The Effect of Ration Based of The fermented Palm Oil by Product and Zn-lysinat on The ferforman and Digestibility Goat

By

Muhtarudin, K. Adhianto., A. Haryanto , Liman, S. Tantalo. A. Ramadhani, and M.T. Aldi

Agriculture Faculties Lampung Universities
Jl. Soemantri BrojonegoroNo.1Gedung Meneng Bandar Lampung 35145
Telp 082186186413.e-mail: muhtarudin.1961@fp.unila.ac.id. Fax(0721)770347

Abstract

The objectives of this research were to find out: the influence of fermented palm by product based ration to digestibility of dry material and organic material, and the performance (feed consumption and daily gain) of goats. There are nine goats which consist of 3 treatments and 3 replications. Some treatments which are tested in this research are R1 = control ration (15% king grass and 85% concentrate consists of cassava waste, tofu waste, rice brand, molasses, urea, premix), R2 = fermented palm oil by product based ration (*cassava waste, rice brand*, mollases, urea, premix + palm leaves, and palm kernel meal), R3= R2 + Zn-lysinate (40 ppm). The results of this research are: first, the R1 treatment results the digestibility of dry material and organic material as well as the best performance; second, The digestibility of dry material and organic material on R2 treatment is higher than R3 treatment; and the third, the R3 treatment results the better performance rather than R2 treatment. The additional of Zn- lisinat influence the performance of goats.

Keywords: palm oil by product, Zn-lisinat, digestibility, ferformance

INTRODUCTION

Goat was one of ruminant that has potential to develop to support availability of animal protein in Indonesia. Feed was one of the essential factors to support livestock production. Potential feeds resources were leguminous. However, there were competition utilization of leguminous between human and animals, therefore we need alternative feed. Feed alternative that could be used as feed was potential by product.

Utilization of palm oil by product need to be optimalize because they contain highs crude fiber and low crude protein. The palm oil by product consisted of leaf midrib and palm cake. The constrain utilization of palm oil by product could reduce the processing and add some feed supplement. There were many processing agriculture product to improve their utilization.

Fermentation was biological processing that used to improve nutrition value of agriculture by product because the fermentation process support chemicals processed of organic material (Mandels dan Parizek, 1990). Meanwhile, supplement Zn Organic in ration could be support growth of rumen microbial and improve livestock performance (Muhtarudin *et al*., 2003).

MATERIAL AND METHOD

The research design which was used was random block design, weight gain was based. There are nine cattle which consist of 3 treatments and 3 replications. Some treatments which are tested in this research are: R1 = control ration (15% king grass and 85% concentrate consists of cassava waste, waste tofu**,** rice brand, molasses, urea, premix), R2 = fermented palm oil by product based ration (*cassava waste, rice brand*, mollases, urea, premix + palm leaves, and palm kernel meal), R3= R2 + Zn-lysinate (40 ppm).

Parameter consisted

1. **Fecal collection to Digestibility.** Fecal collection during five day. Is collected to calculated value of dry matter digestibility and organic matter digestibility. The calculation dry matter and organic matter digestibility used method total collection (Tillman et al., 1991)
2. **Ration consumption.** Ration consumption was calculated by subtraction among of ration that gives by residuals of rations. The consumption which was measured during 24 hours residuals of rations was weighed on 07.00—08.00 PM (Mathius et al. 2002)
3. **Daily Gain.** Daily gain was calculated by formula i. e.:

   Daily gain (kg) = (W2 – W1)/ (t2- t1)

Information:

W1 = early weight of animals (kg), W2 = late weight of animals (kg), t1 = early observation (day), t2 = late observation (day)

Body weight was measured once a month to evaluated giving of ration body weight was done at 07.30—08.30 p.m.

Nutrient content of treatment ration can be seen on the table 1. The data observation were analyzed of variance (ANOVA) on 5% of parametric test and or 1% and continued with LSD (least significant different).

Table 1. Nutrient content of treatment ration

Ration		Nutrient content of treatment ration (%)					
		DM	CP	CF	EE	Ash	BETN
R1	F	17,67	12,29	24,42	1,83	17,87	43,60
	C	68,38	18,02	11,14	8,37	7,68	54,81
Total (15% F+85% C		60,77	17,16	13,13	7,39	9,20	53,13
R2 and R3	F	35,66	8,20	43,84	4,94	10,81	32,21
	C	55,55	16,63	12,76	5.66	18,1	46,85
Total (15% F+85% C)		52,57	15,37	17,42	5,55	17,00	44,65

Explanation: DM = dry matter; C P= crude protein; C F = crude fiber; EE= ether extract; N N M = Non nitrogen material; F= forage; C= concentrate. Resources: Analysis of feed laboratory, Departemen of Animals Husbandry, Agriculture Faculty Lampung University (2017).

