



COMPARATIVE EVALUATION OF *TRIDAXPROCUMBENS*, *KHAYASENEGALENSIS* AND *SENNA SIAMEA* AS SUPPLEMENTS TO CONCENTRATE DIET ON GROWTH PERFORMANCE OF RABBITS

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ABSTRACT: This study was carried out to evaluate the feeding potentials of *Tridaxprocumbens*, *Khayasenegalensis* and *Senna siamea* foliages as supplements to concentrate diet for grower rabbits over 12 weeks period. A total of 24 crossbred grower rabbits with average initial weight of 590 ± 10 g were used for feeding trial in a completely randomized design experiment. The animals were divided into four groups of six animals per treatment and each treatment had triplicates of two animals per replicate. Treatment T1 was fed with concentrate only. Treatment T2 was fed with concentrate and *T. procumbens*. Treatment T3 was fed with concentrate and *K. senegalensis* while treatment T4 was fed with concentrate and *S. siamea* foliage. The results had shown that rabbits on concentrate diet supplemented with forages performed better ($P < 0.05$) than those fed with concentrate only. Furthermore, animals on diet T2 had higher ($P < 0.05$) feed intake, weight gain and feed conversion ratio than T1, T3 and T4 respectively.

Keywords: *Tridaxprocumbens*; *Khaya senegalensis*; *Senna siamea*; Weight gain; Animal protein

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INTRODUCTION

Interest in rabbit production in Nigeria has increased dramatically due to increasing demand for animal protein. This is because rabbit is fast growing animal with short gestation period and short generation interval. More so, there are no religious prohibitions preventing their production and consumption like pigs. Due to high cost of production, many options have been advocated to finding lasting solution to current high cost of conventional feed stuffs with a view to make animal protein available and affordable to common man. Studies have shown that rabbit can thrive on a number of tropical forages supplemented with concentrate [1]. The domestic rabbit has good ability to utilize forages and fibrous plant materials [2]. *Tridaxprocumbens*, *Khayasenegalensis* and *Senna siamea* are forages that are available in many areas of savanna which are not competed for by man and can be used as supplements to concentrate diet to feed rabbit. This study was carried out to compare the potentials of these forages as supplements to concentrate diet for rabbit.

MATERIALS AND METHODS

This research work was conducted at the Teaching and Research Farm of Federal College of Wildlife Management, New Bussa, Niger State, Nigeria. Concentrate diet was formulated as shown in Table 1. Twenty four crossbred grower rabbits with average initial weight of 590 ± 10 g were used.

The animals were divided into four treatment groups of six animals with each group having triplicate of two animals per replicate in a completely randomized design experiment. They were given prophylactic treatment and allowed for two weeks adjustment period followed by 12 weeks experimental period. Treatment 1 (T1) were fed with concentrate diet only. Treatment 2 (T2) were fed with concentrate and *Tridaxprocumbens*. Treatment 3 (T3) were fed with concentrate and *Khayasenegalensis* while treatment 4 (T4) were fed with concentrate and *Senna siamea* respectively. Feed and water were served ad-libitum. Feed intake, weight gain and feed conversion ratio were measured. After the feeding trial, seven days digestibility study was conducted. Proximate analyses of the concentrate diet, *T. procumbens*, *K. senegalensis*, *S.siamea* as well as faecal samples were carried out according to AOAC (1990) [3]. All data collected were subjected to statistical analysis using statistical package for social science (SPSS, 1980) [4]. Significant means were separated using Duncans Multiple Range test of the same package.

Table 1:Composition of the experimental diets.

Ingredient	Percentage (%)
Maize bran	64.61
Groundnut cake	18.39
Blood meal	3.00
Rice husk	10.00
Bone meal	3.00
Salt	0.50
Premix	0.50
Total	100.00
Calculated composition	
Crude protein (%)	18.00
Crude fibre (%)	11.70
Metabolizable Energy (Kcal/Kg)	2580

