Economy of production and carcass quality of rabbits fed African locust bean (*Parkia biglobosa*) fruit pulp based diets

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Abstract

Recent researches have shown that the African locust bean fruit pulp contains 6.56 % crude protein (CP), 11.75 % crude fibre (CF), 4.18 % ash, 1.80 % ether extract (EE), 67.30 % nitrogen free extracts (NFE), with a metabolizable energy value of 2420 Kcal/kg; and has the potential to replace maize in the diets of growing rabbits. A study was carried out to determine the effect of dietary inclusion of Parkia biglobosa fruit pulp (PBFP) on the economy of feed conversion, carcass characteristics and sensory properties of the meat of rabbits. A total of forty-five mixed sex and mixed breed (New Zealand White X California White) weaner rabbits of 5 to 6 weeks of age, with an average weight of about 700.00 ± 0.05 g, were used for the study. The rabbits were randomly allotted to five treatment diets, consisting of 0, 10, 20, 30 and 40 % dietary inclusion levels of Parkia biglobosa fruit pulp (PBFP) in a completely randomized design model. Feeding trial lasted for 12 weeks, at the end of which 15 rabbits were randomly selected, one from each replicate, and slaughtered by severing their throats with a sharp knife and processed for their carcass characteristics. Thereafter, lean meat samples from the lumbar region were harvested and used for sensory evaluation. Results showed that live weight, dressing %, weight of neck, hind limbs, full intestine, liver, lungs, heart, spleen and skin (%) significantly (P<0.05) varied across the treatments. The dressing percentage of rabbits fed 20 % Parkia fruit pulp (58.92 %) was significantly (P<0.05) higher than 50.16, 48.92, 47.61 and 46.83 % in rabbits fed 0, 10, 30 and 40 % dietary inclusion level of PBFP, respectively. Also, there were significant (P<0.05) differences in the appearance and tenderness of the meat of rabbits, whereas juiciness, flavour and general acceptability did not show any significant (P>0.05) difference across the treatments. Higher overall scores of 8.20, 7.70, 7.50, 7.40 and 7.55 were recorded for meat from rabbits fed 20 % dietary inclusion level of PBFP for all the sensory parameters (appearance, tenderness, juiciness, flavour and general acceptability, respectively) monitored. Also, proportionate increase in the inclusion of PBFP in the diets of rabbits resulted in a relative decrease in the cost of production. It was therefore concluded that inclusion of PBFP in the diets of rabbits at 20 % level produced optimum effect on the economy of feed conversion, carcass characteristics and sensory properties of rabbit meat.

Keywords: *Parkia biglobosa* fruit pulp**,** economy of feed conversion, carcass qualities, rabbits.

Économie de Production et Qualité de la Carcasse des Lapins Nourris avec des Régimes à Base de Pulpe de Fruit de Fève de Locustier Africain (Parkia biglobosa)

Résumé

Les recherches récentes ont montré que la pulpe de fruit de fève de locustier africain contient 6,56 % de protéines brutes (PB), 11,75 % de fibres brutes (FB), 4,18 % de cendres, 1,80 % d'extrait éthéré (EE), 67,30 % d'extraits azotés libres (EAL), avec une valeur d'énergie métabolisable de 2420 Kcal/kg; et a le potentiel de remplacer le maïs dans les régimes des lapins en croissance. Une étude a été menée pour déterminer l'effet de l'inclusion dans l'alimentation de la pulpe de fruit de Parkia biglobosa (PBFP) sur l'économie de la conversion alimentaire, les caractéristiques de la carcasse et les propriétés sensorielles de la viande des lapins. Un total de quarante-cinq lapins sevrés de sexe et de race mélangés (New Zealand White X California White) âgés de 5 à 6 semaines, avec un poids moyen d'environ 700,00 ± 0,05 g, ont été utilisés pour l'étude. Les lapins ont été alloués de manière aléatoire à cinq régimes alimentaires, comprenant des niveaux d'inclusion de 0, 10, 20, 30 et 40 % de pulpe de fruit de Parkia biglobosa (PBFP) dans un modèle de conception complètement randomisé. L'essai alimentaire a duré 12 semaines, à l'issue desquelles 15 lapins ont été sélectionnés au hasard, un par réplicat, et abattus par incision de la gorge à l'aide d'un couteau tranchant pour l'évaluation de leurs caractéristiques de carcasse. Ensuite, des échantillons de viande maigre provenant de la région lombaire ont été prélevés pour l'évaluation

