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Suplementation Local Feed Urea *Gula Air* Multinutrient Block and Different Levels of Sulphur for Increasing Lactation Productivity Doe also Decreasing Kid Mortality Bligon Goat Grazed at Timor Savannah

Arnold E. Manu[1], Yusuf L. Henuk[1], H.L.L.Belli[1], M.M. Kleden[1]

[1]Faculty of Animal Science, Nusa Cendana University
Email: Maurin_01@yahoo.co.id; HP. 085239299545

ABSTRACT: This research was conducted at the Regional Technical Implementation Unit (UPTD) Breeding Goat Sumlili, Sub-district of West Kupang, Regency of Kupang for 10 weeks from 17th November 2012 to 28th January 2013. Twelve does with initial body weight ranged from 14.2 - 23.8 kg (CV = 14.91) were used in the experiment. The objectives of this study were to evaluate the performance of local (Bligon) does and review their kids that reared under grazing in the savannah at West Timor supplemented with local feed water sugar urea multinutrient blocks (UGMB) and different levels of sulphur (S). *Gula air* were taken from *Borassus sundaicus* then cooked. Twenty Bligon goat lactating does and their kids were divided into four groups and used as subjects in the experiment. Does were randomly devided into 4 groups of treatment namely, R1 = 0.62% S in the doe kid + solid feed supplement; R2 = 0.62% S in the doe kid without a solid feed supplement; R3 = 0.93% S in the doe kid + solid feed supplement; R4 = 0.62% S in the doe kid without a solid feed supplement. The results of the experiment showed that averaged daily gain (ADG) (g/h/d) of the does were 60.71; 42.86; 52.57 and 45.83 and to the kids were 33.33; 20:24; 21:43; 17.86 for group R1, R2, R3 and R4, respectively ($P < 0.01$). The ADG kids were better on higher milk consumption ($P < 0.05$). All Significantly different treatment found in terms of protein and energy consumption, pH, VFA and NH_3 of rumen fluid but there was no effect of on both protein and energy digestibility. Averaged percentage of kid mortality was 0% R1 and R3, R2 and R4 33.3% 66.7%. It was concluded that local feed supplement with different sulphur increased the percentage of rumen fermentation product and crude protein content of milk and solid feed supplemented kid decrease kid mortality.

Keywords: local feeds, doe performance, sulphur level, savannah, kid mortality

INTRODUCTION

Goats in West Timor is usually kept extensively in the pasture. Pasture forage production during the dry season is very low whereas Bligon goat born more during the end of the dry season, so their lactation more at the end of the dry savannah where forage is less available (Manu *et al.,* 2007). This situation will affect the production of doe's milk, so it does not meet their needs, while the feed quality of pasture is still too low for kids. Performance does can run normally, if sufficient fodder for livestock pasture in the dry season should be given additional food or supplementation (Smith, 2000). One of the technologies in the field of forage that can be used is urea mollases multinutrients block (UMMB) as suggested by Santosa *et al.* (2000).

There was unavailable Mollases in Timor so it can look for available substitutes which have almost the same nutrient value named 'sugar water'. Sugar water is the juice produced from palm trees (*Borassus sundaicus*) and cooked. Extract ingredients without nitrogen (NFE) from molasses about 85.7%, and according Jelantik *et al.* (2003) on sugar water about 86.03%. Thus, the cooked juice can be replaced by sugar molasses, and it more appropriate supplemented in

the form called UGMB (urea gula air multinutrient blocks). Supplementation strategies can be implemented to provide a supplement to both does or kid. The main source of milk for kid is the does' milk. Genetically livestock milk production capability is very limited, while kid need a lot of milk. So that strategies can be modified through supplementation is to be given to the kid.

