

PENGARUH SUPLEMENTASI SELENIUM ORGANIK DAN ANORGANIK TERHADAP KARAKTERISTIK FERMENTASI RUMEN SECARA *IN VITRO*

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INTISARI

Dalam penelitian ini, tujuan pengaruh suplementasi selenium organik dan anorganik terhadap parameter fermentasi rumen secara *in vitro* telah diteliti. Ada 3 perlakuan yang telah digunakan, yaitu T0 yang terdiri atas 60% rumput gajah dan 40% bran pollard, T1 (Ransum basal + selenium yeast sebesar 0,3 mg/kg BK pakan), dan T2 (Ransum basal + sodium selenite sebesar 0,3 mg/kg BK pakan). Setiap perlakuan telah direplikasi 4 kali. Sumber mikrobia rumen berasal dari cairan rumen sapi bali berfistula yang telah diadaptasi selama 7 hari. Metode *in vitro* gas test, yang mengikuti prosedur Menke dan Steinggas (1988), telah dilakukan dengan lama proses fermentasi selama 48 jam. Parameter yang telah diamati mencakup nilai pH, kadar *Volatile Fatty Acid* (VFA) secara total maupun parsial, kadar amonia (NH₃), dan kadar protein mikrobia rumen. Data telah dianalisis dengan analisis variansi Rancangan Acak Lengkap (RAL) pola searah, dan kemudian jika ada perbedaan nyata antara mean, dilanjutkan dengan uji Duncan's New Multiple Range Test (DMRT). Hasil penelitian telah menunjukkan bahwa nilai pH rumen meningkat secara signifikan ($P < 0,05$) akibat suplementasi selenium, baik yang bersifat anorganik maupun organik. Total VFA juga meningkat secara signifikan ($P < 0,05$) ketika ditambahkan suplementasi selenium, baik yang bersifat anorganik maupun organik. Kadar NH₃ juga mengalami peningkatan yang signifikan ($P < 0,05$) pada suplementasi selenium anorganik. Namun, suplementasi selenium tidak memberikan dampak yang signifikan ($P > 0,05$) pada kadar protein mikrobia. Kesimpulan yang dapat ditarik dari penelitian ini adalah bahwa suplementasi selenium memiliki dampak yang signifikan pada nilai pH, total VFA, dan kadar NH₃ dalam fermentasi rumen secara *in vitro*, namun tidak berpengaruh secara signifikan pada kadar protein mikrobia.

Kata kunci: anorganik, fermentasi rumen, selenium, in vitro, organik, suplementasi

The Effect of Organic and Inorganic Selenium Supplementation on Rumen Fermentation Characteristics In Vitro

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ABSTRACT

This research the effect of organic and inorganic selenium supplementation on rumen fermentation parameters in vitro is determined. Three treatments were employed, namely T0, consisting of 60% napier grass and 40% bran pollard, T1 (basal diet + selenium yeast at 0.3 mg/kg DM of feed), and T2 (basal diet + sodium selenite at 0.3 mg/kg DM of feed). Each treatment was replicated four times. Rumen microbial inoculum was sourced from Bali cattle with rumen fistulas that had been adapted for seven days. The in vitro gas test method, following the procedure of Menke and Steinggas (1988), was conducted with a fermentation period lasting 48 hours. Parameters observed included pH value, total and partial Volatile Fatty Acid (VFA) levels, ammonia (NH₃) concentration, and rumen microbial protein content. Data were analyzed using a Completely Randomized Design (CRD) with a one-way pattern, and if there were significant differences among the means, Duncan's New Multiple Range Test (DMRT) was applied. The results of the study indicated that rumen pH increased significantly ($P < 0.05$) as a result of selenium supplementation, both inorganic and organic forms. Total VFA also increased significantly ($P < 0.05$) when selenium supplementation was added, regardless of its form. NH₃ levels also showed a significant increase ($P < 0.05$) with inorganic selenium supplementation. However, selenium supplementation did not have a significant effect ($P > 0.05$) on rumen microbial protein content. The conclusion drawn from this research was that selenium supplementation had a significant impact on rumen pH, total VFA, and NH₃ levels in in vitro rumen fermentation, but it did not significantly affect microbial protein content.

Keywords: inorganic, rumen fermentation, selenium, in vitro, organic, supplementation