sensorielle. Les résultats ont montré que le poids vif, le pourcentage de carcasse, le poids du cou, des membres postérieurs, de l'intestin complet, du foie, des poumons, du cœur, de la rate et de la peau (%) variaient de manière significative (P<0,05) selon les traitements. Le pourcentage de carcasse des lapins nourris avec 20 % de pulpe de fruit de Parkia (58,92 %) était significativement (P<0,05) plus élevé que celui des lapins nourris avec 0 (50,16 %), 10 (48,92 %), 30 (47,61 %) et 40 % (46,83 %) de pulpe de fruit de PBFP. De plus, il y avait des différences significatives (P<0,05) dans l'apparence et la tendreté de la viande des lapins, tandis que la jutosité, la saveur et l'acceptabilité générale ne montraient aucune différence significative (P>0,05) entre les traitements. Des scores globaux plus élevés de 8,20, 7,70, 7,50, 7,40 et 7,55 ont été enregistrés pour la viande des lapins nourris avec un régime contenant 20 % de PBFP pour tous les paramètres sensoriels (apparence, tendreté, jutosité, saveur et acceptabilité générale) surveillés. En outre, l'augmentation proportionnelle de l'inclusion de PBFP dans l'alimentation des lapins a entraîné une diminution relative du coût de production. Il a donc été conclu que l'inclusion de PBFP dans les régimes des lapins à un niveau de 20 % produisait un effet optimal sur l'économie de la conversion alimentaire, les caractéristiques de la carcasse et les propriétés sensorielles de la viande de lapin.

Mots-clés : Pulpe de fruit de Parkia biglobosa, économie de la conversion alimentaire, qualités de la carcasse, lapins.

Introduction

The world population is increasing daily, with a corresponding increase in the demand for animal protein and their by-products. This increasing demand for animal protein had resulted in the rising demand for maize (*Zea mays*), a major energy ingredient for making livestock feed; hence the search for alternative sources of energy for profitable livestock rearing.

Parkia biglobosa (also known as *Parkia clappertoniana*, *Parkia oliveri*, *Parkia africana* or *Parkia filicoidea*) is a very important multipurpose tree species that is used essentially for food, medicinal, cultural, economic and magico-therapeutic purposes (Musara *et al*., 2020). It is called the African locust bean tree. It is a leguminous tree which produces seed grain that is often cheap and readily available in Nigeria, especially across the Sudan and Guinea Savannah ecological zones (Kemi, 2015). The seed is rich in protein, and when fermented, it is used as a flavour intensifier or enhancer for soups and stews throughout the Savannah region of Sub-Saharan Africa (Dike and Odunfa, 2003). The crude protein content of the seed, on dry matter basis, ranges between 25 and 38 %, hence it has the potential to be utilized in livestock feeding (Olomu, 2011). Tamburawa *et al*. (2017) reported that soaked and fermented African locust bean seed meal can be included in broiler chicken diets up to 15 % level at starter phase and 22.5 % at the finisher phase, without any adverse effect on performance, haematological parameters and nutrient digestibility. Wafar *et al*. (2019) used toasted African locust bean meal (TABM) to replace full fat soyabean and concluded that TABM could replace up to 100 % full fat soyabean meal in the diet of grower rabbits, without any deleterious effects on growth performance, apparent nutrients digestibility, blood profile, carcass characteristics and weight of internal organs. Despite its utilitarian value as livestock feedstuff, its utilization is however limited due to the presence of antinutritional factors such as enzyme inhibitors, phytates, oxalates, saponins and polyphenol compounds (Vijayakumari *et al*., 1997). Pharmacological studies of *Parkia biglobosa* show that it has anti-malarial, anti-helminthic, anti-bacterial, anti-diabetic, anti-hypertensive, anti-inflammatory, analgesic, anti-carcinogenic, anti-trypanosomic and anti-oxidant properties (Musara *et al*., 2020). The fruit pulp is sweet to taste when it is ripe, and is fairly rich in nutrients. The fruit pulp is a by-product of the processing of African locust bean seeds, used in the production of a highly-valued local food seasoning or flavour enhancer called *Dadawa* (Hausa) or *Iru* (Yoruba). Traditionally, the floury pulp can be made into a refreshing drink, which is rich in vitamins A and C (Wafar *et al*., 2019). However, this pulp is mostly washed off and wasted away during the processing of the locust bean seeds. But it is a potential energy source for livestock, with a metabolizable energy value of 2420 Kcal/kg (Bot, 2011). According to Germah *et al*. (2007), the fruit pulp contains 6.56 % crude protein (CP), 11.75 % crude fibre (CF), 4.18 % ash, 1.80 % ether extract (EE), 67.30 %