Manu (2010) found that during the dry season goats deficient almost all minerals, one of which is sulphur (S). Timor Island was included in a series of outer arc east of the islands of Indonesia's low mineral content. Forage left in the savannah in Timor just old high dry forage fiber ballpark during dry season. Sulphur is required in the dry season to increase the crude fiber-digesting microbial populations. It is also important to stimulate the synthesis of amino acids rumen. Non protein nitrogen (NPN) is a source of nitrogen that is easy and inexpensive to use for livestock to pasture. The need of S for Angora goat will be higher if the NPN is used as a partial source of nitrogen (Qi *et al.,* 2002). The purpose of this study was to determine the effect of feed supplementation with local UGMB sulpur different levels in Bligon goat lactating does and their beginners fed solid feed and grazed in the savannah of Timor on the performance of does parent and kid mortality.

MATERIALS AND METHODS

This research was conducted at the Regional Technical Implementation Unit (UPTD) Breeding Goat Sumlili, Sub-district of West Kupang, Regency of Kupang for 10 weeks from 17th November 2012 to 28th January 2013. Twelve does with initial body weight ranged from 14.2 - 23.8 kg (CV = 14.91) were used in the experiment. Feed use is forage for grazing is natural grass and a supplement to the does composed of urea, *gula air*, coconut meal, corn grain, rice bran, sulphur and salt. Solid feed beginners (P3) for kid composed of *gula air*, pumpkin, fish meal, vitamineral mix and salt, and made in the form of a paste.

Supplements for does and kid were given as much as 1% of body weight on a dry matter basis, and the sum is for daily use. Constituents of feed and feed supplements for additional does to kid used and their nutritional content are presented in Table 1 and 2.

Table 1. Ingredients Supplements for Does and Kids Based on Dry Matter

Materials Supplement	Doe Supplement (%)	Kid supplement (%)
Urea	2.5	-
Gula air	35	30
Coconut meal	20	-
Rice bran	20	-
Corn grain	20	-
Salt	2.5	-
Fish meal	-	25
Pumpkin	-	35
Vitamineral mix	-	10

Table 2. Nutrient Supplements and forage pastures.

Samples	Dry Matter (%)	Organic Matter (%)	Crude Protein (%)	Crude Lipid (%)	Crude Fiber (%)	Total CHO (%)	BETN (%)	Gross Energy	
								(MJ/ kg)	(KKal/ Kg)
Forage	21.27	87.71	20.89	3.28	18.82	63.54	44.71	17.18	4,089.33
Doe Supplement	72.27	93.60	17.01	7.59	11.31	69.00	57.69	18.65	4,440.50
Kid Supplement	47.17	73.23	13.82	2.33	0.86	57.07	56.21	14.02	3,337.81

Each doe is placed in individual pen and were given supplements in the morning before grazing, at noon and in the evening grazing goat housed. During given supplements separated to does and kid. A Randomized Trial Design (RBD) was used in the experiment with four treatments and 3 replicates. The four treatments were:

R1: does supplemented with additional S as much as 0.62% + kid were fed solid starters
R2: does supplemented with additional S as much as 0.62% + kid were not fed solid starters
R3: does supplemented with additional S as much as 0.93% + kid were fed solid starters
R4: does supplemented with additional S as much as 0.93% + kid were not fed solid starters.

Parameters measured were: daily weight gain of does and child (g/head/day), daily does milk production (g/head/day), feed intake (dry matter, protein and energy) and digestibility (dry matter, protein and energy) during grazing, fermentation products rumen (pH, VFA and NH3 rumen fluid) and the percentage of kid mortality. The estimation of dry matter intake in the savannah was used fecal techniques (Minson, 1990). The data collected in this study were subjected to the standard analysis of variance technique (Steel and Torrie, 1995), and Duncan's Multiple Range test was used to detect differences among the means.

RESULTS AND DISCUSSION

1. Daily weight gain of does and kid and the does' milk production

Average daily gain (ADG) of does fed with S 0.62% (average of R1 and R2) is not much different from that received S 0.93% (average of R3 and R4). Does with kid receive additional feed showed the average DWG higher than that did not receive additional food. Nevertheless, all does groups showed that their milk production was no different, it is because the main priority of does is to produce milk, so that kid fed additional food has a higher DWG. Feed intake and digestibility does fed S 0.62% (R1 and R2) was lower than their counterparts received 0.93% S (R3 and R4), but ADG more influenced by the treatment of supplementary feeding to kid. This results can be understood as a kid on R1 and R3 will reduce the consumption from does' milk, so that the feed obtained by the does will be more used to the weight of the does.

