

EFFECT OF FEEDING DIETS OF DIFFERENT PROTEIN SOURCES ON CARCASS AND OFFAL CHARACTERISTICS OF GRASS CUTTER (*Thryonomys swinderianus*)

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ABSTRACT

This study was conducted to evaluate the effects of feeding three legumes a soyabean (*Glycine max*), locus bean (*Parkia biagosis*), and melon seeds (*Citrullis lanatus*) of different protein values on carcass and offal characteristics of grass cutter (*Thryonomys swinderianus*). 20 were grass cutters, 4 families with 4 males and 16 females were used for this study. They were purchased and remain allocated to 4 treatment diets: TO: Cassava flour meal (CFM) Control, T1= CFM+ soya beans meal (SBM), T2= CFM + locust bean meal (LBM), T3= CFM+ Melon seeds meal (MSM). Data collected were analysed with analysis of variance (ANOVA) at $P=0.05$. The result showed that treatment 2, CFM+LBM furnished highest ($p<0.05$) carcass and offals characteristics of the three diets used compared with the control diet (TO). Diet T2 (CFM+LBM) was therefore, recommended for grass cutter farmers for optimum carcass attributes in grass cutter kept in captivity.

Keywords: carcass, diets, grass cutters, offal, proteins.

INTRODUCTION

One of the major factors hindering the production of livestock in the Sub-Saharan Africa is nutrition (Adu, 2005), but the most critical livestock feedstuffs are those that supply proteins and energy due to the fact that cereal grains and legumes that are used for livestock feeds also serve as staple food for most population of the world (Zyl *et al.*, 2001). There is increased efforts to develop grass cutter which in a micro livestock to complement the existing but bigger ones like cattle, sheep and goats because it is very hardy highly prolific and can survive on different feedstuffs especially on grasses (Young, 2002). Several works had been done to evolve a particular protein requirement for grasscutter for optimum growth and carcass development (Adu and Wallace, 2003; Adu and Rhule, 2005). This is because there is need to prepare feed ration with known crude protein level from non-conventional feed stuffs that can supply needed protein such as locust bean (*Parkia biglobosa*), melon (*Citrullus lanatus*) and soyabean (*Glycine max*) (Ojeh *et al.*, 2008; Elemo *et al.*, 2011). The aim of this study was to test the efficacy of this feedstuff on the carcass and offal profiles of grasscutter.

MATERIALS AND METHODS

The study was carried out at the Teaching and Research Farm of the Olabisi Onabanjo University, Ayetoro Campus in Ogun State. 20 grass cutters were used (4 families of 4 males and 16 female were 3 to 4 weeks old and 600 to 680kg in weight. They were purchased from a reputable farm in Cotonou, Benin Republic and transported to the Research Farm and quarantined and given necessary medication in compartments built with iron sheets. Three proteinous diets were prepared from Locust Beans (LB) Melon Seeds (MS) and Soya Beans (SB) according to Omafuebe *et al.*, (2004) while the fourth diet was basal (control). The 4 diets were mixed with chopped and milled cassava tubers dried to a moisture content of 12% and formed into pellet. The animals were randomly allocated into 4 diet treatments thus: TO = Control T1 = Diet with Soya beans (SB) meal. T2 = Diet with locust beans (LB) Meal; T3= Diet with melon seeds (MS) meal as depicted on Table 1. Data collected were analyzed with analyzing variance (ANOVA) at $P= 0.05$ using (SAS, 2002).

RESULTS AND DISCUSSION

The results of carcass characteristics of grass cutter fed diets of different protein sources are presented on Table 2. There were significant ($P<0.05$) differences in all carcass variables

measured with the exception of chilling loss ($P>0.55$). Locust bean meal (LBM) elicited the highest ($P<0.05$). The animals fed melon seed meal (MSM) gave the lowest ($P<0.05$) carcass characteristics compared with the control diet. These results could be due to the fact that more of LBM was consumed by the grass cutter resulting in higher carcass attributes (Apata *et al.*, 2015). The observed values of blood loss and carcass weight in this study could be attributed to consumption of more LBM than of MSM (Ukah *et al.*, 2006).

CONCLUSION

The results obtained from this study showed that locust bean meal (LBM) furnished highest carcass and offal characteristics of grass cutter fed three diets of different protein sources: soya bean meal (SBM), locust bean meal (LBM) and melon feeds meal (MSM). Therefore, locust bean meal (LBM) is recommended to grass cutter farmers as alternative protein sources in this study.

