NUTRITIONAL EVALUATION OF CASSABIO IN THE RATION OF LOCAL LAMBS

D. Diapari, A.D. Lubis, R.R Thaher, W.W. Ifafah and D.A. Astuti

Department of Nutrition Science and Feed Technology, Faculty of Animal Science
Bogor Agricultural University
Jl. Agatis, Dramaga Campus, Bogor 16680 Indonesia

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Corresponding Author: dewiapriastuti86@gmail.com

ABSTRACT

The objective of the study was to evaluate the effect of Cassabio inclusion in concentrate on performance of local lambs. Twelve thin tailed lambs, aged 6 - 8 months with an average BW 13-16 kg, were divided into four treatment groups with three replicates by using completely Randomized Block Design ie. without Cassabio (C-0), 20% Cassabio (C-20), 40% of Cassabio (C-40), and 60% of cassabio (C-60). Variables measured were feed consumption, average of body weight gain, and feed efficiency. No significant difference in body weight gain, feed comsumption and feed efficiency was observed on addition of Cassabio upto 60 % in the concentrate..

KEY WORDS: Body weight gain, Cassabio, Cassava pulp, consumption, Local Lamb.

INTRODUCTION

The availability of local animal feed depends on industral waste and agricultural waste products. Waste from Cassava prosessing industry is one of the alternative feed ingredients. The most important use of Cassava is as human food for over 200 million people in Africa. Cassava is also used as livestock feed, and regularly fed to sheep and goats on small-scale subsistence farms in Africa. A majority of the farmers of South Nigeria use Cassava products and by-products as supplementary feed to grass and hay (Anon. 1988).

Cassava peel has also been fed to ruminants after fermentation. Adebowale (1981) substituted fermented Cassava peel upto 20 % for maize to feed West African Dwarf sheep. Perhaps the greatest constraint to feeding Cassava to ruminants is cyanide toxicity, because of the high level of cyanogenic glycoside linamarin and lotaustralin, which are broken down by hydrolytic enzymes present in the plant to hydrocyanic acid (HCN), a toxic compound, and acetone and glucose. Sun drying, ensiling and fermentation are used to reduce the concentration of the glycosides to tolerable levels. Cassava pulp is a solid waste from tapioca processing which contains 75% unextracted starch that can be used as a carbon source in the ration, but it has low crude protein content (1.04 % in the dry matter) and thus it is necessary to add other materials which are indispensable for the growth (Nuraini *et al.* 2007). Therefore, in this study fermenatation technology was used to process cassava into a better quality product called as Cassabio.

Fermentation of cassava pulp with the addition of zeolite, urea, and ammonium sulfate resulted into a product called Cassabio with high (13 %) protein content, addition of Cassabio up to 40% in the ration of broiler chickens could give good results. However, the use of Cassabio in ruminants such as local sheep has not been evaluated. Therefore this study was conducted to evaluate the effect of different levels of Cassabio in concentrate feed on the performance of local lamb.

MATERIALS AND METHODS

Twelve thin tailed lambs aged 6 - 8 months with average BW 13 - 16 kg, were divided into four treatment groups with three replicates. Sheep were kept individually in 1x1.5 m cages .The complete randomized block design (RBD) consisted of four treatment groups (C-0, C-20, C-40

and C-60) of various levels of Cassabio in the concentrate with three replicates for each group. Data were analyzed using ANOVA (Analysis of Variance) and the differences between treatments were further tested by Duncan's new multiple range test (DNMRT) using SPSS 16.0 program software.

Preparation of Cassabio

Cassabio is a fermentation product of Cassava pulp. Cassava pulp-flour was uniformly mixed with 2.5 % zeolite and sterilized using autoclave at 120°C and a pressure of 250 psi for 15 minutes. Then 3 % urea, 1.5% ammonium sulfate, 0.2 % *Aspergillus niger as* starter was mixed homogeneously and sufficient distilled water was added to achieve 75 % moisture content. The resulting mixture was then placed in a fermentation chamber and incubated at 28 - 32°C for six days. The fermentation process was stopped by drying in sun for 2 to 3 days. The product thus obtained is called Cassabio that has more protein (11.60%) than the Cassava pulp (3.43%) with a reduction in crude fibre from 5.12% to 2.80%. The Cassava pulp was replaced with Cassabio in the experimental concentrate feed at four different levels 0, 20, 40 and 60 %. The ingredient composition of the concentrate feeds are given in Table 1.

