

Productivity of Crossbred Ettawah Goats Fed by-Product of Traditional Fried Snack Industry with Different Level of Urea

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Submission date: 15-Feb-2023 02:32PM (UTC+0000)

Submission ID: 2014806147

File name: Productivity_of_Crossbred_Ettawah_Goats_Fed_by.docx (37.78K)

Word count: 1175

Character count: 6469

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Abstract The purposes of this study were to evaluate the effect of urea levels in the concentrate consisted of 1:1 "rontokan gorengan" (by-product of traditional fried snack industry) and rice bran on feed intakes, body weight, milk production, average daily gain (ADG) of their offspring and digestibility of crossbred Ettawah fed native grass and banana peel as basal diets. Fifteen lactating crossbred Ettawah does were divided into three groups (5 goats each) fed one of dietary concentrate treatments (1%, 2% and 3% urea) and arranged according to Completely randomized Design. There were no significant differences on feed intake, milk production and digestibility, except fibre and N digestibility were significantly increased for diet with 3% urea ($P < 0.05$). At the end of the experiment, the does receiving diet with 1% urea lost significantly ($P < 0.05$) in body weight, while those receiving diet containing urea higher than 1% gained weight. The results indicate that feeding lactating crossbred Ettawah with a basal diet of field grass and banana peel and concentrate based on "rontokan gorengan" and rice bran (1:1) containing up to 3% urea give beneficial effects.

Keywords By-product, Milk production, Weight gain, Digestibility

1. Introduction

Growth and milk production patterns are depend on the management, quality and quantity of available feed, health management and climate. An availability of feed is a predominant factor determining efficiency of dairy goat production, because the cost of feed in dairy goats is the highest amongst the operational cost [1]. In developing countries, therefore, alternative feeds which are locally available, unconventional and sometime pollute environment should be found out. In Mataram, by products of traditional fried snack industry ("Gorengan") such as banana peel, cassava peel, jack fruit peel and "rontokan gorengan" (by-product of gorengan) are polluting the traditional market environments and the rivers around the city, result in spreading out bad smell and pathogenic bacteria. It is caused by the unawareness of a healthy environment. Recently, these kinds of by-products are being utilized by "the Gopal a goat farm" for feeding Ettawah crossbred goats. However, those feedstuffs are given ad libitum and free choice without considering level of nutrient intake of these feed which are rich in fermentable energy but lack of protein. In this case, adding urea is a cheap possibility to enrich the nutrient for increasing the goats' productivity. Therefore, the experiment was conducted to evaluate the milk production, average daily gain of the pre-weaning off spring and digestibility in Ettawah crossbred does given concentrate containing different levels of urea.

2. Materials and Methods

Fifteen lactating Ettawah crossbred does (a month lactating period) were divided into three groups of five goats each and given one of three concentrates treatments (Table 1) according to Completely Randomized Design.

Table 1. The composition of concentrate treatments as feeds

Treatments	Rice bran (%)	"Rontokan gorengan" (%)	Urea (%)	Mineral (%)
U1	48.5	48.5	1.0	2.0
U2	48.0	48.0	2.0	2.0
U3	47.5	47.5	3.0	2.0

"Rontokan gorengan" is by-product of traditional fried snack industry which is separated from the main products. Mineral is specific for goats and sheep produced by Eka Parma, Semarang.

The goats were penned in individual cages and the feeding technique is shown in Table 2. Milk production was measured for 8 weeks, continued by a week digestibility measurement and the pre-weaning off spring were weighted weekly for 10 weeks to calculate the average daily gain. Data were analyzed using PROC GLM [3] and differences between treatment means were tested with Duncan multiple range test.

Table 2. Frequency, feeding time and amount of feed given to each goat in different dietary treatments

Feeds	U1	U2	U3	Frequency and time given
Native grass	ad-lib	ad-lib	ad-lib	Three times a day (in the morning; noon; evening)
Concentrate (g)	500	500	500	Once a day (in the morning)
Banana peel (g)	750	750	750	Once a day (in the morning)

3. Results and Discussion

Intake, milk production, body weight, average daily gain of pre-weaned offsprings, and digestibility are presented in Table 3. Milk production was not influenced by the urea levels in the concentrates, since the intake and digestibility (DM, OM and fat) were not significantly different ($P>0.05$) among urea treatments (Table 3). Consequently, the ADG of pre-weaned offsprings were also not significantly different. However, the does receiving concentrate containing only 1% urea lost 1.125 kg weight at the end of the experiment. In contrast, those goats receiving 2% and 3% urea gained weight of 0.625 and 1.0 kg respectively. This might be caused by significant increase in digestibility of fiber and N when the does were fed concentrate containing 3% urea, so that the does were not necessarily sacrifice their body tissue to fulfill their nutrient needs. These findings were in accordance with those reported by [3] that increasing levels of protein in concentrates improved the digestibility of dietary fiber and protein, but did not affect digestibility of DM and OM. Different protein sources (soybean meal, cotton seed meal and urea) in the concentrates contained similar amount of energy did not affect microbial protein synthesis in the rumen of the

goats [2] and there is still an opportunity to utilize urea to enrich certain unconventional by-product for goats.

Table 3. Intake, milk production and digestibility of lactating crossbred goats receiving various dietary treatments and ADG of pre-weaned off spring.

Parameter	U1	U2	U3	SEM	P-value
Intake					
DM (kg/day).	1.31	1.24	1.33	0.0383	0.230
DM per kg body weight (%)	4.12	3.77	3.62	0.2839	0.472
Production					
Milk production (ml)	728.5	680.0	705	73.1830	0.686
Body weight change (kg)	-1.125 ^b	0.625 ^a	1.00 ^a	0.5368	0.045
ADG of pre-weaning off spring (g/day)	144.03	139.75	145.11	12.2811	0.716
Digestibility (%)					
DM	84.3	82.5	85.1	1.2506	0.398
OM	85.6	84.2	86.7	1.1427	0.388
Fat	74.5	66.5	71.1	3.0880	0.337
Fiber	63.6 ^a	69.5 ^a	81.0 ^b	2.1637	0.001
N	68.3 ^a	71.5	78.2 ^b	2.224	0.054

U1, 1% urea, U2, 2% urea, U3, 3% urea in the concentrates

Different superscripts within the same row are statistically different at P<0.05

4. Conclusion

Feeding lactating crossbred Ettawah with a basal diet of native grass and banana peel and concentrate ("rontokan gorengan" and rice bran at the ratio of 1:1) containing up to 3% urea give beneficial effects.

5. References

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