

**KUALITAS DAN KECERNAAN IN VITRO SILASE RUMPUT LAPANGAN
DENGAN SUPLEMENTASI LAMTORO (*Leucaena leucocephala*) DAN
INOKULASI *Lactobacillus plantarum***

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INTISARI

Penelitian ini dilakukan untuk mengetahui pengaruh suplementasi lamtoro dan inokulasi *Lactobacillus plantarum* terhadap kualitas fisik, kimia, dan pencernaan silase rumput lapangan. Penelitian didesain menggunakan rancangan acak lengkap pola faktorial 3×3 . Faktor pertama berupa suplementasi lamtoro dengan level 10, 20, dan 30%, dan faktor kedua berupa inokulasi *L. plantarum* dengan level 0, 2, dan 4%. Variabel yang diukur meliputi karakteristik fisik, karakteristik fermentasi, komposisi kimia, parameter fermentasi rumen, dan pencernaan nutrisi secara *in vitro*. Hasil penelitian menunjukkan perlakuan suplementasi lamtoro dan inokulasi *L. plantarum* menghasilkan silase dengan kualitas fisik yang baik. Peningkatan level suplementasi lamtoro meningkatkan ($P < 0,05$) pH dan konsentrasi NH_3 silase. Inokulasi *L. plantarum* secara nyata menurunkan pH dan konsentrasi NH_3 silase. Kandungan bahan kering (BK), bahan organik (BO), protein kasar (PK), lemak kasar (LK), dan *total digestible nutrients* (TDN) silase meningkat ($P < 0,05$) dengan peningkatan level suplementasi serta menurunkan ($P < 0,05$) kandungan serat kasar (SK). Inokulasi *L. plantarum* menunjukkan pengaruh terhadap penurunan kandungan SK dan LK silase ($P < 0,05$). Derajat keasaman cairan rumen tidak dipengaruhi oleh perlakuan suplementasi lamtoro maupun oleh inokulasi *L. plantarum*. Konsentrasi VFA total, asetat, dan propionat meningkat ($P < 0,05$) dengan adanya suplementasi lamtoro sedangkan inokulasi *L. plantarum* berpengaruh terhadap peningkatan proporsi asetat ($P < 0,05$) dan cenderung ($P = 0,071$) meningkatkan VFA total cairan rumen. Konsentrasi NH_3 rumen menurun ($P < 0,05$) akibat suplementasi lamtoro dan inokulasi *L. plantarum*, namun hanya suplementasi lamtoro yang secara nyata meningkatkan sintesis protein mikroba rumen. Suplementasi lamtoro meningkatkan ($P < 0,05$) KcBK, KcBO, dan KcPK, namun tidak terdapat perbedaan terhadap KcSK. Inokulasi *L. plantarum* tidak menunjukkan pengaruh pada KcBK, namun menurunkan KcBO dan meningkatkan KcPK dan KcSK ($P < 0,05$). Suplementasi lamtoro dan inokulasi *L. plantarum* menunjukkan pengaruh interaksi terhadap konsentrasi NH_3 silase, NH_3 cairan rumen, KcBK dan KcPK. Disimpulkan bahwa suplementasi lamtoro 30% dan inokulasi *L. plantarum* 2% serta kombinasinya merupakan perlakuan yang menghasilkan kualitas fisik, kimia, karakteristik fermentasi rumen, dan pencernaan silase rumput lapangan yang terbaik.

Kata kunci: Karakteristik fermentasi rumen Kecernaan *in vitro*, *Lactobacillus plantarum*, Lamtoro, Rumput lapangan, Silase.

**QUALITY AND *IN VITRO* DIGESTIBILITY OF NATIVE GRASS SILAGE
SUPPLEMENTED WITH *Leucaena leucocephala* AND
INOCULATED WITH *Lactobacillus plantarum***

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ABSTRACT

This study has been conducted to determine the effect of *Leucaena leucocephala* supplementation and inoculation of *Lactobacillus plantarum* on the physical, chemical, and digestibility of *native grass* silage. The study was designed using a 3 x 3 factorial complete randomized design. The first factor was *Leucaena* supplementation with level of 10, 20, and 30%, and the second factor was *L. plantarum* inoculation with level 0, 2, and 4%. The collected data were included characteristics of physical and fermentation, chemical composition, ruminal fermentation characteristics, and *in vitro* digestibility. The results showed that *Leucaena* supplementation and *L. plantarum* inoculation resulted in good quality silage. Increasing levels of *Leucaena* supplementation linearly increased ($P<0.05$) pH and NH_3 concentration of the silage. Inoculation of *L. plantarum* significantly decreased pH and NH_3 concentration of silage. Concentrations of dry matter (DM), organic matter (OM), crude protein (CP), ether extract (EE), and total digestible nutrients (TDN) of silage significantly increased with the increasing level of *Leucaena* supplementation, but decreased ($P<0.05$) crude fiber (CF) concentration of the silage. *Lactobacillus plantarum* inoculation affected some of chemical composition of the silage, i.e. decreased CF and EE concentrations ($P<0.05$). Ruminal pH was not affected by *Leucaena* supplementation nor by *L. plantarum* inoculation. The concentrations of VFA total, acetate, and propionate was significantly increased due to *Leucaena* supplementation, while *L. plantarum* inoculation increased acetate concentration ($P<0.05$) and tended ($P=0.071$) to increase VFA total concentration. The concentration of ruminal NH_3 was decreased ($P<0.05$) due to *Leucaena* supplementation and *L. plantarum* inoculation, but only *Leucaena* supplementation significantly increased microbial protein synthesis. *Leucaena* supplementation significantly increased DMD, OMD, and CPD but no response was noted on CFD. *Lactobacillus plantarum* inoculation did not show any effects on DMD, but visible effect of reducing the OMD, and also significantly increased the CPD and CFD of the silages. *Leucaena* supplementation and *L. plantarum* inoculation on silage showed interaction effects on concentration of NH_3 , DMD, and CPD of the silage as well as on ruminal NH_3 , however, no interaction effects was noticed on the other variables. Based on the results, it was concluded that *Leucaena* supplementation at 30% and *L. plantarum* inoculation at 2% as well as its combination were the best treatments for achieving the best physical and chemical quality, rumen fermentation characteristic, and digestibility of the native grass silage.

Keywords: *Leucaena leucocephala*, *Lactobacillus plantarum*, *In vitro* digestibility, Rumen fermentation characteristic, Native grass, Silage.