

EVALUASI PENAMBAHAN TEPUNG MAKROALGA *GELIDIUM* SP. SEBAGAI SUMBER FENOL DALAM PAKAN TINGGI ASAM LEMAK TIDAK JENUH SECARA *IN VITRO*

Nanda Uniqe Putri Septiani
21/474468/PT/08849

INTISARI

Gelidium sp. merupakan tanaman yang berpotensi sebagai sumber fenol. Fenol dikenal sebagai senyawa metabolit sekunder yang memiliki peranan sebagai agen untuk memodulasi populasi mikroba rumen. Penelitian ini bertujuan untuk mengetahui pengaruh penambahan tepung makroalga *Gelidium* sp. dalam pakan tinggi asam lemak tidak jenuh sebagai sumber fenol terhadap profil asam lemak dan parameter fermentasi rumen secara *in vitro*. Bahan pakan yang digunakan dalam penelitian ini, antara lain rumput gajah, *pollard*, bungkil kedelai, dan minyak biji bunga matahari dengan proporsi masing-masing bahan pakan adalah 60:35:3:2 (dalam %), lalu dilakukan penambahan tepung makroalga *Gelidium* sp. sebanyak 0% (kontrol), 2%, 4%, dan 6% dari BK pakan dengan 3 kali pengulangan, masing-masing ulangan dilakukan secara *duplo*. Penelitian ini menggunakan metode *in vitro gas test* (Menke dan Steinggas, 1988) untuk mengamati populasi protozoa, pH, konsentrasi amonia (NH₃), *volatile fatty acid* (VFA), protein mikroba, dan profil asam lemak rumen. Data hasil penelitian dianalisis menggunakan rancangan acak lengkap (RAL) pola searah, apabila terdapat perbedaan nyata maka dilakukan uji *Duncan's New Multiple Range Test* (DMRT). Hasil penelitian menunjukkan bahwa penambahan tepung makroalga *Gelidium* sp. mulai 4% dapat meningkatkan *unsaturated fatty acid* (UFA) dan menurunkan *saturated fatty acid* (SFA) ($P < 0,05$). Penambahan tepung makroalga *Gelidium* sp. hingga level 6% tidak berpengaruh signifikan terhadap nilai pH, konsentrasi amonia (NH₃), protein mikroba, dan total VFA ($P > 0,05$). Penambahan tepung makroalga *Gelidium* sp. mulai level 4% berpengaruh nyata menurunkan total protozoa ($P < 0,05$). Kesimpulan dari penelitian ini adalah penambahan tepung makroalga *Gelidium* sp. mulai level 4% dapat menghambat proses bihidrogenasi dengan asam lemak tidak jenuh tanpa mengganggu fermentasi dalam rumen.

Kata kunci : fenol, mikroba rumen, parameter fermentasi rumen, profil asam lemak, PUFA, tepung makroalga *Gelidium* sp.

EVALUATION OF *GELIDIUM* SP. MACROALGAE FLUOR SUPPLEMENTATION AS A SOURCE OF FENOL IN A DIET HIGH UNSATURATED ACIDS ON IN VITRO

Nanda Uniqe Putri Septiani
21/474468/PT/08849

ABSTRACT

Gelidium sp. is a plant that has potential as a source of phenol. Phenol is known as a secondary metabolite compound that can act as an agent to modulate the rumen microbial population. This study aims to determine the effect of the addition of *Gelidium* sp. macroalgae flour in feed high in unsaturated fatty acids as a source of phenols on in vitro rumen fermentation and fatty acid profiles. The feed ingredients used in this study included elephant grass, pollard, soybean meal, and sunflower seed oil with the proportion of each feed ingredient being 60:35:3:2 (in %), then the addition of *Gelidium* sp. macroalgae flour as much as 0% (control), 2%, 4%, and 6% of feed DM with 3 repetitions, each replication was done in duplo. This study used the in vitro gas test method (Menke and Steinggas, 1988) to observe protozoa population, pH, ammonia concentration (NH₃), volatile fatty acid (VFA), microbial protein, and rumen fatty acid profile. Data from the study were analyzed using a randomized complete block design (CRD) unidirectional pattern, if there were significant differences then Duncan's New Multiple Range Test (DMRT) was conducted. The results showed that the addition of *Gelidium* sp. macroalgae flour from 4% to 6% level could increase unsaturated fatty acid (UFA) and decrease saturated fatty acid (SFA) ($P < 0.05$) compared to the control. The addition of *Gelidium* sp. macroalgae flour at up to 6% level had no significant effect on pH value, ammonia concentration, microbial protein, and total VFA ($P > 0.05$). The addition of *Gelidium* sp. macroalgae flour starting at the 4% level, however, significantly decreased the total protozoa ($P < 0.05$) compared to the control. The conclusion of this study is that the addition of *Gelidium* sp. macroalgae flour starting at the level 4% can inhibit the biohydrogenation process by protecting unsaturated fatty acids without disrupting fermentation in the rumen.

Keywords: phenol, rumen microbes, rumen fermentation parameters, fatty acid profile, PUFA, *Gelidium* sp. macroalgae flour