

## INTISARI

Penelitian bertujuan untuk evaluasi penggunaan formaldehid sebagai proteksi campuran menir kedelai dengan minyak ikan lemuru dan penggunaannya sebagai komponen ransum induk sapi potong secara *in vitro*. Penelitian tahap pertama melakukan evaluasi berbagai level formaldehid untuk proteksi campuran menir kedelai dan minyak ikan lemuru rasio 2:1 dan 4:1 secara *in vitro* satu tahap (inkubasi 48 jam). Penelitian tahap kedua merupakan kelanjutan dari hasil pertama melakukan evaluasi penggunaan campuran menir kedelai dan minyak ikan lemuru untuk sumber asam lemak tidak jenuh sebagai komponen ransum induk sapi potong secara *in vitro* satu dan dua tahap (inkubasi 96 jam). Baik penelitian tahap kesatu maupun kedua mengamati : (1) fermentasi rumen, (2) aktivitas mikrobial rumen, (3) pencernaan nutrisi, (4) komposisi dan kadar asam lemak. Penelitian tahap ketiga diamati produksi gas serta produksi dan kadar gas metana dan kecernannya. Hasil penelitian tahap pertama adalah perbedaan level formaldehid berpengaruh nyata ( $P < 0,05$ ) terhadap VFA total, asam asetat, asam propionat, asam butirat, jumlah protozoa, protein mikrobial, dan pencernaan bahan kering, bahan organik, protein kasar, lemak kasar dan serat kasar dan berpengaruh sangat nyata ( $P < 0,01$ ) terhadap  $\text{NH}_3$ , asam butirat, dan pencernaan bahan kering, namun berpengaruh tidak nyata terhadap pH dan rasio asam asetat : propionat. Perbedaan rasio campuran menir kedelai minyak ikan lemuru berpengaruh nyata ( $P < 0,05$ ) terhadap kadar  $\text{NH}_3$  dan pencernaan bahan kering. Perbedaan level formaldehid berpengaruh nyata ( $P < 0,05$ ) terhadap kadar asam palmitat, asam lemak palmitat, linoleat, gamma linolenat, dan arachidonat. Hasil penelitian tahap kedua adalah perbedaan perlakuan berpengaruh nyata ( $P < 0,05$ ) terhadap terhadap  $\text{NH}_3$ , asam asetat, asam propionat, asam butirat, jumlah protozoa, protein mikrobial dan tidak berpengaruh terhadap pH dan rasio asetat:propionat. Untuk pencernaan nutrisi 48 jam inkubasi berpengaruh nyata ( $P < 0,05$ ) terhadap pencernaan bahan kering, bahan organik, protein kasar, lemak kasar, dan serat kasar dan untuk 96 jam berpengaruh nyata ( $P < 0,05$ ) terhadap pencernaan bahan kering, bahan organik dan protein kasar. Hasil penelitian tahap ketiga perbedaan perlakuan tidak berpengaruh terhadap produksi gas serta produksi dan kadar gas metana juga pencernaan bahan kering dan bahan organik. Komposisi dan kadar asam lemak dipengaruhi nyata ( $P < 0,05$ ) oleh perbedaan perlakuan terhadap asam lemak oleat, palmitat, linoleat, gamma linolenat, dan arachidonat pada inkubasi 48 jam dan terhadap asam lemak gamma linolenat dan arachidonat pada inkubasi 96 jam. Kesimpulan adalah (1) formaldehid kadar 37% dapat digunakan sebagai bahan proteksi campuran menir kedelai dan minyak ikan lemuru dengan perbandingan 4:1 sebanyak 2% berdasarkan bahan kering, (2) campuran menir kedelai dan minyak ikan lemuru (4:1) diproteksi formaldehid kadar 37 % sebanyak dari bahan kering dapat digunakan hingga 15% sebagai komponen ransum induk sapi potong secara *in vitro*, (3) ransum dengan komposisi 30% jerami padi, 30% rumput gajah, 25% konsentrat kontrol (10% dedak, 5% pollard, 3,5% kulit kopi, 5% bungkil kedelai, 1% mineral dan 0,5% garam) mengandung asam linoleat, arachidonat dan gamma linolenat yang sangat bermanfaat bagi induk sapi potong sebagai sumber prekursor hormon PGF<sub>2</sub> induk sapi potong.

