Production and Milk Composition of Crossbred Etawah Goats Fed on Basal Diet Containing Different Levels of Sesbania (Sesbania Grandiflora) Leaves

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Production and Milk Composition of Crossbred Etawah Goats Fed on Basal Diet Containing Different Levels of Sesbania (*Sesbania Grandiflora*) Leaves

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Abstract

The study was aimed to evaluate the effect of feeding different levels of sesbania leaves (*Sesbania grandiflora*) on production and milk composition of crossbred Etawah goats given basal diet of field grass with 0% (T0), 7% (T1), 14% (T2) and 21% (T3) sesbania leaves. Sixteen lactating crossbred Etawah goats with initial body weight of 36.7 $\pm$ 0.76 kg were randomly assigned into four dietary treatments so that each treatments had four replicates. Every day, each goat in all treatments was given 500 g concentrate made up of by-product of fried traditional snack; rice bran; urea and mineral mix (in proportion of 47.5%; 47.5%; 3% and 2% respectively) and 1 kg fresh banana peel. The results showed no significant difference (P>0.05) in total dry matter (DM) intakes among treatments. But, the DM intake of concentrate of goats fed on 21% sesbania leaves was significantly lower than those fed on control (T0) diet. Similar pattern was observed for milk production. It was significantly increased by enhancing the sesbania leave levels, but milk protein content reduced for goats fed on 21% sesbania leaves. Milk fat content did not affected by dietary treatments, but there was a trend that it decreased as levels of sesbania leaves increased. This finding indicates that feeding less than 21% sesbania leaves in basal diet does not result in significant improvement in productivity of lactating crossbred Etawah goats.

Keywords: *crossbred Etawah goat, milk production and composition, levels of sesbania leaves, feed intakes*

Introduction

Crossbred Etawah Goats in West Nusa Tenggara, Indonesia are being developed as a dual purposes goat type (meat and milk) to enhance nutritional status of local people (Asih *et al*., 2015). However, not all farmers milking their goats for their nutritional status and their income due to low milk production of those goats, particularly in dry season due to lack of feed availability. Vice versa, to get an optimum milk production, the goats should be fed sufficient amount of good quality feeds. This forces farmers to spend much money which is impossible thing to do. To solve this problem, an exploration of potential locally by-product available feed were done on milking Crossbred Ettawa Goats (Asih *et al*., 2014) and on growing-female Crossbred Ettawah Goats (Asih *et al*., 2015) fed a concentrate consisted of 1:1 by-product of traditional fried snack industry (***rontokan gorengan***) and rice bran with 3% urea and 2% mineral mix could increase milk production and maintained the growth rate of the goats. The weaknesses of the results were the low concentrate intakes due to the high fat content of the by-product of fried traditional snack. It is expected that when the concentrate intake could be higher than the former results, the goats' productivities could also be enhanced because of increasing total dry matter intakes. To achieve this purpose, it is

therefore very important to look for alternative feed locally available as a supplement to improve milk quality and production.

Sesbania leaf is one of the tree legumes could increase milk production in humans (Widiyanti, 2009). It also a potential forage which has a high complete nutrient content (crude protein: 30.1%; fiber: 5.1%; carbohydrate: 42.3%; and ash: 10.4%) for milking goats, but its availability is very limited. Its production is relatively lower compared with other forage. It is only about 2 – 3 tons/hectare/year lead to its price to be expensive, so its' use must be efficient.Therefore, to find out the optimum level of *Sesbania grandiflora* leaf in basal diet to improve the quality and production of Crossbred Ettawa Goats milk without disturbing their digestive system, it was conducted a study to evaluate the feed intakes, milk production and composition of Crossbred Ettawa Goats given similar concentrate as previous studies (Asih *et al*., 2014; Asih *et al*., 2015) and basal diets containing different levels of sesbania (*Sesbania grandiflora*) leaves.

Methodology

The study was conducted in "Gopala goat farm" located in SengkongoVillage, West Lombok, by using sixteen lactating crossbred Ettawah Goats (2 to 3 years old with the initial body weight of 36,7 ± 5,3 kg; for a period of one month lactating) were divided into four groups of four goats and each group was fed on one of four additional level sesbania treatments (T0 = 0%; T1= 7%;T2 = 14% and T3 = 21% sesbania leaves on DM basis based on the preliminary study according to Completely Randomized Design.

Table 1. The amount of feed implementation to each treatment on lactating goats on DM basis, except for banana peel on fresh basis

Types of feeds (kg/head/day)	Treatments				Frequencies and times feeding
	T0 (0%)	T1 (7%)	T2 (14%)	T3 (21%)	
Field grass	1 kg	1 kg	1 kg	1 kg	3 x a day (morning; noon; afternoon)
Sesbania leaf	0 kg	0.07 kg	0.14 kg	0.21kg	1 x a day (morning)
Banana peel	1 kg	1 kg	1 kg	1 kg	1 x a day (morning)
Concentrate*	0.5 kg	0.5 kg	0.5 kg	0.5 kg	1 x a day (morning)

* Theconcentrate was made up of by-product of fried traditional snack; rice bran; urea and mineral mix in proportion of 47.5%; 47.5%; 3% and 2% respectively.

