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Dry Matter Digestibility and Natural Organic Matter Mulberry Feed Gamal Leaves on Male Goat Crossbreed Ettawa

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Abstract

This study aimed to test the level of dry matter and organic matter mulberry natural food and Gliricidia at Ettawa goat crossbreed (PE) males. This research was conducted in March and April 2016 in the village Ranomentaa Toari District of Kolaka. The material used is 12 PE male goats aged 4-6 months with a body weight of 10.44 ± 1.13 kg. Research compiled by complete randomized design (CRD) 3 treatments and 4 replications, P1 (100% mulberry), P2 (50% and 50% mulberry Gliricidia), P3 (100% Gliricidia). The parameters observed were dry matter intake (DMI), organic matter intake (OMI), dry matter digestibility (DMD) and organic matter digestibility (OMD). The data obtained were analyzed using ANOVA with F test (P <0.01 and P <0.05), when there is a continued effect with least significant difference test (BNT). Dry matter consumption and OMI highly significant (P <0.01), while DMD and OMD not significant (P> 0.05) as a result of treatment. DMI highest average at P3 (295.41 grams), in line with the highest OMI on P3 (271.21 grams). While the percentage DMD and OMD each ranging between 39.82 to 41.23% and from 40.55 to 43.87%. The absence of the effect of treatment on DMD and OMD caused by the degradation rate of the different natural feed caused by the content of crude fiber (CF) and lignin as well as anti-nutritive substances in the forage. Based on the results of the study concluded that the DMI and the best OMI on Gliricidia, but had no effect on DMD and OMD.

Keywords: Goat crossbreed Etawa, Mulberry Leaves, Leaves Gamal, Natural Feed, consumption, digestibility

A. Introduction

Crossbreed goats goat Ettawa a result of crossbreeding of beans with goat Ettawa goats, goats have characteristics that have long hanging ears, fur color black or white as snow with and have a body weight of 40 to 45 kg (Atabany, 2001). Goats Ettawa itself was imported from India in the Dutch period, given the origin of the goat Ettawa that of the country of India (Jamnapari) which is different from the climate and season with Indonesia, goats are often known as goat PE (Peranakan Ettawa), today considered as the local goats. Ettawa size similar to but more adaptive to local environments Indonesia because it is a cross between a goat Ettawa and a goat Nuts.

Goats of this type easily thrive in cold temperate areas, a big man coat color vary; white striped, red-brown, patches - patches of black or a combination of these and on the back there is a thick fur and long. Listening goats crossbreed Etawa generally very fond of beauty feathers and face shape. Because it is very rare type of goat is used as a goat to be slaughtered (cut) to be eaten, they are more use is as pets for collection. Even supposedly ancient times, those who have Etawa goats will look appetizing and who it was in the public eye.

Feed is anything that can be given to livestock, in the form of organic and inorganic materials are partially or completely digested and do not disturb the health of livestock. Good feed a

positive influence on body weight gain than that of feed is an important factor affecting the growth (Susetyo, 2001). In addition to genetic factors, one of the environmental factors that most affect livestock production, especially the quantity and quality of feed consumed and the end product of the fermentation process and the rumen microorganisms rumen itself.

The amount of food and the quality of the food was either not able to change the body of cattle genetically smallish, but feeding in low numbers will not be able to provide body weight gain and growth carcass optimally in accordance with the genetic potential that exist in each animal as the speed of growth, a high percentage of the carcass, it may only be realized if the animal can obtain enough food (Parakkasi, 1995).

Forage contains nutrients that can determine the growth, reproduction and animal health. Good fresh green feed is when the composition is arranged between the low protein and high in protein. Foliage is a source of high fiber for ruminants. Foliage is usually in the form of grasses (Yani, 2001). However, forage derived from the grass singly on Ettawa crossbreed goats produce negative growth. As a result of the low content of its protein so its digestion too low. Animals with high production levels (growth, pregnant and lactation). Need more protein supply feed origin. Giving the fastest protein needs is by giving Concentra, but the price of concentrate feed is relatively expensive and not affordable by farmers.

