The Journal of Animal and Plant Sciences, 22(3 Suppl.): 2012, Page: 205-206
ISSN: 1018-7081

EFFECT OF FEEDING DETOXIFIED CASTORSEED CAKE IN LACTATING BUFFALOES

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ABSTRACT

An on farm trial of 15 days preliminary feeding and 75 days experimental period was conducted in Palanpur taluka of Banaskantha District on sixteen Mehsani lactating buffaloes. The buffaloes were randomly assigned to two dietary treatments control (T1) and 10 % detoxified (Lime treated and extrusion cooked) castor cake based concentrate mixture (T2) and green and dry fodder. The milk yield of morning and evening milking of individual animal was recorded daily and was compiled for five periods of 15 days each. At the end of experimental period, a digestion trial of 7 day collection was undertaken. The average daily dry matter intake of experimental buffaloes in T1 and T2 groups during digestion trial was 3.05 ± 0.11and 3.39 ±0.16 Kg/100 Kg Body Weight were statistically similar. The average content of DCP (7.94 ±0.37 and 8.02 ± 0.24 %) and TDN (65.06±0.97 and 65.91± 1.42 %) were also statistically similar in T1 and T2 groups, respectively. The average fortnightly yield of whole milk in T1 and T2 groups was 135.01± 1.63 and 137.38 ± 0.74 Kg respectively and was statistically similar. The gross milk composition of T1 and T2 groups in terms of fat (8.36±0.21 and 8.55 ± 0.13%) and SNF (8.83 ± 0.17 and 10.17 ± 0.11%), respectively was statistically similar. The fortnightly and cumulative yield of FCM 171.70±0.5.16and 177.89±0.2.67; 1001.25±54.02 and 1047.59±88.72 kg/head respectively were statistically similar. The feed conversion efficiency in terms of DM, DCP and TDN intake (Kg/Kg milk, Kg/Kg FCM and Kg/Kg SCM) were statistically similar. The daily feed cost (Rs/head/day) was Rs.74.88±0.79 in control group which was significantly higher than the CCK based ration (Rs.68.89±3.05). The return as % of feed cost (170.68±3.03 in control and 194.93±7.91 in treatment group) was significantly higher in CCK group.

INTRODUCTION

For sustaining or increasing the amount of productivity in country is to make efficient utilization of the existing feed resources and to have newer non-conventional feed resource which could be utilized for livestock feeding. Castor is an important non edible oil seed crop grown especially in arid and semiarid region. Castor seed cake is available plenty and although a protein rich concentrate feed finding its use as manure and not as animal feed owing to its containing ricin a toxic principle and other allergens. The detoxified castor seed cake required for experiment was made available by National Institute of Animal Nutrition and Physiology, Bangalore involving 4 % Lime treatment and extrusion cooking. In a bid to test the feasibility of using a novel feed resource- detoxified castor cake in ruminant rations, the present investigation was planned.

The on farm trial on lactating buffaloes was conducted in Palanpur taluka using sixteen Mehsani buffaloes of uniform body weight, milk yield, with 2nd and 3rd lactation number and assigned to two dietary treatments namely T1 Control (Concentrate mixture + green fodder + dry fodder) and T2 Treated (Detoxified Castor Seed Cake based Concentrate mixture + green fodder + dry fodder) of eight animal each. The milk samples from morning and evening milking were collected for two successive days every fortnight for assessing the gross milk composition. Daily feed intake, daily milk yield was recorded. For the conversion of whole milk in to 6 % FCM, the equation derived by Rice et al (1970) and SCM was calculated by the method of Tyrell and Reid (1965). Feed conversion efficiency in terms of dry matter, crude protein, digestible crude protein and total digestible nutrients intake per kg of whole milk, FCM and SCM was calculated. The total feed cost of each lactating buffalo was calculated taking in to account the cost of feed consumed and their prevailing prices at the time of experimentation. The price (Rs./kg fat) paid by Gujarat Milk Marketing Federation was considered for working out the cost of milk produced and for working out the percent return over feed cost. The data were analyzed following standard procedure and means were compared by "t" test (Snedecor and Cochran (1980).