nitrogen free extracts (NFE) and 91.59 % dry matter (DM). The antinutritional factors present (mg/100g) include phytic acid (60.00), saponin (17.80), tannins (81.00), total phenols (204.60) and hydrocyanic acid (17.30). This is comparable to 5.68 % CP, 12.00 % CF, 4.00 % ash, 18.00 % EE and 68.75 % NFE obtained by Bello *et al*. (2008). Bot (2011) reported 11.52 % CP, 12.49 % CF, 3.09 % EE, 4.08 % ash, 68.32 % NFE, 0.48 g/100 g calcium and 0.10 g/100g phosphorus; with antinutritional factors determined to be: oxalate (150 mg/100 g), phytic acid (210 mg/100 g) and tannin (3.23 mg/100 g). It also contained total starch (5.84 mg/100 g), ascorbic acid or vitamin C (24.22 mg/100 g) and reducing sugar (4.56 mg/100 g). Malik *et al*. (2018) reported 95.00 % DM, 11.38 % CP, 10.00 CF, 4.5 % EE, 4.08 % ash and 65.12 % NFE; with antinutritional factors (measured in mg/100 g) determined to be 145.00, 215.00 and 4.11 for oxalate, phytate and tannins respectively; while saponin and cyanide were found to be negligible. Afolayan (2014) reported 3.19 % CP, 6.03 % CF, 6.86 % ash, 1.84 % EE, 66.39 % NFE and 542.40 mg/100 g vitamin C. The fruit pulp also contained 0.32 mg/100 g tannin, 0.93 mg/100 g oxalate, 1.67 mg/100 g phytate, 0.34 mg/100 g saponin, 0.08 mg/100 g cyanide, 0.41 mg/100 g trypsin inhibitor, 19.72 % alkaloid and 40.20 % flavonoid. With these nutrient compositions, *Parkia biglobosa* fruit pulp have been found to be a valuable feedstuff for feeding various categories of livestock. Bot (2011) established that *Parkia* fruit pulp could be included at 10 % level for starter and finisher diets; and could replace 25 % maize at both the starter and finisher phases, without adverse effects on the growth performance of the birds. Afolayan (2014) determined that 0-8 weeks old pullet chicks fed 22.5 % fruit pulp had significantly higher weight gain than those fed 30 %; but similar to those fed 0.0, 7.5 and 15.0 % fruit pulp diets. For 9-20 weeks old growing pullets, final weight and weight gain for the birds on the locust bean fruit pulp diets were similar. For laying hens (20-42 weeks old), 7.5 % dietary inclusion level was recommended for optimum layer performance. Malik *et al*. (2018) determined that 20 % dietary inclusion level of *Parkia biglobosa* fruit pulp (PBFP) produced optimum growth performance and apparent nutrient digestibility in weaner rabbits. Therefore, this study was aimed at determining the effect of different dietary inclusion levels of *Parkia biglobosa* fruit pulp (PBFP) on the economy of feed conversion, carcass characteristics and sensory properties of the meat of rabbits.

Materials and methods

Location of the Study

The study was carried out at the Rabbitry Unit of Niger State Ministry of Livestock and Fisheries, Bosso, Minna, Niger State. Minna is located between latitude 9º 33' North and longitude 6º33' East, with an annual rainfall of between 1200-1300mm (FUTMIN, 2012).

Experimental diets

Parkia biglobosa fruit pulp was purchased from Zonkwa Market in Zango Kataf Local Government Area of Kaduna State. Foreign particles found in the pulp were removed, and the pulp sun dried for 3-5 days, before being incorporated into the experimental diets at 0, 10, 20, 30 and 40 % dietary inclusion levels, replacing maize, to form Treatments T1, T2, T3, T4 and T5 respectively. The composition of the experimental diets is shown in Table 1.

Management of the Experimental Animals

A total of 45 weaner rabbits of mixed sexes, aged between 5-6 weeks, with average initial weights of 700.00 ± 0.05 g were randomly allotted to five treatments of three replicates per treatment and three rabbits per replicate, in a completely randomized design (CRD). The rabbits were housed in individual wooden cages of height 60 cm, length 45 cm and width 40 cm, under an intensive system of management. Prior to the arrival of the rabbits, the cages were washed and disinfected. On arrival, the animals were acclimatized for one week, during which time they were given prophylactic treatments for coccidiosis and bacterial infections, as well as treatment for internal and external parasites. During this period, the animals were fed the Control Diet (T1) and thereafter fed the experimental diets *ad libitum* for 12 weeks, during which time data were collected on feed intake and weight gain.

