

Nutritional Evaluation of Rape Seed Cake

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Rape seed cake is a byproduct of oil milling industry available after extraction of oil from rape seeds. It is traditionally fed to ruminants in northern region of the country (Ranjhan, 1981 and Banerjee, 1986). However, its feeding is not popular in Gujarat State. Data for nutritive value of rape seed cake are not available for this region. Hence an effort was made to determine its nutritive value in adult ruminants.

The nutritive value of rape seed cake was determined by difference method on six bullocks of good nutritional status. These bullocks were fed rape seed cake initially 0.25 kg daily in increasing order for adaptation. Initially bullocks did not consume the cake because of its peculiar taste even when offered only 1.0 kg/day. Therefore cake was mixed with wheat bran in 2:1 proportion alongwith salt and fed to bullocks. After

adaptation each bullock was offered the uniform mixture of 2.0 kg rape seed cake, 1.0 kg wheat bran and 30 g salt daily during preliminary period of 21 days. Mature pasture grass was fed as basal roughage. A digestion cum balance trial following conventional method was conducted on six bullocks with seven days collection period. The digestibilities of mature pasture grass and wheat bran were also determined. The samples of feeds and fodders were analysed for proximate nutrient content (AOAC, 1980).

Bullocks maintained their body weight. Average dry matter intake by each bullock was 4.48 ± 0.18 kg/day and 1.84 ± 0.08 kg/100 kg body weight, which is sufficient for maintenance of adult non producing large ruminants.

Dry matter intake from rape seed cake only was 1.31 ± 0.10 kg/day/animal (Table 1). It indicates that rape seed cake was found palatable to adapted animals when fed after mixing with some palatable feeds like wheat bran.

The data for proximate composition of feeds and fodders fed to animals are

TABLE 1

Average body weight and dry matter intake by bullocks.

Av. body weight of bullocks (kg)	246.67 $\pm$ 18.37
Breed of animals	Cross bred bullocks
Av. dry matter intake	
kg/day/animal	4.48 $\pm$ 0.18
kg/100 kg body weight	1.84 $\pm$ 0.08
g/kg $W^{0.75}$	72.51 $\pm$ 1.99
Av. dry matter intake	
from rape seed cake only	1.31 $\pm$ 0.10
(kg/day/animal)	
Av. dry matter intake from wheat bran only	0.65 $\pm$ 0.05
(kg/day/animal)	

TABLE 2
Chemical composition (per cent on DM basis) of feed and fodders, digestibility coefficients and balances of nutrients of bullocks fed rape seed cake.

Constituents Feeds	Crude Protein	Ether Ext.	Crude fibre	NFE	Ash	Silica	P	Ca
Rape seed cake	38.47	1.47	5.85	46.16	8.05	2.23	1.23	1.47
Wheat bran	18.33	4.04	5.36	67.94	4.33	0.76	1.21	0.48
Mature pasture grass	2.22	1.68	42.25	46.00	7.85	6.34	0.05	0.65

Digestibility coefficients and digestible nutrients of rape seed cake only.

Crude protein	Ether extract	Crude fibre	NFE	OM	DCP	TDN
81.97 ±3.14	62.31 ±10.13	26.13 ±11.55	68.51 ±3.34	80.36 ±3.44	31.53	66.74

Average balances of nitrogen, phosphorus and calcium (g/day/animal).

Nutrients Particulars	Nitrogen	Phosphorus	Calcium
Total intake	106.68±7.53 (100)	26.70±1.51 (100)	38.25±1.91 (100)
Voided in feces	32.58±1.37 (30.54)	17.16±0.74 (64.27)	23.91±1.05 (62.51)
Voided in urine	51.84±4.94 (48.59)	0.16±0.03 (0.60)	1.82±0.17 (4.76)
Total voided	84.42±5.49 (79.13)	17.32±0.75 (64.87)	25.73±1.12 (67.27)
Balance	+22.26±3.71 (20.87)	+9.38±0.94 (35.13)	+12.52±1.33 (32.73)

() Figure indicates percentage of intake.

presented in Table 2. Rape seed cake had 38.47 per cent crude protein on dry matter basis. The digestibility coefficients of rape seed cake only for crude protein, ether extract, nitrogen free extract and organic matter were 81.97, 62.31, 68.51 and 80.36, respectively, however crude fibre digestibility was very low.

The balances of whole ration for Nitrogen (N), Phosphorus (P) and Calcium (Ca) were + 22.26 ± 3.71, + 9.38 ± 0.98 and + 12.52 ± 1.33 g/day/animal, respectively. Positive balances of N, P and Ca indicated that bullocks utilized the nutrients of rape seed cake efficiently. Rape seed cake provided 31.53 per cent DCP and 66.74 per cent TDN on dry matter basis. Sen and Ray (1971) reported slightly lower DCP (27.83%)

and higher TDN (78.10%) values for rape seed cake. Higher value of TDN reported for rape seed cake may be because of expeller type of cake as against deoiled rape seed cake used under present investigation.

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REFERENCES

- AOAC, 1980. Association of Official Analytical Chemists. *Official Methods of Analysis*, 13th Edn., Washington DC, USA.
- Banerjee, G. C., 1986. *A Text Book of Animal Husbandry*, 7th Edn. Oxford & IBH Publ. Co. Pvt. Ltd., New Delhi.
- Ranjhan, S. K., 1981. *Animal Nutrition in Tropics*, 2nd Edn. Vikas Publ. House Pvt. Ltd., New Delhi.
- Sen, K. C. and S. N. Ray., 1971. Nutritive value of Indian Cattle Feeds and the Feeding of Animals. Bull. No. 25, ICAR, New Delhi.