

## Digestibility of varying levels of African yam bean in cocoa pod husk based diets fed to West African Dwarf Sheep

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The West African Dwarf (WAD) sheep is a useful small ruminant species among the livelihoods of resource poor farmers. The animals promote crop production, provide raw materials for the agro-allied industries and the manure is also a source of biogas (Hassan *et al*, 2015). The cost of legume supplementation in the nutrition of ruminants is high and the seasonal availability of forage impinges on the sustainable supply of feed resources all year round. Underutilized legumes and fibrous waste have potential for feeding ruminants given their specialized digestive system. African yam bean (*Sphenostylis stenocarpa*) is an underutilized grain legume known in homesteads of Central and West Africa (Adeparusi, 2001). Cocoa pod husk is a fibrous by-product of cocoa (*Theobroma cacao*) processing when the edible bean has been removed (Ayuk *et al*, 2007). Digestibility estimation is essential in assessing the nutritive value of feed as well as other nutritious residues and notable for adequate balancing of diets (Detmann *et al*, 2007). This study was designed to evaluate the digestibility of varying levels of the African Yambean in cocoa pod husk based –diets fed to West African Dwarf sheep.

Four diets were formulated with inclusion levels of African Yam bean at 0% (T1), 10% (T2), 20% (T3) and 30 % (T4). A total of 32 intact male WAD sheep with average weight of  $7 \pm 1.28$  Kg were used. The sheep were randomly divided into the four treatments of eight animals with each of the animals serving as a replicate. Feed and water was provided *ad libitum*. The animals were properly vaccinated and dewormed. Digestibility studies lasted for 14 days, seven days adaptation period and seven days for data collection. Thereafter, data was collected on nutrient digestibility, urinary samples and coefficients of fecal samples were used to obtain the dry matter, crude protein, ether extract, crude fibre, ash and nitrogen free extract digestibilities among the treatments and were compared with the control (0%).

Dry matter digestibility values were significantly influenced by dietary treatments ( $P < 0.05$ ; Table 1). Sheep fed the control diet had significantly higher ether extract and crude fibre digestibilities ( $P < 0.05$ ; Table 1). Sheep fed 10% AYB had significantly higher dry matter digestibility ( $P < 0.05$ ; Table 1). Sheep fed 20% AYB had highest crude protein and Ash digestibilities, while the highest NFE digestibility was recorded for sheep fed 30% AYB ( $P < 0.05$ ; Table 1).

**Table1. Nutrient Digestibility of WAD Sheep Fed with Varying Levels of African Yambean in cocoa pod husk based Diets**

Parameter (%)	0%	10%	20%	30%	SEM
Dry matter	52.66 <sup>c</sup>	57.29 <sup>a</sup>	55.71 <sup>ab</sup>	54.84 <sup>b</sup>	0.56
Crude protein	88.39 <sup>ab</sup>	86.79 <sup>bc</sup>	89.18 <sup>a</sup>	86.15 <sup>c</sup>	0.44
Ether extract	30.99 <sup>a</sup>	29.41 <sup>a</sup>	15.09 <sup>b</sup>	9.11 <sup>c</sup>	2.82
Crude fibre	74.39 <sup>a</sup>	23.08 <sup>d</sup>	28.57 <sup>c</sup>	54.89 <sup>b</sup>	6.24
Ash	63.64 <sup>b</sup>	56.67 <sup>c</sup>	86.49 <sup>a</sup>	62.96 <sup>b</sup>	3.42
NFE	86.45 <sup>d</sup>	88.39 <sup>c</sup>	90.94 <sup>b</sup>	93.26 <sup>a</sup>	0.81

SEM: Standard Error of Mean, abc = means different superscript on the same row differ significantly ( $P < 0.05$ ).

Results obtained showed that of all the dietary inclusion levels, 20% had higher protein and ash digestibilities when fed WAD sheep. Therefore, 20% level of African Yam bean is recommended in the diet of West African Dwarf Sheep. However, further investigation is required since the adaptation period was short.

### References

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*Gratitude to the good Lord for His supply of funds for the study*