Kata kunci : Formaldehid, *In Vitro*, Menir Kedelai, Minyak Ikan Lemuru, Proteksi, Ransum Induk Sapi Potong,

## ABSTRACT

The study aims to evaluate the use of formaldehyde as a mixture of soybean groats and lemuru fish oil protected its use as a component of the rations of cow beef cattle *in vitro*. The research of first phase to evaluate various levels of formaldehyde for protection mixture of soybean groats oil and lemuru fish oil ratio of 2: 1 and 4: 1 *in vitro* one stage (48 hours incubation). The second phase is a continuation of the first results to evaluate the use of a mixture of soya groats and lemuru fish oil for sources of unsaturated fatty acids as a component of the rations of cow beef cattle *in vitro* one and two stage (96 hours incubation). Both unity and the second phase of the study observed: (1) rumen fermentation, (2) rumen microbial activity, (3) digestibility of nutrients, (4) the composition and content of fatty acids. The third phase of the study observed gas production as well as production and methane gas levels and digestibility.. Results of the first phase of the study is the difference in the level of formaldehyde significantly ( $P < 0.05$ ) of the total VFA, acetic acid, propionic acid, butyric acid, the amount of protozoa, microbial protein and digestibility of dry matter, organic matter, crude protein, crude fat and crude fiber and highly significant ( $P < 0.01$ ) against  $\text{NH}_3$ , butyric acid, and digestibility of dry matter, but no effect on pH and ratio of acetic acid: propionate. Differences soybean groats and lemuru fish oil protected significant ( $P < 0.05$ ) on the concentration of  $\text{NH}_3$  and dry matter digestibility. The levels of formaldehyde significantly ( $P < 0.05$ ) on levels of palmitic acid, palmitic fatty acids, linoleic, gamma linolenic acid, and arachidonic. Results of the second phase of the study was the difference in treatment significantly ( $P < 0.05$ ) against  $\text{NH}_3$ , acetic acid, propionic acid, butyric acid, the amount of protozoa, microbial protein and does not affect the pH and the ratio acetat: propionate. For 48 hours incubation nutrient digestibility significantly ( $P < 0.05$ ) on dry matter, organic matter, crude protein, crude fat and crude fiber and for 96 hours significantly ( $P < 0.05$ ) on dry matter, organic matter and crude protein. The third phase of the research results difference in treatment has no effect on gas production as well as production and methane gas levels also digestibility of dry matter and organic matter. Composition and fatty acid levels are influenced significantly ( $P < 0.05$ ) by the difference in treatment of oleic fatty acid, palmitic, linoleic, gamma linolenic acid, and arachidonic incubation time of 48 hours and to the fatty acid gamma linolenic and arachidonic at 96 hours of incubation. Conclusion: (1) formaldehyde content of 37% can be used as a soybean groats and lemuru fish oil protected with a ratio of 4: 1 as much as 2% based on dry matter, (2) a mixture of soybean groats and lemuru fish oil (4: 1) protected formaldehyde content of 37% as much of the dry ingredients can be used up to 15% as a component of the ration of beef cattle cow *in vitro*, (3) feed with a composition of 30% rice straw, 30% elephant grass, 25% concentrate controls (10% bran, 5% pollard, 3.5% coffee husks, 5% soybean meal, 1% mineral and 0.5% salts) contain linoleic acid, arachidonic and gamma linolenic acid which is very useful for holding cattle as a source of precursor  $\text{PGF}_2$  hormone of beef cattle cow.

Keywords: In Vitro Formaldehyde,, Lemuru Fish Oil Protection, Rations of Beef Cattle Cow, Soya Groats,