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HAEMATOLOGICAL RESPONSE OF GROWING YANKASA RAMS FED UREA TREATED AND ENSILED MILLET STOVER BASED DIETS WITH SUPPLEMENTS

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ABSTRACT

An experiment was conducted in 90 days to evaluate the effect of feeding urea ensiled millet stover based diet with supplements on haematological profiles of 30 growing Yankasa rams of mean initial body weights of between 16.35 - 18.21 kg allotted to six treatments of five animals per treatment each taken as a replicate in a Completely Randomized Design. Four kg urea was dissolved in 100 litres of water sprinkled on 100kg of crushed millet stover and ensiled for 21 days was used as basal diet. A concentrate diet consisting of 300g of cotton seed cake (diet 1), Faidherbia albida (FA) meal (diet 2), cotton seed cake and maize offal (diet 3), FA and maize offal (diet 4), CSC and wheat offal (diet 5), and FA and wheat offal (diet 6) were all fed to each ram a quantity of 150g twice daily. Blood samples were collected and analysed for haematological parameters. Significant differences (P<0.05) were observed on haemoglobin, PCV, MCH, MCV and WBC. The results of this study revealed that ensiled millet stover with supplements can be fed to growing Yankasa rams without detrimental effects on haematological profile. CSC:WO at ratio of 50:50 in the diet recorded the best in majority of the parameters measured and is therefore recommended for growing Yankasa rams.

Key words: *Growing Yankasa rams, urea ensiled millet stover, haematological profile and Faidherbia albida*

INTRODUCTION

In most developing nations, particularly those within arid and semiarid regions of sub-Saharan West Africa, livestock production is affected by seasonal variation in the availability and quality of pastures (Castrillo *et al.,* 2003). According to Akinola *et al.* (2015) cereal crop residues are given less attention as important livestock feed, where over 40% is used as fuel while only about 27.28% is used as animal feed. Therefore, ruminant animals in the arid and the semi-arid areas of the Sudan savanna survive almost entirely on drought tolerant pasture species and supplement their nutrient requirements generally from the available fodder trees and shrubs (Buterworth, 2002). Animals that depend on natural vegetation for their nutrition suffer heavy losses during the dry season which coincides with productive performance (Deaville *et al.,* 1994), as dry season nutritional stress is a major constraint to ruminant livestock production in semi-arid regions (Smith *et al.,* 1980), in that when the rain ceases the quantity and quality of grazing falls rapidly so that dry season forage is highly fibrous and low in crude protein around 2% (Owen & Aboud, 1998).

As a result of the poor nutritive status of available forages on which most livestock depend, livestock suffer weight losses considerably and impairment of the other productive functions and in some cases resulting in death of animals offered poor quality roughage without supplementation (Shehu, 1994). The objective of the research was to determine the haematological response of Growing Yankasa Rams fed urea treated and ensiled millet stover based diets with supplements.

MATERIALS AND METHODS

Study Area

The experiment was conducted at the Teaching and Research Farm, in the Small Ruminant Unit of the Federal University Dutsinma, Katsina State.

Dutsinma Local Government Area lies on latitude 12^0 27'16.128'N and longitude $07^0$29'5544E. It has a land area of about 527, km^2 (203sq miles). It has an elevation of about 605m (1,985 ft.), with a population of 167,671. The inhabitants are predominantly Hausa and Fulani by tribe. Their main occupation is crop production and animal rearing (Wikipedia, 2006).

Preparation of Experimental Diets

Two experimental diets were prepared for the study: basal and concentrates. The basal diet was prepared by dissolving 4kg of urea grade fertilizer in 100 litres of water to make a 4% urea solution, which was then sprinkled on 100kg of crushed millet stover and spread on a polythene sheet for a period of one hour to allow for escape of excess ammonia. This served as the basal diet of the experiment which was fed to the rams, *ad libitum*

Six supplement diets were formulated using cotton seed cake, Gawo (*Faidherbia albida*) meal, maize offal and wheat offal respectively.

Experimental Design, Animals and Management

Thirty growing Yankasa Rams with an average initial weight of between 16.35 - 18.21 kg were procured for the study were randomly allocated to six diets (treatments) in a Completely Randomized Design (CRD) arrangement with five (5) rams each as a replicate. They were housed under a common roof in fully illuminated, ventilated, cleaned and disinfected cubicles measuring 2 × 2 m in pens with slanted concreted floors. The disinfectant used was Diskol-ES (Tiscol) at the rate of 10mls/4litres of water and 10% formalin used as fumigant. On their arrival, they were quarantined for two weeks during which their bodies were sprayed with acaricide, using Amitraz® 1ml/litre against external parasites. They were dewormed with Albendazole at 12.5mg/kg^1 body weight. against internal parasites. Antibiotic (Oxytetracycline L. A. (Kepro®)) 20%, at 1ml per 10kg body weight was injected intramuscularly all prior to the commencement of the experiments. Groundnut haulms and maize offal were offered to the rams during the quarantine period.

