* cengkeh tidak berpengaruh terhadap pH dalam rumen, pH rumen berada pada kondisi optimal. *Essential oil* cengkeh meningkatkan protein mikroba dalam rumen dan menurunkan jumlah populasi protozoa dalam rumen, namun meningkatkan kadar amonia. Peningkatan amonia dalam rumen mempengaruhi laju sintesis protein, sehingga meningkatkan pembentukan protein mikroba. Berdasarkan penelitian dapat disimpulkan bahwa *essential oil* cengkeh merupakan pakan aditif yang baik untuk meningkatkan produktivitas ternak ruminansia. Pemberian *essential oil* cengkeh 50 mg/L direkomendasikan karena tidak mengubah pH, meningkatkan protein mikroba ( $P < 0,05$ ), dan menurunkan jumlah protozoa dalam rumen, namun dapat meningkatkan amonia.

Kata kunci : Fermentasi rumen, *Essential oil*, Cengkeh, *in vitro*

## **THE EFFECT OF CLOVE (*Syzygium aromaticum* L.) ESSENTIAL OILS ADDITION ON PARAMETERS *IN VITRO* FERMENTATION OF CATTLE RUMEN**

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### **ABSTRACT**

This research was aimed to observe the effect of essential oils from cloves (*Syzygium aromaticum* L.) on rumen fermentation parameters *in vitro* which include pH, protozoa population, ammonia levels, and microbial protein. Clove essential oil was added and mix together with fermentation substrate which consisted of king grass, pollard and rice bran in ration 60:20:20 dry matter bases. The addition of clove essential oil were at level of 0, 25, 50, 75, and 100 mg/L of fermentation volume. Rumen fermentation was carried out by *in vitro* gas production technique for 24 hours, at 39°C with 3 replications of each treatment. The collected data were analyzed by completely randomized design one way analysis of variance. The difference between means were tested by Duncan's new Multiple range test (DMRT). The results showed that addition of clove essential oil did not affect pH in rumen. The pH were in optimal condition. Clove essential oil increased ammonia levels and microbial proteins in rumen. The increasing of ammonia in rumen affects the rate of protein synthesis ( $P < 0,05$ ), thereby increased the formation of microbial proteins. Addition of clove essential oil reduced population of protozoa in the rumen. It can be concluded that clove essential oil is potentially to be used as feed additive to increase the productivity of ruminants. Giving clove 50 mg/L recommended level for futher study.

Keywords : Rumen fermentation, Essential oil, Clove, *in vitro*