Table 1: Ingredient composition of the experimental diets fed to weaner rabbits

Ingredients (%)	T 1 (0%)	T 2 (10%)	T 3 (20%)	T 4 (30%)	T 5 (40%)
Maize	49.80	39.80	29.80	19.80	09.80
Groundnut cake	25.55	25.55	25.55	25.55	25.55
African locust bean pulp	0.00	10.00	20.00	30.00	40.00
Rice husk	19.00	19.00	19.00	19.00	19.00
Palm oil	1.00	1.00	1.00	1.00	1.00
Bone meal	3.00	3.00	3.00	3.00	3.00
Lysine	0.30	0.30	0.30	0.30	0.30
Methionine	0.80	0.80	0.80	0.80	0.80
Salt	0.30	0.30	0.30	0.30	0.30
*Premix	0.25	0.25	0.25	0.25	0.25
Total	**100**	**100**	**100**	**100**	**100**
Calculated analysis					
ME (Kcal/Kg)	2701	2668	2635	2602	2571
Crude protein (%)	18.01	18.25	18.49	18.72	18.80
Crude fibre (%)	10.36	11.09	11.82	12.55	13.28
Protein/calorie ratio	1:149	1:146	1:143	1:139	1:137
Calcium (%)	1.40	1.45	1.47	1.49	1.51
Phosphorous (%)	1.03	1.03	0.99	0.99	0.79
Lysine (%)	0.87	0.88	.088	0.88	0.89
Methionine (%)	1.01	1.00	0.98	0.97	0.96

* The premix supplied the following nutrients kg^{-1}: Vitamin A, 500 IU; Vitamin D_2,1500 IU; Vitamin E 3, IU; Vitamin K,2 mg; Riboflavin, 3 mg; Pantothenic, acid 6 mg; Niacin, 15 mg; Vitamin B_{12},0.8 mg; Chlorine, 3 mg; Folic acid, 4 mg; Manganese, 8 mg; Zinc, 0.5 mg; Iodine, 1.0 mg; Cobalt, 1.2 mg.

T1 = 0 % dietary inclusion level of *Parkia biglobosa* fruit pulp ME = Metabolizable energy
T2 = 10 % dietary inclusion level of *Parkia biglobosa* fruit pulp
T3 = 20 % dietary inclusion level of *Parkia biglobosa* fruit pulp
T4 = 30 % dietary inclusion level of *Parkia biglobosa* fruit pulp
T5 = 40 % dietary inclusion level of *Parkia biglobosa* fruit pulp

Determination of the economy of feed conversion

The economy of feed conversion of rabbits fed *Parkia biglobosa* fruit pulp diets was determined by calculating feed cost/kg, total cost of feed consumed and cost of feed/ kg weight gain as follows: Cost of feed/kg was determined by dividing the total cost of feed by the quantity of feed (in kilogram). Total cost of feed consumed was determined by multiplying the total amount of feed consumed (in kg) by the cost of feed per kg. Feed cost/kg weight gain was calculated by multiplying the feed conversion ratio (FCR) by the feed cost/kg (Ayanwale and Kudu, 2001).

Evaluation of carcass characteristics and sensory properties

At the end of the growth performance study, one rabbit from each replicate was randomly selected and slaughtered by severing the throat with a sharp knife and washed with clean water. Hot carcasses were hung in a well-ventilated space for 30 minutes before being eviscerated. Thereafter, dressed weights, dressing percentage, weights of primal cuts and the weights of the internal organs were determined, and expressed as percentage of the live weights. Lean meat from the lumbar region of the dressed rabbit was used for sensory evaluation. The meat was boiled in water with salt seasoning for 30 minutes at 100 ^oC and allowed to cool. The boiled meat was cut into small bite sizes of about 20 g and served to a 20-member taste panel drawn from the University Community. The organoleptic properties of the meat for each treatment were determined using a 9-point Hedonic scale; and the evaluation was for colour or appearance, juiciness, flavour, tenderness and general acceptability.

Data analysis

Data were subjected to a one-way analysis of variance (ANOVA) using Statistical Analytical System Package (SAS, 2000, Version 6; SAS Institute, Cary, NC, USA). When significant (P<0.05), treatment means were separated using the Duncan's Multiple Range Test as contained in the Package.

