EFFECT OF GROUNDNUT HAULMS SUPPLEMENTATION ON PERFORMANCE AND FEED DIGESTIBILITY OF MONGREL RABBIT IN SAHEL SAVANNAH ZONE OF NIGERIA

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ABSTRACT

An experiment was conducted in Teaching and Research Farm, Binyaminu Usman Polytechnic, Hadejia. To determine the effect of groundnut haulms supplementation in the diet of mongrel rabbit. Twelve weaned mongrel rabbits average age of 14 weeks were purchased from Hadejia market. The experimental animals were allotted in to 4 dietary treatments (supplemented with groundnut haulms) : T1, T2, T3 and T4 0, 5, 10 and 15%, respectively. Twelve rabbits were used with three rabbits per treatment. The experiment lasted for 6 weeks during which water and feed was provided ad libitum. Antibiotics and multivitamins were provided to experimental rabbits to prevent and manage infectious disease. Parameters measured were initial weight gained, final body weight, feed intake, feed conversion ratio (calculated) changes in organ weights and feed digestibility. All data generated were subjected to analysis of variance (ANOVA) significance (P>0.05) differences of means were separated by using Duncan multiples range using SAS. The result indicated that supplementation of groundnut haulms significantly affected daily and weekly body weight changes. It is therefore concluded that incorporation of groundnut haulms in the diets of rabbits was safe and can be supplemented partially or fully as protein sources and use as a supplementation to weaner rabbits in the diets without adverse effects on the performance and feed digestibility of growing rabbit.

Key words:- Groundnut Haulms, Supplementation, Carcass, Mongrel, Savannah

INTRODUCTION

Rabbit production has been recognized to have a very important role to play in the supply of animal protein to Nigerians especially in the rural and peri-urban areas (Asar, 2010). Rabbits are herbivores with early maturity, short generation interval, high prolificacy, and ability to utilize forages that abound in rural communities (Asar, 2010; Aminu *et al*., 2020). Rabbit meat is healthy and has high nutritional value due to its low content of fat, cholesterol, calories, and sodium, as opposed to beef, chicken, and pork (Wafar *et al*., 2018). Conventional feedstuffs like cereal grains and legumes are expensive and highly demanded by humans. There is need to advocate and encourage the rearing of micro livestock species such as rabbits considering the comparative advantage of these animals over large animals such as cattle, sheep goats Asar (2010). Rabbits have extraordinary reproductive potentials because of their rapid growth rate short gestation period and capability to breed immediately after parturition (Aduku and Olukasi, 1990). Nister *et al*. (2013) reported that Rabbit meat is better in calcium (21.4mg/100g) and phosphorus (347mg/100g) than other types of meat and lower in fat (9.2g/100g) and cholesterol (56.4mg/100g) Rabbit meat is appreciated for it organoleptic properties in high essential fatty acids contents and low cholesterol level. Rabbits could explored as cheaper and quality meat type animals for the fast growing human population in the developing countries in the particular if adequately researched with natural plant materials as efficient and reliable feed addictive for better performance and nutrition security Nister *et al*. (2013).

MATERIALS AND METHODS

Study area

The survey was conducted at Hadejia local government area of Jigawa State. Hadejia town is the capital of Hadejia and is located in the central part of the emirate. Hadejia lies between 10°10'E

longitude and between 12° 25'N and 12°30'N latitude. The town is served by federal trunks roads, linking it to Nguru on the East, Kano on the North West. Katagun on the South and Dutse (The capital city of Jigawa) on the South West.

Experimental Diets

Four experimental diets were formulated and designed as T1, T2 T3, and T4. Diet 1 contain (0% Groundnut haulms) serve as control, while the remaining diets contain groundnut haulms supplementation at 0, 5, 10 and 15%, respectively.

Experimental Animals and their Management

A total of 12 (mongrels) weaned rabbits of an averagely equal weight (1.5 kg) were purchased from the market for the experiment. The rabbits were balanced for weight and therefore allocated into four treatments with three rabbit per replicate. The rabbits were housed individually in wire mash cage. The animals were treated against external parasites. Water was supplied *ad-libitum.* Feeders were cleaned after every 2 days to avoid the buildup of diseases.

Experimental Design and Treatment

Experiment was designed using completely randomized design (CRD). The 12 experimental animals were randomly allocated to four treatments and replicated three times, with one rabbit per replicate. The rabbits were housed in cage hutch partition with wire mesh in to twelve compartments as capable to occupy one rabbit per compartment as experimental unit.

Data Collection

Rabbits were weighed individually at the commencement of the experiment. The experimental animals were fed twice in a day at 8:00am and 5:00pm in the morning. Every morning, feed that is not consumed (residual feed) were weighed, deducted from the feed offered in order to determine the daily feed intake. Weight gain was measured weekly. At the end of the experiment, carcass characteristics were determined by removing the pur and evisceration to remove the viscera and intestine. The weight of the carcass, head and internal organ were taken. At the end of the experiment daily feed intake, final weight gain, and carcass characteristics were recorded.