Tabel 1. Composition of the Concentrates (% DM)

Ingredients	**Treatments (%)**			
	C-0	**C-20**	**C-40**	**C-60**
Pollard	48.0	31.5	10.0	3.0
Cassava pulp	14.6	0.0	0.0	0.0
Coconut meal	16.8	30.0	28.5	8.5
Soybean meal	13.0	11.0	14.0	21.0
Molasses	7.1	7.0	7.0	7.0
Mineral and Vitamin Premix	0.5	0.5	0.5	0.5
Cassabio	0.0	20.0	40.0	60.0
Total	100.0	100.0	100.0	100.0

C-0=concentrate without cassabio; C-20=concentrate containing 20% cassabio; C-40 =concentrate containing 40% cassabio; C-60 =concentrate containing cassabio.

The experimental lambs were adapted to the environment cages for two weeks. The lambs were fed with respective feed twice a day at 06:00 am and 15.00 pm for 10 weeks . Feed and drinking water were given *ad libitum. Body* weight gain was recorded biweekly and daily feed intake was recorded from the feed offered and the remaining feed at the end of the day. Feed efficiency was calculated from daily gain divided by intakes.

RESULTS AND DISCUSSION

The effect of different levels of Cassabio inclusion in the concentrate on performance of lambs is presented in Table 2. Consumption is a benchmark in the assessment of the palatability of the feed given to livestock and an important factor in determining the productivity of the animals (Aregheore 2000). Forbes (2010) stated that palatability is directly related to performance. Use of Cassabio

in this study did not affect palatability compared to control as evidenced from the incresing trend in fresh and DM intake. In this study Cassabio resulted in better palatability, may be due to presence of some micronutrients / minerals after fermentation of Cassava pulp by Aspergilus *niger* which might have improved the quality of feed. Further it is found that DM intake was about 2.40% of body weight which supported medium growth rate in lambs without any adverse effect on the palatability and health status. There was non significant difference in feed efficiency among all the treatment groups. The feed efficiency range was 0.17 to 0.20. However in C-60 group it was higher (0.20 ± 0.022), but statistically non significant. The results revealed that there was an increasing trend in ADG which was 27 % higher in C-60 group however there was no significant difference among all the treatment groups. At the same time there was also increase in DM intake. The increase in DM intake might have contributed to the increase in ADG. There was no significant difference in daily weight gain in all the treatments which suggests that Cassabio could be used up to 60% in concentrate without any harmful or deleteriuos effects. Nasich (2011) stated that the weight gain is not only influenced by genetic factor but also influenced by environmental factors, especially feed.

Table 2 Effect of Cassabio inclusion in feed on performance of lambs

Variables	Treatments			
	C-0	C-20—g/h/d—-	C-40	C-60
Fresh matter intake	1367.21±145.74	1463.89±103.36	1491.55±207.90	1501.31±175.81
DM intake (g/day)	444.34 ± 33.40	463.13 ± 28.05	483.03 ± 42.95	493.52 ± 34.74
Initial weight(kg)	13.90 ± 0.21	14.78 ± 0.42	15.42 ± 0.10	16.75 ± 0.35
Final weight (kg)	19.20 ± 0.56	20.40 ± 1.41	20.43 ± 0.70	21.65 ± 0.80
ADG (g/d)	76.19 ± 7.05	81.43 ± 19.73	84.29 ± 13.03	96.90 ± 12.00
Feed efficiency	0.17 ± 0.028	0.18 ± 0.04	0.17 ± 0.021	0.20 ± 0.022

C-0=concentrate without cassabioin; C-20=concentrate containing 20% cassabio; C-40 =concentrate containing 40% cassabio; C-60 =concentrate containing 60% cassabio.

REFERENCES :

Adebowale EA. (1981). Tropical Animal Production 6: 6672.

Anonymous (1988). Goat Research Group technical report. Obafemi Awolowo University, Nigeria.

Aregheore AM. (2000). Animal Feed Science and Technology 85 (2000) : 99-109.

Forbes J. Michael (2010). *Animal Science Reviews.* Page : 229-231.

Nuraini, Sabrina & S.A. Latif. (2008) Performance of Chicken and Egg Quality Using Rations Containing Onggok Fermentation with Neurospora. *Media Peternakan*. Andalas University: 195-201. Vol (31) No 3.

Nasich, M. (2011) .Productivity Goat Results Between Stud Boer Crosses with Local Parent (PE) Pre Wean Period. *J Tropical Livestock. Vol* (12) No.1: 56-62.

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