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INTAKE AND NUTRIENT DIGESTIBILITY OF KONKAN KANYAL GOATS FED FINGER MILLET STRAW SUPPLEMENTED WITH VARYING LEVELS OF DRIED POULTRY DROPPING BASED DIETS

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Abstract

This study was conducted to study the effects of dried poultry dropping based diets on the feed intake and nutrient digestibility of Konkan Kanyal goats fed finger millet straw. Thirty Konkan Kanyal goats aged above 12 months weighing 14.00-14.67 Kg were used in a randomized block design (RBD) experiment. The experimental goats were randomly assigned to five treatments (T_1-T_5). T_1 were goats fed with 0 % dried poultry droppings based diets (DPDBD), T_2 were fed with 20 % dried poultry droppings based diets (DPDBD), T_3 were fed with 40 % dried poultry droppings based diets (DPDBD), T_4 were fed with 60 % dried poultry droppings based diets (DPDBD), T_5 were fed with 80 % dried poultry droppings based diets (DPDBD).Feed intake was monitored, digestibility coefficient was calculated. Mean feed intake was higher in treatment groups supplemented with dried poultry droppings based diet T_2 (666.84), T_3, (780.75), T_4, (780.48), T_5, (716.00), compared to the control treatment group T_1, (588.58). Nutrient digestibility coefficient of the experimental animals was significantly ($P<0.05$) higher in treatment group supplemented with 40 % DPDBD (T_3) for all the parameters measured compared to all other treatment groups. The results of this study suggests that feeding of dried poultry droppings based diets up to 80 % to theanimalswould give satisfactorily performance. However, superior performance was observed at 40 per cent inclusion. Furthermore, it was recommended to include the dried poultry droppings at 40 per cent in the diet of the animals for better improved performance

Keywords:Digestibility coefficient;Dried poultry droppings; feed intake; finger millet straw; Konkan Kanyal goats

1. INTRODUCTION

Feeding is an essential aspect of goat rearing enterprise and may be the highest expense of any meat goat operation. Goats raised for meat need high quality feed in utmost conditions and need ideal levels of many different nutrients to achieve maximum profit potential (Luginhul and Poore, 1998)
Finger millet straws (FMS) which are by-product of Finger millet are coarse, high-fibre, low-protein and low-digestibility roughages, they play an important role as filler and have some value as a energy source for feeding ruminant animals provided they are adequately supplemented (Heuze and Tran, 2013).This study was therefore conducted to study the effects of feeding dried poultry droppings based diet as supplementary diet to finger millet straw on feed intake as well as on the nutrient digestibility of Konkan Kanyal goats.

2. Materials and Methods

The study was carried at the Institutional livestock farm, goat unit, Department of Animal Husbandry and Dairy Science, College of Agriculture, Dapoli, District Ratnagiri, Maharashtra, India. The experimental design used was the Randomized block design (RBD). Thirty Konkan Kanyal goats aged above 12 months and with average

weight of 14.38 kg were used for this study. The goats were randomly assigned to five treatments designated T1-T5 comprising of three replicates with two animals per replicate

The animals were kept in individual pens. Prophylactic protocol was observed. The feeding trial lasted for 90 days. The animals were raised in individual compartment under confinement. The experimental animals were fed at 3% of their body weight (BW). The levels of inclusion of dried poultry dropping in the treatments are T1 (0%) T2 (20%) T3 (40%) T4 (60%) and T5 (80%). Chopped finger millet straw (2 cm length) was offered to the animals as basal diets. The proximate constituent of supplemental diet is presented in Table 1. Feed intake was monitored and nutrient digestibility was calculated. All data collected were subjected to analysis of variance (ANOVA) using the General Linear Model (GLM) procedure of SAS (2008). Means were separated Using Least Significant Difference (LSD) test of the same package.

Table 1: Chemical composition of supplemental feeds (% DM basis)

	Proximate composition				
Parameters	T_1	T_2	T_3	T_4	T_5
OM	89.32	89.50	89.11	89.20	89.33
DM	91.53	91.16	91.90	91.32	91.58
CP	13.34	14.05	14.25	13.71	14.39
EE	4.34	4.56	4.61	4.40	4.39
CF	3.30	3.50	3.23	3.40	3.31
NFE	68.34	67.39	67.02	67.69	67.24
TA	10.68	10.50	10.89	10.80	10.67
Minerals					
Ca	0.92	1.00	0.95	0.97	0.97
P	0.68	0.78	0.78	0.84	0.85

OM= Organic matter; DM= Dry matter; CP=Crude protein; EE= Ether extract; CF= Crude fibre; NFE= Nitrogen free extract; TA= Total ash; Ca=Calcium and P= Phosphorus. Source: Proximate analysis result.

3. Result and Discussion

The daily feed intake (g/day) was not significantly different between treatment T_3 and T_4. The daily feed intake (g/day) was highest in values (780.75 g/day) in treatment T_3 compared to the other treatment groups. This was followed by treatment T_5 and T_2, respectively, while the lowest intake was observed in treatment T_1. From the results of the present study, treatment groups supplemented with poultry droppings had higher values for daily feed intake as compared to the control treatment group. This present findings is in agreement with Abdul *et al*.(2008) in their study on the effects of supplementing sorghum stover with poultry litter on the performance of Wadara cattle where they reported that supplementation with poultry litter significantly ($P<0.05$) increased dry matterintake (DMI).