Experimental diet

Feeds containing (CP 15%, Lysine 0.6%, Methionine 0.5%, Calcium 0.5%, Magnesium 0.4%, Wheat brand 16%,Cowpea husk 13% and Limestone 2%) groundnut haulms supplementation at 0, 5, 10 and 15% .

Statistical Analysis

The data obtained were analyzed using analysis of variance (ANOVA) using the procedure of SAS (2000). Means that are significantly different were separated using Duncan multiple ranges (DMR) at 5% level of probability.

RESULTS AND DISCUSSION

Presented in table 1 is the effect of supplementation of groundnut haulms on performance. The study revealed that, there was significant increase in average daily weight gain, body weight gain across all the treatments and T_2 and T_3 with 5% and 10% level in initial weight gain of rabbits supplemented with groundnut haulms. T_3 and T_4 with 10% and 15% supplementation of groundnut haulms have significant increases in all the parameters measured on feed digestibility. It confirmed the findings of the (Demir *et al*., 2003; Wafar, *et al*., 2018) who supplemented groundnut produce including groundnut haulms as growth promoters in California rabbits diets and observed a pronounced improvement in their body weight gain and feed conversion ratio. These results may be due to good health status of rabbit which may be caused by the additional of groundnut haulms supplementation and might also be due to the chemical composition of groundnut haulms. Onyimonyi, and Enes (2003) and Fadalla *et al*. (2010) however reported that groundnut haulms have no significance effects on the final body weight gain and feed conversion ratio of rabbit. Similar observations were made by Ogunsanmi *et al*. (2002) in their study on weaned rabbit. Ogunsanmi *et al*. (2002) also noted that groundnut haulms may have controlled and limited the growth and colonization of numerous pathogenic and non-pathogenic species of bacteria in the gut leading to improved translation of feeds to meat. Ukpe and Ukpe (2009) opined that inhibiting the transformation of arachidonic acid to thrornboxane and decreasing the sensitivity of hemoglobin to aggregating agent may be possible with administration of groundnut haulms and carrot extracts in fat rich diets. This implies that groundnut haulms could be potentially useful in improving feed digestibility and account of its inhibiting effects

on moisture contain, crude protein and crude fiber (Ukpe and Ukpe, 2009) similar inhibitory effect was observed in groundnut haulms supplementation by Fletcher and Shi Zhaolin (2016).

Table 1: Effect of supplementation of ground nut haulms on growth performance of Mongrel Rabbit

	Treatments				
Parameters	**T1 (0%)**	**T2 (5%)**	**T3 (10%)**	**T4 (15%)**	**SEM**
Initial Body Weight (kg)	0.95[a]	0.76[ab]	0.76[b]	0.98[a]	0.068
Final Body Weight (kg)	1.48[a]	1.15[a]	1.28[a]	0.78[a]	0.301
Body Weight Changes (kg)	0.53[b]	0.74[ab]	0.58[b]	0.53[b]	0.070
Total Feed Intake (kg)	4.20[a]	3.36[a]	4.16[a]	2.42[a]	0.804
Average Daily Weight Gain (g)	10.70[b]	15.05[ab]	11.73[b]	17.35[a]	1.433
Average Daily Feed Intake (g)	85.76[a]	67.39[a]	85.00[a]	49.29[a]	1.284
Feed Conversion Ratio	8.045[a]	4.490[a]	7.293[a]	3.833[a]	0.642

abc Means within the same rows with different superscript are significantly ($p<0.05$) different. SEM =standard error of mean.

Table 2 Feed digestibility of Mongrel Rabbit fed diet supplemented with Groundnut Haulms

Parameters	Treatments				
	T1 (0%)	**T2 (5%)**	**T3 (10%)**	**T4 (15%)**	**SEM**
Moisture	**6.44[a]**	**5.87[c]**	**6.27[b]**	**5.62[d]**	**0.0084**
Ash	**4.66[d]**	**6.04[a]**	**4.99[c]**	**5.32[b]**	**0.0054**
Crude Protein	**15.57[d]**	**15.98[c]**	**16.22[b]**	**16.87[a]**	**0.0083**
Crude fat	**8.26[c]**	**8.94a**	**7.77[d]**	**8.57[b]**	**0.0110**
Crude fibre	**7.76[c]**	**8.02[a]**	**7.93[b]**	**7.51[d]**	**0.0054**
NFE	**57.303[a]**	**55.14[d]**	**56.80[b]**	**56.09[c]**	**0.0195**

NFE= Nitrogen free extract abc Means within the same rows with different superscript are significantly ($p<0.05$) different. SEM =standard error of mean.

CONCLUSION

It is there by concluded that groundnut haulms is safe and can be supplemented partially or fully as protein sources and use as a supplementation to weaned rabbit in the diets without adverse effects on the performance and feed digestibility of growing rabbits.

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