

Effect of Feeding Rubber Seed Cake to Growing Calves on Dry Matter and Nutrients Utilization

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ABSTRACTS

The attempt was made to study the nutrients utilization by growing animals fed a ration containing 0,15 and 30 per cent level of rubber seed cake in the concentrate mixture. For this a metabolism trial was conducted on male Kankrej calves.

The results on per cent dry matter consumption indicated 2.34 to 2.39 kg./day/100 kg body weight showing thereby that animals consumed sufficient amount of ration containing rubber seed cake. The digestibility of most of the proximate nutrients did not show marked difference between the treatments. The balance data revealed that nitrogen retention decreased with increasing levels of rubber seed cake in the ration. However, the differences were found to be non significant. The phosphorus balance was positive under all the treatments. Similarly the calcium retention was positive under all the treatments and showed reverse trend than that of nitrogen retention, but the differences were not significant.

Thus overall result of rubber seed cake feeding indicate that there was no adverse effect on digestibility and balance. Hence, it was concluded that rubber seed cake can be incorporated in the concentrate mixture of growing calves upto 30% level.

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INTRODUCTION

The utilization of agro-industrial waste products as cattle feeds have been studied by several workers to minimize the present shortage of cattle feeds. Rubber seed cake is now available in large quantity and can be used for feeding to cattle.

The present study was undertaken to study the feasibility of replacing conventional cake like cotton seed cake with rubber seed cake in concentrate mixture for growing Kankrej animals.

MATERIALS AND METHODS

Twenty two growing Kankrej calves having 11 male and 11 female calves of 12-15 months of age and 130 to 218 kg body weight were randomly divided into 3 groups. Completely randomised design was followed for this study. The treatments T₁, T₂ and T₃ were 0, 15, 30% level of rubber seed cake replacing the cotton seed cake from concentrate mixture respectively. The ingredients and their proportions in concentrate mixture are presented in Table 1.

The nutrients requirements were given as per N.R.C. (1971) feeding standards for growing animals. The required quantity of dry roughage was supplied through paddy straw.

Metabolism study was conducted for knowing the digestibility and balance of nutrients on male calves only after two months of experimental ration feeding. Samples of feeds, faeces and urine were analysed by the method of AOAC (1970).

RESULTS AND DISCUSSION

Chemical Composition of feeds : The feeds and fodder used for the study were analysed for proximate composition and the results are given in Table 2

Effect on dry matter consumption : The dry matter intake during digestibility trial period was worked out and the data are given in Table 3.

The dry matter consumption in T1, T2 and T3 was 2.39, 2.42 and 2.34 kg day/100 kg body weight showing thereby that the animal consumed sufficient quantity of ration containing rubber seed cake. The statistical analysis of the data revealed non-significant differences between the treatments.

Effect on digestibility of proximate nutrients. The average results on digestibility of proximate nutrients are presented in Table 4.

The digestibility coefficient of crude protein was higher in T2 i.e. 15% rubber seed cake in concentrate mixture as compared to T1 and T3, while the ether extract digestibility was higher

in T1 i.e. control compared to rubber seed cake supplemented groups (T2 and T3). The trend of digestibility of crude fibre was similar to crude protein digestibility. The digestibility of N.F.E. and organic matter increased with increasing levels of rubber seed cake in concentrate mixtures. However, the digestibility coefficients of different proximate nutrients did not differ significantly under the three treatments. These results are in agreement with those reported by Ananthasubramaniam (1977).

Effect on balance of nitrogen, phosphorus and calcium : The results on average balances are given in Table 5.

The balance data revealed that the nitrogen retention was more in T2 indicating the similar trend of crude protein digestibility. The phosphorus balance was positive in all the three groups and did not show any definite trend, while calcium retention increased with the increasing levels of rubber seed cake in concentrate mixtures. The balances of nitrogen, phosphorus and calcium under three treatments did not show significant differences.

REFERENCES

- Ananthasubramaniam, C.R. 1977. Ann. Progress Report on All India Coordinated Research Project for Investigation on Agricultural Byproducts and Industrial waste Material for evolving economic ration for livestock-P. 18-23. Trichur.
- A.O.A.C. 1970. Official Methods of analysis of Association of Analytical chemist, 11th edn. Association of Official Agricultural Chemist, Washington, D.C.

TABLE 1
The per cent proportions of different ingredients.

<i>Group</i> <i>Ingredients</i>	<i>T1</i>	<i>T2</i>	<i>T3</i>
Rubber seed cake	0	15	30
Cotton seed cake	30	15	0
Groundnut cake	22	23	24
Rice bran	20	8	3
Wheat bran	20	22	18
Tapioca	5	14	22
Salt	2	2	2
Bone meal	1	1	1
Vit. A (I.U.)	5,00,000	5,00,000	5,00,000
Calculated DCP	16.4	16.4	16.3
TDN	67.5	68.3	68.0

TABLE 2

Chemical composition of feeds and fodders used during the feeding experiment (on% d.m. basis).

<i>Feeds</i> <i>constituents</i>	<i>Concentrate mixture</i>			<i>Paddy Straw</i>	<i>Rubber seed cake</i>
	<i>I</i>	<i>II</i>	<i>III</i>		
C. Protein	23.80	22.94	23.16	2.91	35.13
E. Ext.	6.66	5.12	5.30	1.97	12.47
C. Fibre	11.35	7.04	5.80	32.51	7.11
N.F.E.	48.43	54.94	56.01	42.54	34.81
Ash	9.76	9.96	9.73	20.07	10.48
Silica	2.02	1.76	1.40	12.58	0.83
P	1.13	1.03	0.82	0.05	0.82
Ca	0.52	0.58	0.67	0.41	0.98

TABLE 3

Average dry matter consumption of calves. (kg/day/100 kg body weight)

<i>Ani. No.</i>	<i>Treatments</i>			<i>'F' value</i>
	<i>T1</i>	<i>T2</i>	<i>T3</i>	
1.	2.33	2.40	3.32	
2.	2.34	2.31	2.34	
3.	2.40	2.46	2.37	
4.	2.49	—	2.34	
Av.	2.39	2.39	2.34	1.00 N.S.

NS = Non significant.

TABLE 4

Average digestibility coefficients of whole ration.

Treatments constituents	T1	T2	T3	'F' Value
C. Protein	58.20	60.67	57.78	0.50 NS
E.Ext.	65.99	62.67	62.33	0.51 NS
C. Fibre	72.06	77.46	73.98	1.25 NS
N.F.E.	51.82	59.53	62.98	1.47 NS
Organic matter	58.06	64.73	65.18	1.52 NS

NS= Non significant.

TABLE 5

Average balance of Nitrogen, Phosphorus and Calcium. (g/day/animal)

Treatment Particular	T1	T2	T3	'F' value
Nitrogen				
Total intake	78.65	80.64	80.22	
Voided faeces	32.76	31.54	33.85	
Voided urine	27.42	28.92	32.14	
Total voided	60.18	60.46	65.99	
Balance	+18.47	+20.18	+14.23	2.19 NS
Phosphorus				
Total intake	21.04	20.14	16.10	
Voided faeces	17.45	13.21	12.84	
Voided urine	0.25	0.45	0.23	
Total voided	17.70	13.66	13.07	
Balance	+3.34	+6.48	+3.03	2.03 NS
Calcium				
Total intake	21.51	23.06	24.60	
Voided faeces	17.00	16.50	16.22	
Voided urine	0.65	0.74	0.87	
Total voided	17.65	17.24	17.09	
Balance	+3.86	+5.82	+7.51	1.46 NS

NS = Non significant.