

## PENGARUH PENAMBAHAN RUMPUT LAUT PADA PAKAN BASAL RUMPUT GAMA UMAMI TERHADAP KINETIKA PRODUKSI GAS DAN KARAKTERISTIK FERMENTASI RUMEN SECARA *IN VITRO*

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### INTISARI

Rumput laut adalah sumber daya alam hayati yang melimpah di Indonesia yang memiliki kandungan nutrisi yang cukup lengkap seperti karbohidrat, protein, vitamin dan mineral. Jenis rumput laut yang banyak ditemukan adalah jenis rumput laut merah dan hijau. Penelitian ini bertujuan untuk mengetahui kinetika produksi gas dan karakteristik fermentasi pakan basal rumput gama umami dengan penambahan level konsentrasi rumput laut secara *In vitro*. Level penambahan rumput laut *Palisada perforata* dan *Enteromorpha compressa* yang dipakai yaitu 2,5%, 5%, dan 7,5% dari bahan organik substrat. Substrat yang digunakan adalah rumput gama umami. Setiap perlakuan dilakukan uji fermentasi *in vitro* metode Menke dan Steingass (1988). Parameter penelitian yang diamati berupa nilai pH, amonia (NH<sub>3</sub>), total VFA, dan kinetika produksi gas fermentasi rumen. Data penelitian dianalisis menggunakan analisis variansi (ANOVA) pola searah serta analisis lanjut dengan *Duncan's new multiple range test* apabila hasil menunjukkan hasil yang berbeda nyata ( $P < 0,05$ ). Hasil penelitian menunjukkan bahwa perlakuan penambahan rumput laut *Palisada perforata* dan *Enteromorpha compressa* hingga level 7,5% mempengaruhi produksi gas fraksi mudah larut (a), fraksi potensial terdegradasi, fraksi mudah larut dan fraksi potensial terdegradasi (a+b), dan laju produksi gas (c). Penambahan rumput laut *Palisada perforata* pada level 5% menunjukkan produksi total VFA tertinggi ( $P < 0,05$ ) dibandingkan semua perlakuan. Penambahan rumput laut *Enteromorpha compressa* pada level 5% menunjukkan hasil kadar NH<sub>3</sub> paling tinggi dibandingkan semua perlakuan. Nilai pH penambahan rumput laut *Enteromorpha compressa* tidak berpengaruh nyata terhadap perlakuan kontrol. Penambahan rumput laut *palisada perforata* pada level 2,5%, 5%, dan 7,5% berpengaruh terhadap nilai pH ( $P < 0,05$ ) jika dibandingkan dengan perlakuan kontrol. Kesimpulan dari penelitian ini yaitu penambahan rumput laut *Palisada perforata* level 5% berpengaruh terhadap nilai pH dan dapat meningkatkan produksi VFA, serta memiliki kadar amonia yang lebih rendah.

Kata kunci : *Enteromorpha compressa*, *In vitro*, Kinetika produksi gas, *Palisada perforata*, Parameter fermentasi rumen

## **EFFECT OF SEAWEED ADDITION TO GAMA UMAMI GRASS BASAL DIET ON GAS PRODUCTION KINETICS AND RUMEN FERMENTATION CHARACTERISTICS IN VITRO**

### **ABSTRACT**

Seaweed is an abundant biological natural resource in Indonesia that has a complete nutrient content such as carbohydrates, proteins, vitamins and minerals. The types of seaweed that are commonly found are red and green seaweed. This study aimed to determine the kinetics of gas production and fermentation characteristics of gama umami grass basal feed with the addition of seaweed concentration levels in vitro. The levels of addition of *Palisada perforata* and *Enteromorpha compressa* seaweed used were 2.5%, 5%, and 7.5% of the substrate organic matter. The substrate used was gama umami grass. Each treatment was tested in vitro fermentation method of Menke and Steingass (1988). The research parameters observed were pH value, ammonia (NH<sub>3</sub>), total VFA, and rumen fermentation gas production kinetics. The research data were analyzed using analysis of variance (ANOVA) unidirectional pattern and further analysis with Duncan's new multiple range test if the results showed significantly different results ( $P < 0.05$ ). The results showed that the treatment of the addition of seaweed *Palisada perforata* and *Enteromorpha compressa* up to the level of 7.5% affected the gas production of soluble fraction (a), potentially degradable fraction, soluble fraction and potentially degradable fraction (a+b), and gas production rate (c). The addition of *Palisada perforata* seaweed at the 5% level showed the highest total VFA production ( $P < 0.05$ ) compared to all treatments. The addition of *Enteromorpha compressa* seaweed at the 5% level showed the highest NH<sub>3</sub> levels compared to all treatments. The pH value of *Enteromorpha compressa* seaweed addition did not significantly affect the control treatment. The addition of *palisada perforata* seaweed at the level of 2.5%, 5%, and 7.5% affects the pH value ( $P < 0.05$ ) when compared to the control treatment. The conclusion of this study is that the addition of 5% *Palisada perforata* seaweed has an effect on pH values and can increase VFA production, and has lower ammonia levels.

**Keywords:** *Enteromorpha compressa*, Gas production kinetics, In vitro, *Palisada perforata*, Rumen fermentation parameters