Therefore, the author took the initiative to conduct research on natural feeding easily available and also has a relatively high nutrient content. This is the background research about the digestibility of dry matter and organic matter of natural food Gamal and mulberry on the male of crossbreed Ettawa goat.

B. Methodology

1. Materials

The study was conducted from April to May 2016 held at the Village Ranomentaa Toari District of Kolaka. Analysis of organic matter carried out in the Laboratory of the Faculty of Animal Husbandry, Haluoleo university, Kendari. Using as many as 12 heads of PE goat, sex male initial body weight of an average of 10.44 ± 1.13 with a range of age 4-6 months are placed in individual cages at random to obtain treatment. Materials used are forage in the form of Gliricidia leaves and mulberry leaves, water, plastic clip. Tool used for weighing scales goat body weight, feed scales, analytical balance, faeces storage containers, buckets, and laboratory equipment.

2. Method

The study was conducted in two stages of the first stage of the preparation of the second phase of testing in vivo. The preparation phase consists of the manufacture of cages gathering cattle and others. While the testing phase in vivo in general usually do two introductory periods and the data collection period. However, in certain circumstances, there is one period before the second period is a period of adaptation.

Especially for digestibility measurement period collection or data collection will be done three days in ruminant livestock feed in the collection started three days before the collection of feces. Because the estimate of 48 hours is required in the feed stream that is not digested by the digestive tract that was released today is the remainder of the feed that is given beforehand. The parameters measured in this study is the consumption of feed digestibility Dry Materials (DMD) and Organic Materials (OMD) cattle goats to feed complete with different protein content, can be calculated by the following formula:

Feed consumption (g) = Feeding (grams) - the rest of the feed (g)

$$\text{DM digestibility (\%)(\%)} = \frac{\text{BKcomsumpted} - \text{BKfeses}}{\text{BKcomsumpted}} \text{x } 100\%$$

$$\text{OM digestibility (\%)} = \frac{\text{BO comsumpted} - \text{BO feses}}{\text{BO comsumpted}} \text{x } 100\%$$

Description: DM = Dry matter OM = Organic Materials

3. Design of Experiments and Data Collection

The study is based on completely randomized design (CRD) (Gasperz, 1991). Composed of 3 treatments 4 replications for each treatment P1 = 100% mulberry, mulberry P2 = 50% + 50% Gamal and P3 = 100% Gamal

The preliminary study was conducted over a one week study followed for 3 months. The feeding is done three times a day i.e. morning at 08.00 pm, during the day at 13:00 pm, and in the afternoon at 16:00 pm, while the drinking water supplied adlibitum. Total collections held in the third week for four days, taking stool done every hour for 24 hours during the collection period. Total feces during the collection period was mixed until homogeneous, and then taken for analysis 10% dry matter and organic matter feces.

C. Result and Discussion

Summary results of research on natural feeding mulberry and Gamal to the parameters tested in goats crossbreed Ettawa (CE) are presented in Table 1. Based on the analysis of variance of the obtained results that the natural feeding on mulberry and Gamal male of PE goat was highly significant (P<0.01) on dry matter intake (DMI) and organic matter intake (OMI), but not significantly (P>0.05) on the percentage of dry matter digestibility (DMD) and organic matter digestibility (OMD).