Statistical Analysis

The data collected from the study were subjected to Analysis of Variance (ANOVA) using general linear model of SAS (2002). Difference among means were compared at ($p<0.05$) using Duncan Multiple Range Test (DMRT) of the same statistical package.

RESULTS

Table 1: Ingredients Composition of Supplements fed to Yankasa Rams in the Experiment

Ingredients (g)	Supplements					
	T1 CSC	T2 FA	T3 CSC/MO	T4 FA/MO	T5 CSC/WO	T6 FA/WO
CSC	300.00	0.00	150.00	0.00	150.00	0.00
FA	0.00	300.00	0.00	150.00	0.00	150.00
MO	0.00	0.00	150.00	150.00	0.00	0.00
WO	0.00	0.00	0.00	0.00	150.00	150.00
Total	300.00	300.00	300.00	300.00	300.00	300.00

CSC = Cotton seed cake, FA = *Faiderbia albida* meal, MO = Maize offal, WO = Wheat offal

DISCUSSION

Increase in PCV values in this study AF, might be as a result of improved feeding as supported by findings of Etim *et al.* (2013) who reported that, the increase in the percentage of PCV and Hb after feeding trial could be as a result of improved nutrition. The PCV values obtained in this are within the

normal range (27.00 – 45%) reported for sheep by Banerjee (2007). This indicated that PCV values of rams in this study were not affected ($p<0.05$) by the test diets and were on good plane of nutrition.

The haemoglobin concentration (Hb) values in this study (6.80 – 10.80g/dl) is within the range of 8.65 – 10.75g/dl reported by Garba and Abubakar (2012) with rams fed tamarind leaves. The Hb values obtained in this study are within the normal range of 9 – 15g/dl reported by Duncan and Prasse Manual (2016). The values obtained for Hb in this study proved that there was absence of toxic substances which had adverse effect on blood formation.

Table 2: Haematological Parameters of Yankasa Rams Fed Urea Treated and Ensiled Millet Stover with Supplements

Parameters	Periods	Diets T1 CSC	T2 FA	T3 CSC/MO	T4 FA/MO	T5 CSC/WO	T6 FA/WO	SEM	LS
Haem g/dl	Before Feeding	10.30^{a}	8.07^{b}	9.10^{a}	9.90^{a}	10.40^{a}	9.10^{a}	0.30	*
	4 Hrs After Feeding	10.30^{c}	6.80^{b}	7.60^{b}	10.20^{a}	10.70^{a}	10.80^{a}	0.50	*
PCV %	Before Feeding	17.73^{a}	13.83^{b}	18.80^{a}	17.50^{a}	18.30^{a}	16.93^{a}	0.50	*
	4 Hrs After Feeding	18.20^{b}	14.10^{c}	15.90^{bc}	17.10^{b}	22.60^{a}	16.10^{bc}	1.00	*
MCH	Before Feeding	19.81	20.12	16.79	19.60	19.62	18.57	0.40	NS
Pg	4 Hrs After Feeding	18.26^{b}	11.89^{b}	13.33^{b}	17.80^{b}	18.67^{b}	18.85^{a}	0.83	*
MCV	Before Feeding	34.09	34.49	34.69	34.65	34.53	34.55	0.09	NS
Fl	4 Hrs After Feeding	32.27	24.65	27.89	29.84	39.44	28.09	2.30	NS
WBC	Before Feeding	6.90^{a}	5.30^{c}	4.70^{d}	5.40^{b}	4.90^{d}	5.70^{c}	0.50	*
$\times10^{9}$/L	4Hrs After Feeding	6.90^{a}	5.30^{b}	3.10^{c}	5.60^{b}	4.60^{bc}	5.70^{ab}	0.40	*

SEM = Standard Error of Means, LS = Level ofSignificance, NS = Not Significant; * = ($P<0.05$); HAEM = Haemoglobin; PCV = Packed cell volume; MCH = Mean corpuscular haemoglobin; MCV = Mean corpuscular volume; MCHC = Mean corpuscular haemoglobin concentration; WBC = White blood cells;

White Blood Cells. The values of WBC obtained in this study varied among the diets with the highest value of 6.90 in D1 and $5.70\times10^{6}mm^{3}$ in D6 before feeding and $5.40\times10^{6}mm^{3}$ in D4 and $5.70\times10^{6}mm^{3}$ in D6 after feeding respectively, followed by 5.30 for D2 and the least was obtained D3 with $3.10\times10^{6}mm^{3}$. The WBC values obtained for all the diets across groups in this study were within the normal range of 4 - $12\times10^{6}mm^{3}$reported for sheep by Plumb (1999).

CONCLUSION AND RECOMMENDATION

It was concluded that, the diet had no detrimental effect on the haematological profiles of growing Yankasa rams as the values of the values of haematological indices of rams fed the test diets were within the established normal ranges. Rams on treatment 5 (Cottonseed Cake; Wheat offal; 50:50) diet recorded the best values in majority of the parameters measured and is therefore recommended for growing Yankasa rams.

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