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CARCASS CHARACTERISTICS OF WEANER RABBITS FED GRADED LEVELS OF UREA-MOLASSES TREATED MAIZE COB AS A REPLACEMENT FOR WHEAT OFFAL

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ABSTRACT
A total of forty-five rabbits of 5-6 weeks old were used to investigate the carcass characteristics of weaner rabbits fed graded levels of urea-molasses treated maize cobs (UMTMC) as a replacement for wheat offal in a 56days trials. They were allotted into five dietary treatments of nine rabbits segregated into three replicates of three rabbits each. The diets contained urea-molasses treated maize cob at five (0, 25, 50, 75 and 100 %) levels of inclusion. Data obtained were subjected to analysis of variance in a completely randomized design. Improved (P<0.05) carcass weight (815.67g/rabbit) and dressing percentage (63.50%) were obtained in rabbits fed diets added with 25% UMTMC. Organ weight was significantly affected with 50% and 100% UMTMC inclusion level. It could be concluded that inclusion of 50% UMTMC improved carcass characteristics.
Keywords: Rabbits, Maize cob, Urea-molasses and Carcass

INTRODUCTION
The suitability of wheat offal especially in monogastric and micro-livestock diets in terms of nutrient supply and maintaining gut motility earned its consideration as a major fibre source (Gidenne and Michalet-Doreau, 2002). The increased use of this fibrous ingredient has also led to a competitive demand resulting in price increase that can hardly be tolerated by livestock feed producers and its end users. The utilisation of fibre particularly in rabbit nutrition is of major concern to nutritionist because the energy and nutrient retention efficiency in growing rabbits seem to be directly affected by the level of fermentable fibre (Farías-Kovac *et al*., 2020). However, there exists abundant availability of fibrous agricultural and industrial by-products that can be explored for use in rabbit production. This has prompted research on the use of low cost, unconventional feedstuffs in Nigeria (cassava peel meal, Agunbiade *et al* 2002; Udedibie *et al*., 2005,) which are abundant to substitute wheat offal in order to reduce cost and over-dependence on the feedstuff for rabbit feeding.

Maize cob is generally considered as a potential source of fibre in rabbit feeding (Onifade *etal*., 1999).However, there is a paucity of information on the utilization of maize cob in rabbit diets in Nigeria.On the other hand, this cheap agricultural by-products are high in fibre and bulky which requires fermentation by the gut microbiota (Melzler-zebeli *et al*., 2010). Therefore it should be subjected to treatments that can increase its utilisation. Urea treatment has been a conventional technique for improving the quality of fibrous feed material in terms of increasing the nitrogen content (Vadiveloo, 2003) and it's also economically practicable for farmers for use as they are relatively cheap and simple to handle. Rabbits can efficiently utilize urea as a nitrogen source because of the high urease activity in the caecum (Marounek *et al.,* 1995). To prevent the toxicity of urea and also to mask the bitter taste thereby enhancing the palatability of feeds, molasses, in either liquid or solid form, is often used as a carrier for urea and other additives (Martinho et al., 2013). Molasses increases palatability of diet and acts as readily available source of energy

for microflora for better utilization (Sheikh*et al*., 2014). Therefore this research work combines urea with molasses in the treatment of dried maize cobs as a replacement for wheat offal in the diets of weaned rabbits.

MATERIALS AND METHODS

Experimental site:The experiment was carried out at the Teaching and Research Farm of the Agricultural Technology Department, Yaba College of Technology, Epe, Lagos state on longitude 3.98°E and latitude 6.58°N which lies on Km 11, Epe-ijebuode road, Epe. Lagos (Google Earth 2021).

Preparation of UMTMC:Maize cobs were collected from corn starch processing factory along Sagamu-Ijebuode express way, Ogun state. It was sun dried and milled using 2mm size sieve and stored in air tight bags until when needed. UMTMC was prepared by adding 5litres of water to 10kg weight of molasses and 2kg weight of synthetic urea and was thoroughly mixed together in a plastic bucket according to the method of Akinfemi and Adebayo (2016). 100kg weight of milled dried maize cob was added to the mixture and stirred thoroughly together with a stirring rod and left for 5 minutes. The brownish mix was spread to air-dry for 3days. Later it was oven-dried for 30 minutes at 65^{o}C to achieve a constant weight.

***Experimental animals and management*:** Forty-five weaner rabbits of 5-6weeks of age weighing between 400 – 500g were obtained from a reputable farm at Ibadan, Oyo state, Nigeria and were allotted randomly into five dietary treatments in a completely randomize design (CRD). There are nine rabbits per treatment, each treatment was replicated thrice containing three rabbits per replicate. The experimental animals were maintained in rabbit hutches placed on concrete floor. Experimental diets and water were offered *adlibitum*.

Experimental diets:Five experimental diets were formulated consisting a control (0% UMTMC) and four diets containing UMTMC at replacement levels of 25, 50, 75 and 100% (Table 1). Diets were formulated to meet the NRC (2012) requirements for rabbits.