Table 1. Mean DMI, OMI, DMD and OMD on of Cross Bred Goat Males Given Natural Feed Mulberry And Gamal

variables	Treatment			Sig.
	T1	T 2	T 3	
DMI (g / head / day)	246.41 [a]	272.42 [a]	295.41 [b]	0.0013
OMI (g / head / day)	216.05 [a]	244.49 [b]	271.21 [c]	0.0002
DMD (%)	39.82	40.40	41.23	0.6169
OMD (%)	40.55	41.40	43.87	0.1616

Description: Different superscript on the same line indicate significant difference (P <0.05)

1. Dry Mater and Organic Mater Intake

The average dry matter intake goats are fed natural mulberry and the highest in treatment T3 Gliricidia (Gliricidia) of 295,41gr/head/day and the lowest in treatment T1 (mulberry) 246,41 gr/head/day. Results were much lower than Sunarso study (2012) that the dry matter intake average on a male goat that uses grass field with grass silage king ranged 328.76-471.05 g/head/h.

The average dry matter intake (DMI) P1 (100% mulberry) did not differ by treatment with T2 (50% and 50% mulberry Gamal). This suggests that feeding T1 and T2 have not been able meninggkat A power feed given to cattle. But the value of T3 DMI highly significant (P <0.01) in the T1 and T2. DMI T3 containing high due Gamal Gamal dry matter content is much higher than the mulberry leaves. Besides the different types of feed can cause taste and preferences are different for goats so that the amount of feed consumed differently. This is explained by Anggorodi (1994) which states that the palatability of feed qualitatively affected by the physical properties of feed that include shape, smell, taste and texture. Added by Witariadi (2015) that Gliricidia leaves can be used as a basal feed goat or mixed in with the process of withering.

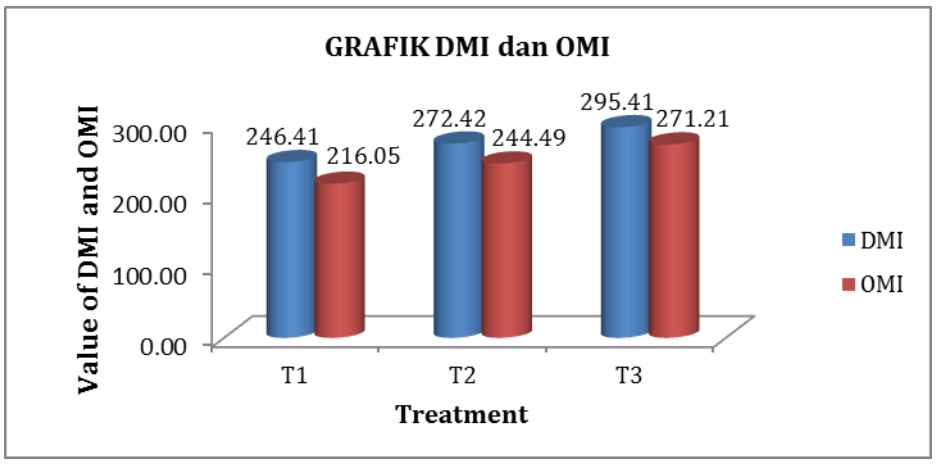

Figure 3 Graphics of DMI and OMI

Based Test F of organic mater intake (OMI) between T1 (100% mulberry), T2 (50% and 50% mulberry Gliricidia) and treatment T3 (100% mulberry) were significantly different (P<0.01) in. This suggests that the different feeding is T1, T2 and T3 are able to provide different level of

palatability to livestock goats. Table 3 shows that the highest OMI Gamal granting 100% (T3), this indicates that the distinctive aroma of withering Gliricidia reduced drastically and also reduce levels of cyanide was avoided livestock for consumption. Described by Abrianto (2011) that the plant Gliricidia does have a distinctive aroma that is less favored, especially cattle never eat it at all, but it is not a problem in cattle that has been accustomed to eating. Gamal shortcomings can be circumvented by familiarizing cattle to consume Gamal.

Average increase in line with increased OMI DMI (Figure 3). DMI and OMI linkages increase shows that the organic material content of the feed is part of the dry matter of feed. Then DMI will always be higher than the OMI. This is in accordance with the opinion of Sutardi (1980) which states that the organic material is closely related to the dry ingredients for the organic material is part of the dry matter.