Average dry matter intake as kg/100kg body weight did not differ statically. Similarly Popovic (1967) observed no ill effect on feed utilization with inclusion of castor bean meal at 5, 10 or 20 % in concentrate mixture. However, Bris and Algee (1970) observed that incorporation of 10 % castor bean meal in cattle ration was not economically sound. DCP and TDN content of the ration in T1 ND T2 did not differ significantly. DCP intake was improved in group T2 fed castor seed cake however TDN intake was found similar. The average fortnightly yield of whole milk in two groups was statistically similar. The results of present study are supported by Popvic (1967) who also observed no ill

effect on milk yield in cattle. The average fortnightly gross milk composition of experimental buffaloes under T1 and T2 groups in terms of content of fat, SNF and TS was statistically similar. The respective fortnightly yield of milk constituents of experimental buffaloes in T1 and T2 groups viz of fat, SNF and TS was statistically similar. However, TS yield was significantly higher in T2 group on account of higher TS percent. The average fortnightly yield of FCM was statistically similar in T1 and T2 groups but fortnightly yield of SCM was significantly (<0.05) higher in T2 group. However cumulative yield of FCM and SCM was statistically similar. Thus inclusion of 10% detoxified castor seed cake did not have adverse effect on production and gross composition of milk of the lactating buffaloes. The results of the present study are supported by Popvic (1967) who observed no ill effect on yield and quality of milk in cattle.

The results of present study indicate that inclusion of 10 % detoxified castor seed cake did not have any adverse effect on feed conversion efficiency of lactating Mehsani buffaloes in terms of intake of DM, CP, DCP and TDN Kg/Kg whole milk, Kg/Kg FCM and Kg/Kg SCM, respectively. The total feed cost of experimental buffaloes in T1 and T2 groups were Rs.74.88 ± 0.79 and 68.89 ± 3.05 / head/day was statistically similar. Average cost of concentrate of experimental buffaloes in T1 and T2 groups were Rs.41.55 ± 0.07 and 32.17 ± 1.13 / head /day. The treatment group T2 differed significantly from T1.The results indicate that inclusion of 10 % CCK significantly reduced cost of concentrate mixture. The cumulative fat yield of experimental buffaloes in T1 and T2 groups was 56.40 ± 1.29 and 58.77 ± 2.04 Kg and was statistically similar. The average selling price of milk of experimental buffaloes in T1 and T2 groups was Rs.9588.43 ± 219.87 and 9991.11 ± 346.80/head/75 day respectively and differences were statistically higher in group T2. The total feed cost of experimental buffaloes in T1 and T2 groups was Rs.5615.72 ± 59.03 and Rs.5166.56 ± 228.90/head/75 day, respectively. The average return as percent of feed cost of experimental buffaloes in T1 and T2 groups was 170.68 ± 3.03 and 194.93 ± 7.91, respectively. The treatment group T2 differed significantly. The buffaloes fed 10 % detoxified cost or cake based concentrate mixture recorded 24.25 % higher return over feed cost than the control group and thus has economic advantage in the lactating buffaloes.

Table 1: Average

Particulars	Group T1	Group t2
Average Daily DM intake Kg/100Kg BW	3.05 ± 0.11	3.39 ± 0.16
DCP%	7.94±0.37	8.02±0.24
TDN %	65.06±0.97	65.91±1.42
Average Fortnightly Yield		
Whole milk(kg)	135.01±1.63	137.38±0.74
FCM(Kg)	171.70±5.16	177.89±2.67
SCM(Kg)	206.84±5.54	225.77±3.55
Fat%	8.36±0.21	8.55±0.13
SNF	8.83±0.17	10.17±0.11
Cumulative yield		
Whole milk(Kg)	675.08±40.27	686.90±46.13
FCM(Kg)	1001.25±54.02	1047.59±88.72
SCM(Kg)	1034.18±110.56	1128.87±112.14
Daily feed cost(rs/h/d)	74.88±0.79	68.89±3.05
Return as % of Feed cost	170.68±3.03	194.93±7.91
Feed Conversion efficiency DM		
Kg/Kg Milk Yield	1.70±0.06	1.86±0.08
Kg/Kg FCM Yield	1.03±0,04	1.11±0.05
Kg/Kg SCM Yield	1.11±0.04	1.14±0.07
DCP		
g/Kg Milk Yield	133.30±3.54	148.20±6.17
g/Kg FCM Yield	80.75±2.69	88.15±3.59
g/Kg SCM Yield	87.96±4.53	90.82±5.02
TDN		
Kg/Kg Milk Yield	1.10±0.05	1.22±0.06
Kg/Kg FCM Yield	0.67±0.04	0.73±0.04
Kg/Kg FCM Yield	0.73±0.04	0.75±0.05