Table 2: Feed intake by experimental goats (% DM basis)

Parameters	Treatments						
	T_1	T_2	T_3	T_4	T_5	SE	CD (5%)
Body weight (kg)	14.00^{a}	14.45^{a}	14.53^{a}	14.23^{a}	14.67^{a}	0.45	2.25
Feed intake (g)	588.58^{d}	666.84^{c}	780.75^{a}	780.48^{a}	716.00^{b}	1.21	2.38
Intake per 100 BW (Kg)	4.19^{e}	4.51^{d}	5.11^{b}	5.28^{a}	4.93^{c}	5.78	15.97

Intake per Kg W $^{0.75}$ BW (g)	80.79^{d}	88.15^{c}	100.73^{a}	103.12^{a}	95.60^{b}	1.85	3.19

Means with the same superscript are not significantly different.

This result on daily dry matter intake kg^{-1} metabolic body weight was higher than the findings of Ukanwoko and Ibeawuchi (2009) in their study with West African Dwarf bucks fed poultry waste-cassava peel based diet The result of apparent nutrient digestibility coefficient is shown in Table 3. The digestibility coefficient of dry matterin treatment T_3 was significantly higher than all the treatment groups, closely followed by T_4 and T_1 and T_2 and T_5 and is all at par with each other, respectively. However, T_5 had the least value.

Table 3: Apparent nutrient digestibility coefficient of experimental animals (% DM basis)

Parameters	Treatments						
	T_1	T_2	T_3	T_4	T_5	SE	CD (5%)
DM	61.69^{b}	59.72^{c}	62.75^{a}	61.30^{b}	59.69^{c}	3.79	9.74
CP	58.98^{b}	58.64^{b}	61.56^{a}	61.15^{a}	58.74^{b}	1.79	2.56
EE	59.53^{b}	57.70^{c}	60.70^{a}	60.54^{a}	58.98^{b}	0.66	4.08
CF	56.08^{b}	54.41^{d}	57.23^{a}	56.15^{b}	55.93^{c}	0.71	2.50
NFE	59.54^{a}	57.20^{c}	59.78^{a}	55.69^{d}	58.30^{b}	0.58	5.1
Total Ash	55.80^{c}	54.81^{d}	57.50^{a}	56.13^{b}	56.07^{b}	1.61	4.6
Ca	53.38^{d}	59.78^{c}	62.88^{a}	61.39^{b}	61.03^{b}	0.16	0.21
P	62.04^{b}	60.42^{d}	63.92^{a}	61.40^{c}	61.08^{c}	0.13	0.2

Mean with the same superscript are not significantly different.

Bello and Tsado (2013) reported higher values of DM digestibility coefficients than the present findings as 81.00, 86.70, 88.10, 89.30 and 91.40% in T_1, T_2, T_3, T_4 and T_5, respectively in Yankasa rams. The highest DM digestibility coefficient of T_3 closely followed by T_4 shows that treatment groups supplemented with dried poultry droppings can favourably replace ground nut cake (GNC) in goat diet with significant improvement. This could be due to the ability of the supplements to supply necessary nutrients especially fermentable nitrogen (N) in ensuring optimum microbial biomass as was reported by Abdul *et al*.(2008).Highest digestibility coefficients of CP was observed for T_3 (61.56) followed by T_4, however, there was no significant differences between T_3 and T_4. Similarly, there were no significant ($P>0.05$) differences between T_1, T_2 and T_5 while T_2 has the least value for CP digestibility coefficients, this indicates that treatment groups

supplemented with poultry droppings can compete favourably with the group fed conventional supplement. Furthermore, the higher digestibility values observed in the supplemented treatment groups could be attributed to the higher CP intake compared to the control treatment group. However, Bello and Tsado (2013) reported higher values of CP digestibility coefficients than the present findings of 76.80%, 81.00%, 82.00%, 83.40% and 86.60% in T_1, T_2, T_3, T_4 and T_5, respectively in Yankasa rams fed sorghum stover supplemented with dried poultry droppings.

The digestibility coefficients of ether extract were significantly higher in treatment T_3 and T_4 followed by T_1 and T_5, respectively. However, T_1, T_5 and T_3, T_4 were at par with each other and followed by T_2 with the lowest value. These values were at variance with the results reported by Bello and Tsado (2013) in EE digestibility coefficients of sorghum stover supplemented with poultry droppings fed to Yankasa rams as 58.20%, 87.20%, 89.40%, 91.90% and 92.10% in T_1, T_2, T_3, T_4 and T_5, respectively. The digestibility coefficients of crude fibre in treatment T_3 was higher, closely followed by T_1, T_4 and T_5, T_2, however, there were no significant differences between T_1 and T_4 was lower than the values reported by Bello and Tsado (2013)in CF digestibility coefficients of sorghum stover supplemented with poultry droppings fed to Yankasa rams as 70.80%, 82.50%, 84.70%, 86.80%

and 88.30% in T_1, T_2, T_3, T_4 and T_5, respectively. Values of nitrogen free extract (NFE) digestibility coefficients were found to be as 59.54%, 57.20%, 59.78%, 55.69% and 58.30% for treatment groups T_1, T_2, T_3, T_4 and T_5, respectively. The digestibility coefficients of NFE in treatment T_3 was higher, closely followed by T_1, T_5, T_2 and T_4, however, there were no significant differences between T_3 and T_1, respectively. The values in this present study were lower than the values reported by Bello and Tsado (2013) in NFE digestibility coefficients of sorghum stover supplemented with poultry droppings fed to Yankasa rams as 95.30%, 94.40%, 94.70%, 96.40% and 94.70% in T_1, T_2, T_3, T_4 and T_5, respectively

4. Conclusions

Results of this present study revealed that goats fed with dried poultry dropping based diets had significantly higher feed intake and superior apparent nutrient digestibility. From the findings of this study, it was recommended that dried poultry droppings based diets could be used satisfactorily to supplement finger millet straw up to 40% inclusion level for better improved performance.

5. References

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