Table 1: Gross composition of experimental diet (g/100g DM)

	Urea-molasses treated maize cob (%)				
Ingredients (%)	**0**	**25**	**50**	**75**	**100**
Maize	40.00	40.00	40.00	40.00	40.00
SBM	18.00	18.00	18.00	18.00	18.00
Fish meal	0.50	0.50	0.50	0.50	0.50
Wheat offal	37.00	27.75	18.50	9.25	-
UMTMC	-	9.25	18.50	27.75	37.00
Bone meal	2.50	2.50	2.50	2.50	2.50
Oyster shell	1.50	1.50	1.50	1.50	1.50
Premix	0.25	0.25	0.25	0.25	0.25
Salt	0.25	0.25	0.25	0.25	0.25
Total	**100**	**100**	**100**	**100**	**100**
Calculated nutrients (%)					
Crude protein	18.21	16.6	16.96	16.92	17.01
Crude Fibre	8.50	8.82	8.63	8.30	8.12

Data collection

Carcass characteristics

At the end of the experiment, fifteen rabbits (i.e. three rabbits per treatment) were sampled randomly for carcass evaluations. The rabbits were starved of feed for 12 hours, weighed and slaughtered. Carcass weight (the main body and organs) were determined according to (Jensen, 1984). The cut parts and organs were expressed in percentageof live weight (LW). Dressing percentage was also calculated.

Statistical analysis

The data collected were subjected to one-way analysis of variance (ANOVA) in a completely randomize design (CRD). The significant means were separated and compared using Duncan Multiple Range Test (Duncan, 1995) of SAS (1999) at 5% level of probability.

RESULTS AND DISCUSSION

The effect of UMTMC cob on carcass characteristics of weaner rabbits

Table 2 shows the effect ofUMTMC oncarcass characteristicsof weaner rabbits. Dressed weight and dressing percentage were significantly (P<0.05) affected. The dressing percentage of 50.65 to 63.55% recorded in this study was higher than 45.30 to 50.18% reported by Njidda and Isidahomen (2011), for rabbits fed diet containing up to 12% sesame (*Sesamum indicum*) seed meal. Fielding (1991), reported that the dressing percentage of rabbits normally ranges from 50 to 56%. This value fell within the normal range and suggested that replacement of wheat offal up to 100% with UMTMC did not impact negatively on tissue accretion. Dietary treatments influenced the head, trotter, legs, rack and whole GIT. The result obtained from this study is not in consonance with the works of Odeyinka *et al.* (2007) who reported no significant difference on carcass characteristics when he uses agro-industrial by-products and wastes in rabbit's diets. The whole GIT weight was highest (P<0.05) for rabbits on UMTMC diet at 100% replacement. The increase in GIT weight may be due to high level of fibre, subjecting the GIT to increased mechanical activity to cope with. Kidney and liver weights were significantly (P<0.05) affected. Rabbits fed diet containing UMTMC at 75 and 100% had increased (P<0.05) liver and kidney weight than those on control diet. This is contrary to the report of Ekpo*et al.* (2009) who observed no significant effect on these organs when cassava tuber meals were fed to the rabbits. The weight of organs obtained in this study is similar to that obtained by Njidda and Isidahomen (2010) which implies no organ impairment. Increased weight of organs has been associated with toxic elements in feed due to accelerated metabolic rate of the organs with the aim of ameliorating the effect of the toxic elements.

Table 2: Effects of urea-molasses treated maize cob on the carcass characteristicsof weaner rabbits (0-8weeks)

	Inclusion level of urea-molasses treated maize cob (%)					
Parameters	**0**	**25**	**50**	**75**	**100**	**SEM**
Live weight (g/rabbit)	1183.33	1283.33	1283.33	1283.33	1183.33	41.81
Dressed weight (g/rabbit)	725.23^{ab}	815.67^{a}	748.27^{ab}	650.67^{b}	663.33^{b}	34.85
Dressing percentage (%)	61.16^{ab}	63.55^{a}	58.64^{ab}	50.65^{b}	56.34^{b}	3.04
Cut parts (% of LW)						
Head	9.07^{a}	8.44^{ab}	7.92^{b}	7.92^{b}	8.83^{ab}	0.28
Trotter	1.74^{ab}	1.50^{ab}	1.51^{ab}	1.32^{b}	1.83^{a}	0.12
Loin	8.48	8.11	7.99	7.48	8.16	0.37
Legs	16.12^{ab}	15.69^{ab}	14.77^{b}	17.07^{a}	15.09^{ab}	0.59
Rack	14.73^{ab}	16.37^{a}	14.47^{ab}	12.87^{b}	14.31^{ab}	0.80
Whole GIT	17.00^{b}	14.61^{c}	16.71^{b}	13.77^{c}	20.31^{a}	0.52
Organs (% of LW)						
Liver	2.39^{c}	3.03^{ab}	3.35^{a}	2.61^{bc}	3.08^{ab}	0.16
Kidney	0.64^{b}	0.74^{ab}	0.78^{ab}	0.92^{a}	0.94^{a}	0.05

^{abc}Means on the same row with different superscripts differ significantly (P<0.05)

SEM= Standard error of means.

CONCLUSION

Based on the present findings, the inclusion of UMTMC up to 50% in the diets of weaner rabbits increased dressed weight with no adverse effect on carcass characteristics. Therefore it can be recommended that UMTMC can replace wheat offal up to 50% in the diets of weaner rabbits without any negative impact on carcass characteristics.

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