The goats were penned in individual cages and the feeding technique is shown in Table 1. Daily feed intake of each feed type and total daily DM intakes were measured for 6 weeks, while milk production was measured for three weeks at last 3 weeks of the study and milk samples were taken in the last week of the study to measure the milk composition (total solid, protein and fat content). Data were analyzed using PROC ANOVA (Sas, 1990) and differences between treatment means were separated using Duncan multiple range test.

Results and Discussion

Responses of milking crossbred Ettawah goats fed additional sesbania leaf levels on dry matter (DM) intakes of each feed, total DM intakes, milk production and composition is presented in Table 2. Increasing levels of sesbania leaf in the forage did not significantly ($P>0.05$) influence DM intakes of each feed, except for DM intake of concentrate. It reduced when the treatment levels increased due to the goats prefer to finish sesbania leaf first than consume the concentrate. However, milk production enhanced significantly ($P<0.05$) with increasing sesbania leaf levels up to 21%, although the total DM intakes were not differ among the treatments (Table 2). This indicates that the nutrient content of the 21% sesbania leaf level played an important role in milk production, and lower levels was not efficient.

In contrary, milk protein contents decreased significantly when the goats given additional sesbania level of 21% and the milk fat content also declined, although it was not significant (P>0.05). This result was in accordance to the basic dairy theory that when the milk production increase, milk composition reduced.

The best response of the 21% sesbania treatment on milk production and in body condition of the does until the end of the study indicated that those levels is a minimum level in the basal diet of field grass fed to lactating crossbred Ettawah goats. Further study is still needed to find the optimum sesbania level in the diet of milking goats.

Table 2. Nutrient intakes, water consumption, ADG, and FCR of growing-female crossbred Ettawah goats.

Parameter	T0 (0%)	T1 (7%)	T2 (14%)	T3 (21%)	Sign
DM Intake of feed					
Field grass (kg/day).	0.9020	0.8450	0,8900	0.7250	Ns
Banana peel (kg/day)	0.1375	0.1400	0.1400	0.1375	Ns
Concentrate (kg/day)	0.3200^{a}	0.2875^{ab}	0.2925^{ab}	0.2475^{b}	**
Concentrate (g/kg BB)	8.9^{a}	8.0^{ab}	$7,8^{ab}$	$6,7^{b}$	**
Sesbania leaf (kg/day)	0.00^{d}	0.07^{c}	0.13^{b}	0.20^{a}	***
Total DM intakes (kg/day)	1.3600	1.3350	1.4525	1.3100	Ns
Productivity					
Milk production (ml/day)	587.00^{b}	651.50^{ab}	763.30^{ab}	853.80^{a}	**
Milk protein content (%)	$3.57^{à}$	$3.68^{à}$	$3.62^{à}$	3.07^{b}	**
Milk fat content (%)	7.66	6.27	6.58	5.94	Ns
Body Weight Changes					
Initial weight (kg)	36.00	36.13	37.63	37.00	Ns
Final body weight (kg)	36.38	37.25	38.88	38.50	Ns

Ns: not significantly different; **: significant different; ***: highly significant different

Conclusion

Feeding *sesbania grandiflora* leaves with the level of less than 21% of the basal diet does not result in significant improvement in productivity of lactating crossbred Ettawah goats. It needs further study to find out the optimum levels of this feed in different types of basal diets given to lactating goats.

References

Asih, A. R. S., K.G. Wiryawan, I.N. Sadia, and Kertanegara.2014. Productivity of Crossbred Etawah Goats Fed by-product of Traditional Fried Snack Industry with Different Level of Urea.*The 2nd Asian-Australian Dairy Goat Conference, April 25 – 27h, 2014, Bogor, Indonesia*.

Asih, A. R. S., K.G. Wiryawan, I.N. Sadia, and Kertanegara.2015. Responses of Growing-Female Crossbred Ettawa Goats Fed Concentrates Containing by-product of Traditional Fried Snack Industry with Different Levels of Urea. The 6thInternational Seminar on Tropical Animal Production, October 20 – 22th, 2015, Yogyakarta, Indonesia.

SAS Institute Inc. 1990. SAS/STAT User's Guide, version 6, 4th edn. SAS Institute Inc., Cary, NC.USA

Widiyanti, R.. 2009. *Analisis Kandungan Senyawa Fenol*. Universitas Indonesia Press, Jakarta.

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