RESULT AND DISCUSSION

1. Effect treatments on dry matter and organic matter digestibility.

Based on the analysis of variants showed that treatment had significant effect ($P<0.05$) on dry matter digestibility based on least significant different test (LSD). R1 treatments had higher digestibility compared to R2 and R3. The R1 treatment had better nutrient than R2 and R3 treatments, The R1 treatment had more protein, low of crude fiber, and ash. Tillman (1998) said that nutrient, digestibility had strong correlation with their chemical composition (content of protein, crude fiber, and ash.

Organic matter digestibility of rations was resulted from subtraction between organic matter consumption and organic matter in faces. The rate value of organic matter at R1 treatment was higher than R2 and R3 treatment. Sutardi (1990) said that the improvement of organic matter digestibility was the same with the improvement of dry matter digestibility.

2. Effect treatments on ration consumption.

Based on the analysis of variants showed that the treatment had significant effect (P<0.05) to ration consumption. According to least significant test (P<0.05) showed that R1 treatment had higher ration consumption compare to R2 treatment (Tabel 1). R2 and R3 treatment which is consisted of palm oil by product have less palatable. So, utilization of palm oil by product was decresing palatable of rations. Suwigyo (2004) said that different kind of ration composition would be supported by different palatability and nutrient contents. Different nutrient content in rations especially crude fiber, resulted R1 treatment had more consumption than another treatment (R2 and R3). Ration that had high of crude fiber could make degradability in rumen slow. Furthermore, it caused the decreasing of feed consumption. Soebarinoto (1991) statement said that one of the characteristic of agriculture by product was high of lignocelluloses content in rations. It caused the differences on the digestive by ruminant.

Table 2. The effect treatment to digestibility and performance

Parameter	Ration Treatment		
	R1	R2	R3
Dry matter digestibility (%)	70.86[a]	58.31[b]	50.81[c]
Organic matter digestibility (%)	74.77[a]	64.38[b]	55.49 [c]
Ration consumption (g/animals/day)	1460.42[a]	933.29[b]	1038.53[a]
Dail gain (kg/animals/day)	0.12[a]	0.7[b]	0.10[a]

Explanation: lower case with different superscript on the same line show the significant different (p<0,05)

R1 = control ration (15% king grass and 85% concentrate consists of cassava waste, tofu waste, rice brand, molasses, urea, premix), R2 = fermented palm oil by product based ration (*cassava waste, rice brand,* mollases, urea, premix + palm leaves, and palm kernel meal), R3= R2 + Zn-lysinate (40 ppm).

In table 1, it is showed that goat consumption at R2 treatment (consisted of palm oil by product) had lower consumption than other treatments. Midrib of palm oil plant influenced the difficulties of consumption. Furthermore, it caused its palatability decreased (Hassan and Ishak, 1991). According to Ravindran and Blair (1992), palm cake had less palatability as feed, because of physical characteristic of palm cake. In table 2 also showed that R3 treatments had more consumption than R2 treatment. This matter was influenced by the supplementation of Zn-lysinate in R3. Zn-lysinate would be degraded into lysine and Zn, so lysine was used by rumen microorganism to improve digestibility. Church (1983) said that microbial growth in rumen would be optimal if their entire precursor were available. The rate of consumption in this research was up to 1460.42 g/animal/day. Saragih (2014) reported that the ration which contain palm oil by product had the consumption was up to 421.35 g/animal/day. Other statement was by Ismoyo and Widyaningrum (2008) they said different time period of giving between concentrate and forage resulted rations consumption was up to 719.67 g/animal/day. Hartanto (2004) said that the supplementation of organic Zn on kacang goat had resulted ration consumption was up to 387.47 g/animal/day. Based on all of the statement above, it is showed that the processing of palm oil by product, different of time period in rations, utilization of mineral had different respond of ration consumption.

3. **Effect treatments on goat daily gain**

Daily gain was parameter to evaluate goat performance and also to evaluate quality of rations. The rate of daily gain was presented at table 2. The highest of daily gain happened at R1 and the lowest at R2 treatment. That matter had correlation with consumption parameter. According Tanuwiria et al (2006), said that nutrient that is consumed is needed to maintenance, production, and reproduction of animals. Parakkasi (1999) also said that daily gain was influenced by

feed consumption. Sutama and Budiarsana (1996) reported that daily gain of ettawa grade was up to 48.3 g/animals/day (age of goat was 12 month).