Results and discussion

The results of the economy of feed conversion of rabbits fed PBFP diets is presented in Table 2. Cost of feed/kg decreased with increase in the level of *Parkia* fruit pulp in the diets. Rabbits fed 30 % and 40 % Parkia fruit pulp had lower feed cost per/kg weight gain than rabbits fed 0, 10 and 20 % Parkia fruit pulp diets, indicating that feed cost per kg weight gain of rabbits fed 10 % and 20 % Parkia fruit pulp diets compared favourably with that of the Control diet. This result agrees with the report of Abeke (2005) that the use of unconventional feedstuffs in livestock diets lower cost of production because they cost less than the conventional ingredients. This result is also similar to that reported by Wafar *et al*. (2019) when toasted African locust bean meal (TABM) was used to replace full fat soya bean at 0, 25, 50, 75 and 100 % levels. The authors found that the feed cost (₦/kg) decreased as the levels of TABM increased in the diet, with rabbits fed 100 % TABM having the least feed cost. Similarly, Bot (2011) used Parkia fruit pulp to replace 0, 25, 50, 75 and 100 % maize in the diets of broiler chicken. However, the author found that cost of feed/kg weight gain were significantly (P<0.05) higher across the dietary treatments as the level of the fruit pulp increased in the diet.

Table 2: Economy of feed conversion of rabbits fed *Parkia biglobosa* fruit pulp diets

Parameters	T_1 (0%)	T_2 (10%)	T_3 (20%)	T_4 (30%)	T_5 (40%)	SEM	p-Value
Cost of feed (₦/kg)	111.70	104.70	97.70	90.70	83.70	-	-
Total cost of feed intake (₦)	446.06^{b}	453.60^{b}	550.40^{a}	297.60^{c}	277.65^{c}	28.23	0.0001
Cost of feed/kg weight gain (₦)	700.00^{a}	676.67^{a}	680.00^{a}	606.67^{b}	613.33^{b}	23.76	0.0699

^{abc}Means in the same row with different superscripts were significantly (P<0.05) different.
SEM = Standard error of the means p-Value = Probability value

Table 3 shows the carcass characteristics of rabbits fed varying level of *Parkia biglobosa* fruit pulp diets. The weight of the head, forelimbs, thorax, loin, kidney and tail were not significantly (P>0.05) different across the treatments. However, live weight, dressing %, weight of neck, hind limbs, full intestine, liver, lungs, heart, spleen and skin (%) varied significantly (P<0.05) across the treatments. Also, the dressing percentage of rabbits fed 20 % Parkia fruit pulp was significantly (P<0.05) higher than those of rabbits in the other treatments. Similarly, neck weight was

Table 3: Carcass characteristics of rabbits fed *Parkia biglobosa* fruit pulp diets

Parameters	T1 (0% PBFP)	T2 (10% PBFP)	T3 (20% PBFP)	T4 (30% PBFP)	T5 (40% PBFP)	SEM	P-Value
Liveweight (g)	1633.33^{a}	1583.33^{a}	1633.33^{a}	1366.67^{b}	1153.33^{c}	54.47	0.0004
Dressing (%)	50.16^{b}	48.92^{b}	58.92^{a}	47.61^{b}	46.83^{b}	1.55	0.0554
Head (%)	8.92	8.15	8.09	10.70	10.34	0.44	0.1843
Neck (%)	2.32^{b}	2.23^{b}	2.46^{b}	3.08^{a}	2.14^{b}	0.12	0.0402
Fore limbs (%)	6.63	6.59	7.59	6.70	6.69	0.17	0.3184
Hind limbs (%)	12.91^{ab}	11.54^{b}	13.32^{a}	13.12^{a}	11.91^{ab}	0.25	0.0671
Thorax (%)	7.77	8.76	8.81	8.52	7.40	0.23	0.1818
Loin (%)	8.57	7.25	7.83	8.29	7.84	0.21	0.3607
Tail (%)	0.47	0.69	0.78	0.76	0.57	0.05	0.2487
Skin (%)	10.29^{a}	8.63^{ab}	8.23^{ab}	9.19^{ab}	7.52^{b}	0.34	0.0817
Liver (%)	1.99^{c}	2.45^{b}	2.46^{b}	2.81^{a}	2.36^{b}	0.11	0.0194
Kidneys (%)	0.67	0.81	0.76	0.71	0.70	0.04	0.8612
Lungs (%)	0.63^{c}	0.63^{ab}	0.86^{a}	0.70^{b}	0.49^{d}	0.04	0.0471