Data in Table 3 showed that the averaged ADG kid affected significantly ($P < 0.01$) by treatment. The highest daily weight gain in the group receiving supplemental feed (R1 and R3) and highly significant with R2 and R4 groups. In lactation goats until the age of 6 weeks, the does' milk is a major nutrient for growth before the kid started to try to consume feed. Growth kid after the age of 6 weeks in addition determined by the hard feed remains largely determined by the does' milk, so that the level of pre-weaning growth of kid is strongly influenced by the does milk production and feed supplement obtained.

Table 3. Average birth weight kids, milk production does, ADG kid and the does with and without supplements UGMB

Parameters	Treatments			
	R1	R2	R3	R4
ADG does (g / head / day)	53.57^{ab}	42.86^{c}	60.71^{a}	45.83^{bc}
ADG kids (g / head / day)	33.33^{a}	20.24^{b}	31.43^{a}	17.86^{b}
Feed intake				
Dry matter (g / head / day)	360.5	361.876	443.59	368.96
Energy (MJ / head / day)	5.43	6.48	5.31	6.89
Protein (g / head / day)	55.72	68.54	55.61	70.12
Digestibility of feed				
Dry matter (%)	72.158	72.876	75.34	75.534
Energy (%)	88.07	87.45	90.12	90.28
Protein (%)	91.12	92.91	93.35	94.25
Rumen fermentation				
VFA				
Acetate (mM/ml)	54.31^{a}	52.38 ^{a}	58.82^{b}	57.34 ^{b}
Propionate (mM/ml)	14.53 ^{a}	13.23 ^{a}	17.21 ^{b}	18.79 ^{b}
Butyrate (mM/ml)	7.31 ^{a}	7.36 ^{a}	9.82 ^{b}	9.43 ^{b}
NH_3 (mg/dl)	32.85 ^{a}	33.86 ^{a}	39.62 ^{b}	38.32 ^{b}
pH	6.82 ^{a}	6.87 ^{a}	5.67 ^{b}	565 ^{b}
Does milk production (g/head/day)	616.67^{a}	616.67^{a}	620.00^{a}	616,67^{a}
Milk components				
Fat (%)	3.51^{a}	3.45^{a}	3.73^{a}	3.78^{a}
Protein (%)	2.93^{a}	2.95^{a}	3.05^{a}	3.07^{a}
The percentage of child mortality (%)	0	33.3	0	66.7

Different superscripts in the same row indicate significant differences (P <0.01)

2. The average results of rumen fermentative

The rumen fermentative data indicate that the percentage of sulphur significant effect on VFA and NH_3 rumen fluid. The addition of S would lead to an increase in consumption and digestibility in the rumen consequently more lactic acid is formed so atmosphere tends to sour. NH_3 and VFA concentration of rumen fluid also increases with increasing number of S. This Possibly because the amount of S increases, the number of fiber-digesting microbes grow because these microbes are generally composed of amino acids containing S.

3. The percentage of kid mortality

Death at pre-weaning goat kids can be caused due to lack of feed during lactation. This condition can be improved by the does or the application of additional feed milk substitute or creep feeding for kids (Alexandre *et al.,* 2002). Does' milk production was not affected by treatment, so that the contribution of all the nutrients of milk on the same treatment. The condition of the kid's body depends on the intake of nutrients, so that kids have higher intakes will have more endurance.

R1 and R3 treatment kids receive additional food so much more than their nutrient intake of the R2 and R4. Pre-weaning kid is still very vulnerable to infection from the environment due to the body's defense system that has not been very good so that sufficient nutrients to help kid maintain body condition (Kristianto, 2002). Thus the treatment of feed supplementation in kid reduce the number of kid mortality due to their nutrient needs met.

CONCLUSION

Based on the results and discussion, it can be concluded that:

1. The increase in the percentage of S can improve the results of fermentation in the rumen and digestibility of the does.
2. Supplementation in kid improve the performance of the does and kid and pressing pre weaning mortality kid.

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