CONCLUSION

The results of this research are: first, the R1 treatment results the digestibility of dry material and organic material as well as the best performance; second, The digestibility of dry material and organic material on R2 treatment is higher than R3 treatment; and the third, the R3 treatment results the better performance rather than R2 treatment. The additional of Zn-lisinat influence the performance of goats.

REFERENCE

Chruch, D.C. 1983. Digestive Pysiology and Nutrition of Ruminant. Vol 1. 2 Rd. Corvali. Oregon. USA

Mandels and R. Parizek. 1990. Enchanced Cellulose Production by Mutant of *Trichoderma Viride*. J. Appl. Microbiol

Hartanto, I. 2004. Pengaruh Penggunaan Zn Organik dalam Ransum Terhadap Performans *Feedlot* Kambing Kacang Jantan. Skripsi. Jurusan Peternakan, Fakultas Pertanian, Universitas Lampung. Lampung

Hartati, E. 1998. Suplementasi Minyak Lemuru dan Seng ke dalam Ransum yang Mengandung Silase *Pod Kakao* dan Urea untuk Memacu Pertumbuhan Sapi *Holstein* Jantan. Disertasi. Program Pascasarjana. Institut Pertanian Bogor. Bogor

Hasan, A.O. and M. Ishada. 1991. Effect of Water, Mollases, and Urea Addition on Oil Palm Frond Sillage Quality, Fermentation, and Palatability Proceedings of Third International Symposium on The Nutrition of Herbivora. Penang

Iswoyo dan Widiyaningrum. 2008. Pengaruh Jarak Waktu Pemberian Pakan Konsentrat dan Hijauan Terhadap Produktivitas Kambing Peranakan Etawa Lepas Sapih. Jurnal Ilmiah Ilmu Peternakan. Sumber Rejo, Vol 11 Nomor 2

Mathius, I.W., I.B. Gaga, dan I.K. Sutama. 2002. Kebutuhan Kambing Peranakan Etawa Jantan Muda akan Energi dan Protein Kasar, Konsumsi, Kecernaan, Ketersediaan, dan Pemanfaatan Nutrien. Fakultas Peternakan, Universitas Udayana. Denpasar

Muhtarudin, Liman, dan Y. Widodo. 2003. Pembuatan dan Penggunaan Zn-Proteinat dalam Ransum untuk Meningkatkan Nilai Hayati Dedak Gandum dan Optimalisasi Bioproses dalam Pencernaan Ternak Kambing. Jurnal Penelitian Pertanian Terapan. Lampung

Parakkasi, A. 1999. Ilmu Nutrisi dan Makanan Ternak Ruminansia. Universitas Indonesia

Ravindran V. and R. Blair. 1992. Feed Resources for Poultry Production in Asia and The Pasific II. Plant Protein Sourrces World's. Sci. J. 48: 206-231

Saragih, H. 2014. Penggunaan Limbah Perkebunan untuk Pengembangan Ternak Kambing. Jurnal Penelitian Peternakan. Medan, Vol 4 Nomor 1

Soebarinoto, S. Chuzaemi, dan Mashudi. l99l. Ilmu Gizi Ruminansia. Universitas Brawijaya. Animal Husbandry Project. Malang

Sutardi, T.1980. Landasan Ilmu Nutrisi I. Departemen Ilmu Makanan Ternak, Fakultas Peternakan, Institut Pertanian Bogor, Bogor

Sutama, I.K. dan I.G.M. Budiarsana. 1996. Kambing PE Penghasil Susu sebagai Sumber Pertumbuhan Baru Sub-sektor Peternakan dan Veteriner. Prosiding Seminar Nasional Peternakan dan Veteriner. Departemen Pertanian. Bogor

Suwignyo, B. 2004. Sektor Peternakan Komoditi Utama Penggerak Perekonomian. Cyber News. Suara Merdeka. Yogyakarta

Tanuwiria, W., Garnida, dan I.Y. Asmara. 2006. Pengaruh Tingkat Protein dalam Ransum terhadap Performan Entok Lokal pada periode pertumbuhan. Seminar Nasional Teknologi Peternakan dan Veterinerr. Universitas Padjadjaran. Bandung