Heart (%)	0.32 [b]	0.44[a]	0.37[ab]	0.42[ab]	0.35[ab]	0.02	0.0128
Spleen (%)	0.06[c]	0.06[c]	0.13[a]	0.07[b]	0.07[b]	0.01	0.0001
Full intestine (%)	12.18[b]	12.78[b]	12.86[b]	13.00[b]	20.45[a]	0.87	0.0001

[abc]Means in the same row with different superscripts differs significantly (P<0.05).
SEM= Standard error of the means PBFP = *Parkia biglobosa* fruit pulp

significantly (P<0.05) higher in rabbits fed 30 % Parkia fruit pulp diets than those of 0, 10, 20 and 40 % levels. The hind limbs of rabbit fed 10 % was lower (P<0.05) than those of the other treatment except rabbits fed the 40 % PBFP. The hind limbs weight of rabbits fed 0, 10, 20 and 40 % did not differ significantly (P>0.05).

The result of the organs weights showed that the value for full intestine of rabbits fed 40 % Parkia fruit pulp diets was higher (P<0.05) than those of the other Treatments. The liver weight showed that that for the control was lower (P<0.05) than those of rabbits fed 30 % Parkia fruit pulp diets; but not significantly (P>0.05) different from rabbits fed 10, 20 and 40 %. The weight of the lungs was significantly (P<0.05) different from rabbits fed 20 and 40 % Parkia fruit pulp diets; but not significantly (P>0.05) different from the other treatments. These results differ from the findings of Bot (2011) where Parkia fruit pulp was used to replace 0, 25, 50, 75 and 100 % maize in the diets of broiler chicken, both at the starter and finisher phases. Liveweight, carcass weight, dressing %, primal cuts and organ parts (expressed as % of liveweight) decreased across the treatments at the starter phase. At the finisher phase, liveweight, carcass weight and dressing % significantly (P<0.05) decreased as the Parkia fruit pulp increased in the diet. Also, the prime cuts and organs: wings, drumsticks, proventriculus, small and large intestines were observed to have been negatively affected in birds fed all the dietary treatments. In a similar vein, Wafar *et al*. (2019) investigated the impact of toasted African locust bean meal (TABM) in replacing full fat soya bean at 0, 25, 50, 75 and 100 % levels, on the growth performance, nutrient digestibility, blood profile and carcass characteristics of grower rabbits. The carcass characteristics, weight of the internal organs and weight of primal cuts were not significantly (P>0.05) influenced by the dietary treatments.

Results of the sensory properties of rabbits fed PBFP diets is presented in Table 4. The carcass colour and meat tenderness of rabbits fed 20 % Parkia fruit pulp diets were significantly (P<0.05) better than those of the other treatments; but flavour, juiciness and overall acceptability of the meat were not significantly (P>0.05) affected by the dietary treatments. This result contradicts the report of Madiha *et al*. (2019) who evaluated the effect of feeding Carob pods (obtained from the Carob tree (*Ceratonia siliuqa*) on the carcass and meat quality of growing rabbits reared under Tunisian summer conditions. The authors found that Carob pods at 20 % dietary inclusion level had no effect on the colour, juiciness, tenderness and flavour of rabbit meat.

Table 4: Sensory properties of the meat of rabbits fed varying levels of *Parkia biglobosa fruit* pulp diets

Parameters	T_1 (0%)	T_2 (10%)	T_3 (20%)	T_4 (30%)	T_5 (40%)	SEM	p-Value	LOS
Colour	7.35[b]	7.65[b]	8.20[a]	7.00[c]	7.00[c]	0.11	0.0018	*
Tenderness	7.50[a]	7.35[b]	7.70[a]	6.85[c]	7.30[b]	0.12	0.0211	*
Juiciness	6.95	6.85	7.50	6.70	7.05	0.13	0.3584	NS
Flavour	7.00	6.90	7.40	6.50	7.25	0.14	0.2622	NS
General accetability	7.20	7.45	7.55	7.10	7.45	0.11	0.6747	NS

[ab]Means in the same row with different superscripts were significantly (P<0.05) different.

SEM=Standard error of the means p-Value = Probability value LOS = Level of significance

Conclusion and Recommendations

This study has demonstrated that *Parkia biglobosa* fruit pulp (PBFP) had beneficial effects on the nutrition of rabbits. Hence, it can be concluded that its inclusion in the diets of weaner rabbits at 20 % level produced the optimum effect on the economy of feed conversion, carcass characteristics and sensory properties of the meat of rabbits.

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