Study on Effect of Feeding Deoiled Sal Seed Meal (DSSM) at Different Levels to Kankrej Cows on Milk Yield and Composition

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ABSTRACT

To study the effect of feeding Deoiled Sal Seed Meal (DSSM) at 0, 10 and 20 per cent levels in the concentrate mixtures, on milk and the FCM yields and on milk composition of the Kankrej cows, an experiment was conducted for a period of 300 days lactation.

The results on milk and the FCM production revealed significant reduction for both milk and the FCM yields in T_3. This suggested that incorporation of 20 per cent DSSM in concentrate mixture of lactating cows hampered both milk and the FCM yield when compared with T_2. Treatment T_2 wherein 10 per cent DSSM was added, showed the best performance amongst the three treatments. Thus, the DSSM should not be fed more than 10 per cent to the milch animals.

Moreover, it is further observed that the composition of milk was slightly lower for the second group (10 per cent level) for some of the constituents analysed. However, the differences for all the constituents of the milk analysed from all the three groups are found to be nonsignificant.

(Received on Jan. 3, 1975).

INTRODUCTION

THE most urgent and challanging problem in the feeding of cattle is of the acute shortage of cattle feeds, (Kehar, 1968). Efforts have been made to study the usefulness of various by-products, unconventional feeds and industrial waste. Deoiled Sal Seed Meal (DSSM) is one of the by-products of fat industry available in large amount. After the extraction of oil from Sal fruit (*Shorea robusta* Gaerth F.) deoiled Sal seed meal is obtained. Verma and Panda (1973) have reviewed the availability, economics and use of this product for using it in a poultry feed.

An attempt has been made to study the effect of feeding the DSSM at different levels on the milk yield, the FCM yield and the composition of milk for 300 days lactation period.

METHODS

A completely randomized design was followed for the study with 18 lactating cows. An equal number of similar cows were allotted to the three groups as and

when they calved. Details of the experimental animals are given in Table 1.

TABLE—1

Details of experimental animals.

Treatment	*Sr. No.*	*Age in months*	*Lactation No.*	*Initial body weight in kg.*
T_1	1	89	3	446
	2	92	3	431
	3	81	3	392
	4	73	2	334
	5	78	4	344
	6	81	3	303
	Av.	82.3	3	374.8
T_2	7	70	2	342
	8	106	3	373
	9	51	2	408
	10	111	3	420
	11	50	1	415
	12	53	2	272
	Av.	73.5	2	371.7
T_3	13	70	2	363
	14	109	4	415
	15	74	3	365
	16	79	2	342
	17	106	4	342
	18	89	4	402
	Av.	87.8	3	371.5

Alongwith the control, 10 and 20 per cent DSSM was fed to replace maize in the conventional concentrate mixture. All the cows were fed as per NRC recommendations (1971) to meet the DCP requirements. The fodder requirement was met by feeding daily 5 kg of hybrid napier and mature pasture hay *ad lib.* The composition of concentrate mixtures used during the feeding trial is given in Table 2.

Weekly morning and evening milk samples were collected separately for each of the experimental cows and composite samples were prepared and analysed every week for fat test and similar samples were analysed at biweekly intervals for the other proximate constituents. The daily milk yield data recorded, were utilised for the FCM calculations.

Total nitrogen (C. Protein) was determined by the standard Kjeldahl procedure (AOAC, 1970) and the other constituents except the SNF were analysed as per the ISI (1962) and the SNF was calculated by subtracting fat from total solids. Statistical analysis was carried out as per Snedecor and Cochran (1967).

TABLE—2

Composition of concentrate mixtures (minimum-maximum) on per cent dry matter basis.

	Treatments		
Constituents	*T—1*	*T—2*	*T—3*
C. Protein	19.83-24.79	21.29-25.54	23.79-26.29
E. Ext.	2.19-4.52	2.27-3.60	1.58-3.97
C. Fibre	6.71-12.61	5.59-10.02	6.02-9.35
N.F.E.	57.49-61.88	58.07-60.17	56.36-59.12
Ash	6.10-7.54	5.95-6.97	5.58-8.80
Silica	0.67-0.84	0.75-1.08	0.64-1.39
P	0.62-0.91	0.70-0.88	0.65-0.97
Ca	0.54-0.98	0.58-0.96	0.68-0.93

RESULTS AND DISCUSSION

Effect on milk and FCM production:

Daily milk yields were recorded including the milk suckled by the calf throughout the experiment. Milk suckled by the calf was accounted by weighing the calf every week before and after suckling. The difference in weight was taken as milk suckeld. The total milk yields for 300 days lactation period are given in Table 3 alongwith the results of the analysis of covariance.