RESULTS AND DISCUSSION

Proximate composition of the concentrate diet, *T. procumbens*, *K. senegalensis* and *S. siamea forages* are presented in Table 2. Nutrient digestibility of the experimental rabbits is shown in Table 3. The results had indicated that nutrients were reasonably utilized by the animals. This could be because the animals are at growing stage when nutrient is required for body building. The values of the nutrient digestibility were within close range but differed significantly between the treatments. Feed intake, weight gain and feed conversion ratio are presented in Table 4. The average daily feed intake for animals on concentrate alone (T1) was 38.65 g while 46.40 g, 53.80g and 52.00 g were recorded for animals on concentrate and forages (T2, T3 and T4) respectively. Concentrate intake decreased with increase in forage intake between the treatments. With the highest (30.80g) forage intake recorded in T2 and lowest (22.00g) in T4. High forage consumption of animals on T2 could be due to succulent, leafy and palatable nature of *Tridaxprocumbens* compared to other forages. This observation is in line with Ukpe et al. [5] who stated that *T. procumbens* has succulent and leafy nature and for this reason it was preferred to *Panicum maximum* and *Calopogonium mucunoides*. Daily feed intake was higher in animals on concentrate and forages with corresponding weight gain than in animals on concentrate alone with highest gain (12.80 g) in T2. *T. procumbens* has extensively been used as the main forage for rabbit feeding. It is reported Ikurior et al. [6] to contain high nutrients and minerals. This may be the reason for high consumption of *T. procumbens* compared with other forages. *K. senegalensis* and *S. siamea* are tree forages which may contain some anti-nutritional factors such as tannin that could have interfered with other nutrients in the feed. This observation is in line with Abdu et al. [7] who stated that tannin in tree and shrub fodder bind with protein in the diet and form a less digestible complex and may also combine with endogenous proteins like enzymes and thus reducing digestibility. The feed conversion ratio (FCR) was better in T2 than other treatments. Although higher feed intake with corresponding higher gains were recorded in T3 and T4 than T1, FCR was better in T1 than T3 and T4 respectively. This may be due to presence of anti-nutritional factors present in the tree fodder as stated earlier.

Table 2: Proximate Composition of the Experimental Concentrate, *T. procumbens*, *K. senegalensis* and *S. siamea*.

Nutrient (%)	Concentrate	<i>T. procumbens</i>	<i>K. senegalensis</i>	<i>S. sia</i>
Dry matter	91.70	68.03	63.32	64.38
Crude protein	17.89	16.26	8.67	7.56
Crude fibre	12.20	12.33	14.24	15.25
Ether extract	6.52	4.13	4.58	3.74
Ash	8.34	6.31	5.70	4.86
Nitrogen free extract	55.05	29.00	30.13	32.97

Table 3: Nutrient digestibility of the experimental rabbits.

Nutrient (%)	T1	T2	T3	T4
Dry matter	68.72 ^a	64.32 ^b	57.28 ^c	52.25 ^d
Crude protein	65.24 ^a	62.28 ^b	60.37 ^b	54.36 ^c
Crude fibre	57.50 ^b	61.37 ^a	58.82 ^{ab}	48.90 ^c
Ether extract	60.21 ^a	65.00 ^a	58.90 ^c	46.65 ^d
Ash	56.86 ^a	57.822 ^a	53.06 ^b	44.28 ^c
Nitrogen free extract	54.48 ^a	52.64 ^a	48.26 ^b	40.56 ^c

^{a,b,c,d}Means in the same row with different superscripts differ significantly (P<0.05)

Table 4: Performance characteristics of the experimental rabbits.

Parameters	T1	T2	T3	T4
Initial weight (g)	600	600	590	580
Final weight (g)	1,480.00 ^c	1680.00 ^a	1550.00 ^b	1440 ^c
Total weight gain (g)	880.00 ^c	1080.00 ^a	960.00 ^b	860 ^c
Average weight gain (g)	10.48 ^c	12.80 ^a	11.30 ^b	10.50 ^c
Total feed intake/day (g)	38.65 ^c	46.40 ^b	53.80 ^a	52.00 ^a
Average forage intake/day (g)	-	30.80 ^a	25.50 ^b	22.00 ^c
Average Concentrate intake/day (g)	38.65 ^a	15.60 ^c	28.30 ^b	30.00 ^b
Feed conversion ratio	3.69 ^b	3.63 ^b	5.09 ^a	4.95 ^c

^{a,b,c,d}Means in the same raw with different superscripts differ significantly (P<0.05)

CONCLUSION

This research work has confirmed that rabbit performs better when fed with concentrate diet and forage than when fed with concentrate only. The results have also shown that *Tridaxprocumbens* was better utilized and had superior weight gain than *Khayasenegalensis* and *Senna siamea*. It is thus concluded that *T. procumbens* is better for feeding rabbit followed by *K. senegalensis*.

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