2. Dry material digestibility and Organic Materials

Based on the analysis of variance of the obtained results that the average percentage of DMD and OMD not significant (P> 0.05) to the experimental unit. In contrast to research Chakra et. al. (2014) that administration of a variety of forage (grass field, hibiscus and Gliricidia) with cedar concentrate "molmik" shows the differences exhibited significantly different between treatments.

Table 1 shows that the natural feeding mulberry, mulberry mix with Gamal and Gamal does not affect DMD and OMD the goat experiment. Percentage DMD and OMD in this study each ranging between 39.82 to 41.23% and from 40.55 to 43.87. The low percentage OMD DMD and the result of different levels of feed degradation caused by crude fiber and lignin content of the forage. Perry et. al. (2003) explains that the feed ingredients that contain high fiber will reduce the value of digestibility of nutrients other as to digest crude fiber required a lot of energy.

Besides anti-nutritional substances contained in forages such as tannin in Gliricidia and compound 1-deoxynojirimycin (DNJ) also can affect the level of digestibility. Their tannin content in Gliricidia can bind to protein feed and also the cell walls of microorganisms thus reducing the availability of microorganisms that serve to degradation feed in the rumen. This is supported by Jayanegara and Sofyan (2008) that tannins can bind to the cell wall of the microorganism and may inhibit the growth of microorganisms or enzyme activity. The reduced dry matter can also be caused by decreasing microbial activity, which is caused by the presence of tannins.

Furthermore, compound 1-deoxynojirimycin (DNJ) on mulberry acts to slow the rate of metabolism and hydrolysis of nutrients in livestock body described by Breitmeier (1997) that the DNJ compounds can inhibit hydrolysis of oligosaccharides became monomer-monomer. Added by Arai et al. (1998) which states that the DNJ can inhibit hydrolysis of carbohydrates into monosaccharides.

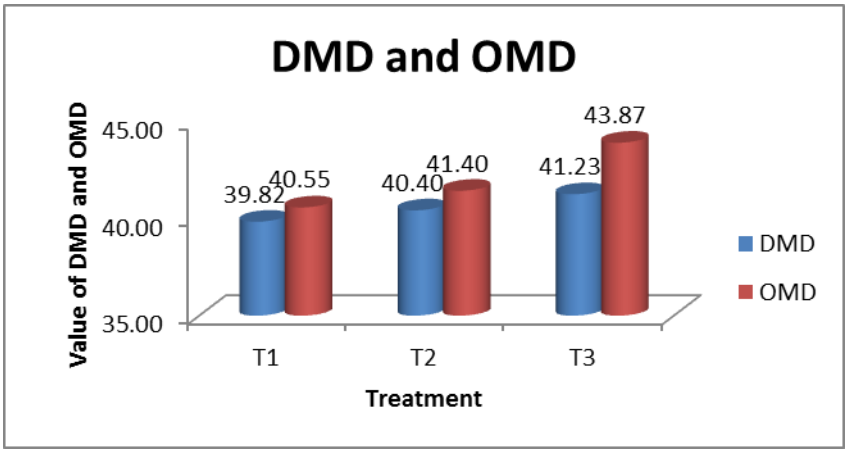

Figure 4. Graphics of DMD and OMD

Although DMD and OMD showed no significant effect on the experimental unit but can be seen in Figure 4 increase DMD and OMD line. This indicates that the components of dry matter and organic matter closely where organic materials are part of the dry ingredients. Described by Tillman et al. (1998) that most of the organic material is a component of dry matter. If the dry matter digestibility coefficients equal, then the organic matter digestibility coefficient is the same.

D. Conclusion

Based on the results of research on natural feeding mulberry and Gliricidia at Crossbreed Etawa male goat concluded that the consumption of dry matter and organic matter is best to P3 (Gliricidia 100%), but had no effect on digestibility of dry matter and organic matter.

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