

**PENGARUH PEMANASAN PAKAN SUMBER PROTEIN YANG
DIFERMENTASI PADA LAMA INKUBASI DAN PENAMBAHAN
MOLASES BERBEDA TERHADAP KECERNAAN
NUTRIEN SECARA *IN VITRO***

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INTISARI

Penelitian ini bertujuan untuk mengetahui pengaruh pemanasan pakan sumber protein yang difermentasi pada lama inkubasi dan penambahan molasses berbeda terhadap pencernaan nutrisi secara *in vitro*. Penelitian ini dilakukan dalam dua tahap. Tahap I merupakan tahap fermentasi dengan penambahan molasses pada level 0%, 3% dan 6%, dan waktu inkubasi nol, satu, dan dua pekan. Mikroba yang digunakan berupa campuran ragi tape, ragi tempe, dan *mix culture* bakteri asam laktat (FDY 31, FDY 43, FC 9, dan *Lactobacillus plantarum*). Parameter yang diamati meliputi pH, kadar asam laktat, dan kadar protein terlarut. Produk terbaik penelitian tahap I kemudian difortifikasi dengan sumber karbohidrat, minyak nabati, dan mineral. Tahap II penelitian ini merupakan tahap proteksi dari produk fermentasi tahap I dengan perlakuan berupa pemanasan pada suhu 60-70°C selama 15 menit, kemudian diuji pencernaan dengan metode Tilley and Terry satu tahap. Parameter yang diamati meliputi pencernaan protein kasar (KcPK), pencernaan bahan organik (KcBO), dan pencernaan bahan kering (KcBK). Data penelitian tahap I dianalisis dengan rancangan acak lengkap pola faktorial 3x3, apabila hasil yang diperoleh berbeda nyata karena perlakuan, dilanjutkan dengan uji *Duncan's Multiple range Test* (DMRT). Data penelitian tahap II dianalisis dengan T-test. Hasil penelitian tahap I menunjukkan bahwa penambahan molasses sampai level 6% belum efektif dalam menurunkan pH dan meningkatkan kadar asam laktat, namun efektif meningkatkan kadar protein terlarut ($p < 0,01$). Waktu inkubasi satu pekan efektif meningkatkan kualitas pakan sumber protein fermentasi. Hasil penelitian tahap II menunjukkan bahwa pemanasan tidak berpengaruh signifikan terhadap KcPK, KcBO, dan KcBK ($p > 0,05$). Berdasarkan hasil penelitian disimpulkan bahwa penambahan molasses sampai 6% belum mampu meningkatkan kualitas nutrisi pakan, namun waktu inkubasi satu pekan efektif menurunkan pH, meningkatkan kadar asam laktat dan protein terlarut. Pemanasan belum mampu melindungi protein dari degradasi rumen.

Kata kunci: fermentasi, bakteri asam laktat, pemanasan, pencernaan

THE HEATING EFFECT OF PROTEINOUS FEEDS FERMENTED WITH DIFFERENT INCUBATION TIME AND MOLASSES ADDITION ON *IN VITRO* NUTRIENT DIGESTIBILITY

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ABSTRACT

This study aimed to measure the heating effect of proteinous feeds fermented with different incubation time and molasses addition on *in vitro* nutrient digestibility. This research was conducted in two steps. Phase I was the fermentation with the addition of molasses at the level of 0%, 3%, and 6%, and an incubation time of zero, one, and two weeks. Microbes used in the phase I was a mixture of tape yeast, tempeh yeast, and mix culture of lactic acid bacteria (FDY 31, FDY 43, FC 9, and *L. plantarum*). The parameters observed included pH, lactic acid levels, and dissolved protein content. The best product of phase I was fortified with carbohydrates, vegetable oil, and mineral. Phase II of this study was the protection of the phase I fermentation product with a heating treatment at a range temperature of 60-70°C for 15 minutes, then nutrient degradability was tested by the Tilley and Terry one-stage method. Parameters observed were crude protein digestibility (CPD), organic matter digestibility (OMD), and dry matter digestibility (DMD). Phase I research data were analyzed by completely randomized design with factorial patterns 3x3, if the results obtained were significantly different due to treatment, then tested by Duncan's Multiple Range Test (DMRT). Phase II research data were analyzed by T-test. The results of phase I showed that the addition of molasses up to the level of 6% was not effective in reducing pH and increasing levels of lactic acid, but was effective in increasing levels of dissolved protein ($p < 0.01$). The incubation time of one week was effective in improving the quality of fermented proteinous feeds. The results of phase II showed that heating treatment did not significantly affect on CPD, OMD, and DMD ($p > 0.05$). Based on the results of the study concluded that the addition of molasses up to 6% had not been able to improve the quality of proteinous feeds, but the incubation time of one week was effective on reducing pH, increasing levels of lactic acid and dissolved proteins. The heating treatment had not been able to protect proteins from ruminal degradation.

Key words: fermentation, lactic acid bacteria, heating, ruminal digestibility