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Table 1. Ingredients Composition of Experimental diets

Treatment Diets		Ingredients			
	TO	T1	T2	T3	
	Control	Smb	Lmb	msm	
Cassava flour meal	80	70	70	70	
Fermented Soybean meal	-	10	-	-	
Fermented locust bean meal	-	-	10	-	
Fermented Melon seed	-	-	-	10	
PKC	15	15	15	15	
Vitamin Premix	0.5	0.5	0.5	0.5	
Bone Meal	2.0	2.0	2.0	2.0	
Salt	0.5	0.5	0.5	0.5	
Urea	2.0	2.0	2.0	2.0	
Total	100.0	100.0	100.0	100.0	
Analysed value					
Crude protein(%)	9.93	18.56	16.18	14.58	
EstheExtract(%)	0.92	1.34	1.61	1.18	
Ash (%)	6.59	6.86	5.11	6.47	
Moisture (%)	9.31	9.33	9.32	9.18	
Calculated values					
Energy MJ/kg ME	11.32	11.45	12.14	12.04	
Protein energy ratio	0.9:1	1.6:1	1.3:1	1.2:1	

SBM: Soybeans meal, **LBM** = Locust beans meal, **MSM** = Melon seeds meal **PVC** = Palm kernel cake.

Table 2. Carcass characteristics of grasscutter

Variable	Treatment Diets				SEM
	TO Control	T1 SMB	T2 LMB	T3 MSM	
Live weight(g)	1083.0 ^c	1335.0 ^b	1430.0 ^a	1025.0 ^d	57.64
Bled weight(g)	1058.3 ^c	1307.3 ^b	1408.3 ^a	1001.0 ^d	41.68
Carcass length (cm)	26.5 ^b	25.1 ^c	28.0 ^a	20.1 ^d	0.13
Dressed carcass wt (g)	600.0 ^c	762.7 ^b	925.0 ^a	453.3 ^d	1.09
Dressing %	55.4 ^c	57.4 ^b	64.7 ^a	44.2 ^d	8.10
Chilled carcass wt (g)	587.0 ^c	747.7 ^b	907.0 ^a	442.3 ^d	25.00
Chilling loss (%)	2.2	2.0	2.0	2.4	0.01

Means on the same row with different superscripts are statistically significant ($P < 0.05$)

Table 3: Offal characteristics of grass cutter

Variable	Treatment Diets				
	TO Control	T1 SMB	T2 LMB	T3 MSM	SEM
Head(g)	112.5 ^c	117.0 ^b	132.4 ^a	100.6 ^d	0.06
Forelimbs	8.2 ^c	10.2 ^b	13.5 ^a	6.5 ^d	0.01
Hindlimbs (g)	13.5 ^c	14.9 ^b	18.9 ^a	11.5 ^d	0.03
Tail (g)	4.9 ^b	4.8 ^b	5.3 ^a	3.1 ^c	0.01
Blood weight (g)	25.0 ^b	28.0 ^a	22.0 ^c	24.0 ^d	1.66
Blood loss (%)	2.3	2.1	1.5	2.3	0.01
Liver (g)	24.2 ^b	24.1 ^b	25.8 ^a	21.8 ^c	0.01
Kidney (g)	5.4 ^b	5.5 ^b	7.1 ^a	4.3 ^c	0.01
Heart (g)	6.3 ^b	6.3 ^b	7.2 ^a	5.2 ^c	0.00
Lungs (g)	8.2 ^c	9.3 ^b	10.0 ^a	6.4 ^d	0.00
Spleen (g)	1.5 ^b	1.7 ^b	2.8 ^a	1.0 ^b	0.02
Full LI (g)	175.9 ^b	150.2 ^c	250.1 ^a	145.1 ^d	0.12
Empty LI (g)	37.6 ^b	27.1 ^c	49.4 ^a	25.0 ^d	0.01
Full SI (g)	16.1 ^b	15.0 ^c	18.9 ^a	14.9 ^c	0.01
Empty SI (g)	12.0 ^b	11.8 ^b	13.1 ^a	9.8 ^c	0.24

Means on the same row with different superscripts are statistically significant ($P < 0.05$) SBM= Soybeans meal, LBM= Locust beans meal, MSM= Melon seeds meal, LI= Large intestine, SI= Small intestine