TABLE—3

Effect of feeding DSSM on milk production (kg) of Kankrej cows during 300 days lactation period.

	Treatments		
Cow. No.	*T1*	*T2*	*T3*
1	2027	2245	558
2	2257	2807	443
3	2222	2028	1497
4	1680	2691	1802
5	1648	2404	1846
6	1357	1113	1299
Av.	1865	2215	1241

Relevant results of the analysis of covariance for the characteristic milk yield for 300 days lactation period.

Source of variation	*d.f.*	*M.S.S.*	*'F'*
Treatment	2	1450930	5.54*
Error	14	261514	

Treatment	Milk yield for 300 days lactation mean adjusted.
T1	1855.02
T2	2219.34
T3	1246.21
S.E.	±208.59
C.D.	633.26

*Significant at 5% level.

From the results it is observed that the cows receiving 10 per cent DSSM (T_2) replacing 50 per cent maize, yielded highest milk yield and the cows receiving 20 per cent DSSM yielded the lowest. The reduction in milk yield of the cows under 20 per cent DSSM was significantly low compared to T_2 but was not significantly different when compared with control. The total FCM yields in each group for the 300 days lactation period are given in Table 4.

TABLE—4

Effect of feeding DSSM on FCM production (kg) of Kankrej cows during 300 days lactation period.

	Treatments		
Cow. No.	*T1*	*T2*	*T3*
1	2431	2613	650
2	2602	2919	481
3	2493	2448	1501
4	1692	2793	2191
5	1666	2585	1985
6	1652	1324	1553
Average	2089	2447	1393

Relevant results of the analysis of covariance for the characteristic FCM yield for 300 days lactation.

Source of variation	*d.f.*	*M.S.*	*'F'*
Treatment	2	1630350	5.17*
Error	14	315172	

Treatment	FCM yield for 300 days lactation mean adjusted.
T1	2077.99
T2	2451.79
T3	1398.75
S.E.	±229.26
C.D.	830.84

*Significant at 5% level.

It is observed that with respect to treatments the FCM yield also followed a trend similar to milk yield. The FCM yield of the cows receiving DSSM at 10 per cent level (T_2) increased to the extent of 20 per cent, whereas at the 20 per cent level of the DSSM (T_3) it affected the FCM yield adversely to the extent of 33 per cent as compared to the control group. However, differences in the FCM yields were found to be statistically significant between T_2 and T_3, but not between T_1 and T_3. Das and Mohanty (1970) also found the lower level of Sal seed meal in the ration of Hariana cows resulted in higher FCM production while Prasad (1971) has reported that even at 15 per cent level of DSSM in the ration of Murrah buffaloes, there is no effect on FCM production.

Effect on composition of milk:

Overall results of analysis of milk samples together with statistical analysis are summarized in Table 5.

TABLE—5

Overall effect of different treatments on milk constituents (%).

Constituents	*Treatments*			*'F' Value*	
	T—1	*T—2*	*T—3*		
Milk fat	5.11	5.06	5.14	0.004	N.S.
Total solids	14.51	14.19	14.45	0.013	N.S.
Solids-not-fat	9.40	9.13	9.31	0.26	N.S.
Crude protein	3.48	3.30	3.34	0.94	N.S.
Lactose	4.66	4.59	4.61	0.049	N.S.
Ash	0.75	0.75	0.73	0.0054	N.S.
Calcium	0.155	0.160	0.159	1.82	N.S.
Phosphorus	0.092	0.087	0.084	2.43	N.S.

N.S.—Non significant.

The data of overall average values in Table 5 for all the constituents under the three treatments reveal that values were slightly lower for some of the constituents of milk samples of second group. However, the differences for all the constituents of milk analysed were found to be non-significant. Das and Mohanty (1970) and Prasad (1971) have reported that Sal seed and DSSM feeding to Hariana cows and Murrah buffaloes did not affect fat, total solids and SNF as is also observed in the present study.

From the results obtained it can be concluded that DSSM feeding at 10 and 20 per cent levels in concentrate mixture did not affect the composition of milk. However, considering the milk and FCM yields DSSM can be used to the extent of 10 per cent when no other unconventional feed is used in the mixture.

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