

PENGARUH PENAMBAHAN *BLEND ESSENTIAL OIL* TERHADAP PRODUKSI METANA DAN KECERNAAN PADA DUA MACAM HIJAUAN PAKAN SECARA *IN VITRO*

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INTISARI

Penelitian ini bertujuan untuk mengetahui pengaruh *blend essential oil* (BEO) dari cengkeh (*Syzygium aromaticum* L.) pinus (*Pinus merkusii*), dan kayu putih (*Melaleuca leucadendra*) dengan perbandingan 1:1:1 terhadap produksi metana dan pencernaan nutrisi pada dua macam hijauan pakan rumput gajah (*Pennisetum purpureum*) dan rumput lapangan secara *in vitro*. Sumber mikroba diperoleh dari cairan rumen sapi Bali betina. Perlakuan *in vitro* fermentasi rumen adalah penambahan BEO dengan level 0 dan 100 ppm. Fermentasi pengambilan data produksi metana menggunakan metode *Menke and Steingass*, sedangkan pengambilan data pencernaan nutrisi menggunakan metode *Theodorou*. Fermentasi diinkubasi selama 24 jam pada suhu 39°C dan diulang sebanyak tiga kali. Parameter yang diukur adalah produksi gas metana dan pencernaan nutrisi meliputi pencernaan bahan kering (KcBK), pencernaan bahan organik (KcBO), pencernaan serat kasar (KcSK), dan pencernaan protein kasar (KcPK). Data hasil penelitian dianalisis menggunakan analisis Rancangan Acak Lengkap (RAL) pola faktorial 2x2. Kemudian perbedaan diuji menggunakan metode *Duncans's multiple range test* (DMRT). Penambahan BEO 100 ppm mampu menurunkan produksi gas metana per bahan kering tercerna (BKT) ($P < 0,01$) sebesar 8,47% serta tidak berpengaruh terhadap KcSK, KcPK, KcBK, dan KcBO. Hasil pencernaan rumput lapangan meliputi KcSK, KcBO, dan KcBK lebih tinggi dibandingkan dengan rumput gajah ($P < 0,01$), sedangkan KcPK tidak berbeda ($P > 0,05$). Interaksi antara pemberian BEO dan perbedaan bahan pakan tidak berpengaruh pada produksi metana dan semua parameter pencernaan. Dapat disimpulkan bahwa penambahan BEO dengan level 100 ppm mampu menurunkan produksi metana dan tidak berpengaruh terhadap parameter pencernaan.

Kata kunci: *Blend essential oil*, Cengkeh (*Syzygium aromaticum* L.), Pinus (*Pinus merkusii*), Kayu putih (*Melaleuca leucadendra*), Produksi metana, Pencernaan nutrisi *in vitro*, Ruminansia

THE EFFECT OF BLEND ESSENTIAL OIL ADDITION INTO TWO TYPES OF GRASSES ON IN VITRO METHANE PRODUCTION AND NUTRIENT DIGESTIBILITY

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ABSTRACT

This study was conducted to determine the effect of blend essential oil (BEO) from clove (*Syzygium aromaticum* L.) pine (*Pinus merkusii*) and eucalyptus (*Melaleuca leucadendra*) in 1:1:1 ratio on methane production and nutrient digestibility in two types of grasses, elephant grass (*Pennisetum purpureum*) and field grass. The study used in vitro rumen fermentation method. The rumen fluid as microbial source was collected from the cannulated female Bali cattle. In vitro treatment of rumen fermentation was the addition of BEO with 0 and 100 ppm levels. Fermentation for collection of methane production data used Menke and Steingass method, while nutrient digestibility data used Theodoro method. The fermentation was incubated for 24 hours at 39°C three times repeated. Measured parameters were methane gas production and nutrient digestibility including crude fiber digestibility (CFD), crude protein digestibility (CPD), organic matter digestibility (OMD), and dry matter digestibility (DMD). Data research were analyzed using 2x2 factorial completely randomized design (CRD). Differences between mean were tested using Duncan's multiple range test (DMRT) method. The addition of 100 ppm BEO reduced production of methane per digested dry matter as much as 8,47% ($P < 0.05$) and had no effect on all digestibility parameters. Nutrient digestibility of field grass including CFD, OMD, and DMD were higher than elephant grass ($P < 0.01$), whereas CPD had no difference ($P > 0.05$). The interaction between the addition of BEO and differences between the two grasses had no effect on all parameters. In conclusion, the addition of BEO 100 ppm can reduce methane production and has no effect on digestibility parameters.

Keywords: Blend essential oil, Clove essential oil (*Syzygium aromaticum* L.), Pine essential oil (*Pinus merkusii*), Eucalyptus essential oil (*Melaleuca leucadendra*), Methane production, In vitro Nutrient digestibility, Ruminant.