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Effect of protein sources in the starter ration on the behavioural response of suckling buffalo calves

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ABSTRACT : The experiment was conducted on 18 buffalo calves of about 1-3 months of age to find effects of three different calf starters (differing on the source of protein) on the behavioural response and cost of rearing. The calves were divided into three groups (six calves in each group) randomly under three treatments *i.e.* T_1, T_2 and T_3. In T_1 group groundnut cake, T_2 group soyabean and in T_3 group mustard cake with fish meal (10 %) as protein source, respectively with green fodder and bhusa was *fed ad lib*. Average eating time spent during day time by the calves were 215.53 ± 8.703, 213.16 ± 9.841 and 182.03 ± 10.318 minutes and the corresponding figures for rumination and resting time spent during day time were 130.07 ± 5.397, 168.17 ± 6.742 and 152.0 ± 11.475 minutes and 280.57 ± 14.988, 274.77 ± 18.566 and 226.03 ± 18.540 minutes in T_1, T_2 and T_3 groups, respectively revealed that feeding behaviour was significantly influenced by the treatments. The eating time was significantly ($P<0.05$) low in T_3 as compared to T_1 and T_2. However, there was no significant difference between T_1 and T_2. The rumination time was significantly ($P<0.05$) higher in T_2 as compared to T_3. The rearing cost per kg body weight gain was Rs. 33.86, 26.91 and 32.56 in T_1, T_2 and T_3, respectively. The cost per kg body weight gain was less in T_2 followed by T_1 and T_3.

KEY WORDS : Behaviour, Calf starter, Feed conversion efficiency, Rearing cost

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INTRODUCTION

When livestock are introduced in a new environment, they show distinct changes in their behaviour relating to eating, rumination and resting. Un-adapted temperature livestock show short grazing and abnormally long resting period, mainly due to high ambient temperature and intense solar radiation in tropics (Fahimuddin, 1975). Knowledge on behaviour is of great importance for improving the management and production. Every species has specific have behavioural pattern of their own, yet several factors may have variation in the same. In fact, behaviour or rather changes in normal behaviour is an important means of adjusting to change in the environment to which animals are exposed.

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MATERIAL AND METHODS

An investigation was carried out in the department of Livestock Production and Management, Chaudhary Charan Singh Haryana Agricultural University, Hisar. Under the experiment, eighteen growing Murrah buffalo calves between 1-3 months of age were selected from the buffalo herd maintained by buffalo research centre.

Animals and protein sources in feed :

These calves were randomly divided into three treatment groups of six calves in each group, almost similar to their body weight and age. Under treatment T_1: calves were fed a calf starter containing groundnut cake as a source of protein and roughage once in a day, T_2: calves were fed a calf starter containing soybean meal as a source of protein and roughage once in a day, T_3: calves were fed a calf starter containing mustard cake and fish meal (10 %) as a source of protein and roughage once in a day. The calf starters were iso-proteinious and iso-caloric in nature containing 20 per cent CP and 72 per cent TDN. An equal and weighed amount of green fodder was fed to all the calves daily. Before the start of the experiment, all the calves were dewormed and other managemental practices were same. Calves were offered concentrate mixture individually once in a day as per NRC recommendations.

Experimental design :

The experiment was analyzed by completely Randomized Block Design. The difference among treatment means were tested for significance by performing Duncan's multiple range test.

RESULTS AND DISCUSSION

The results of the present study as well as relevant discussions have been presented under following sub heads:

Times spent on feeding :

Average time spent in eating, rumination and resting by calves during twenty four have been given in Table 1. Average eating spent during 24 hours by the calves was 373.70±16.56, 352.26±14.09 and 333.16±16.66 minutes and the corresponding figures for rumination and resting time spent during 24 hours were 384.13±10.884, 434.06±17.047 and 412.60±26.735 minutes and 691.03±24.212, 745.16±26.716 and 649.26±35.071 minutes in T_1, T_2 and T_3 groups, respectively revealed that eating and rumination time was not significantly influenced due to feeding different source of protein but resting time was significantly ($P<0.05$) higher in T_2 as compared to T_3. However, no significant difference was observed between T_1 and T_3 and T_1 and T_2.

Average eating time spent during day time by the calves were 215.53 ± 8.703, 213.16 ± 9.841 and 182.03 ± 10.318 minutes and the corresponding figures for rumination and resting time spent during day time were 130.07 ± 5.397, 168.17 ± 6.742 and 152.0 ± 11.475 minutes and 280.57 ± 14.988, 274.77 ± 18.566 and 226.03 ± 18.540 minutes in T_1, T_2 and T_3 groups, respectively revealed that feeding behaviour was significantly ($P<0.05$) influenced by the treatments. The eating time was significantly ($P<0.05$) low in T_3 as compared to T_1 and T_2. However, there was no significant difference between T_1 and T_2. The rumination time was significantly ($p<0.05$) higher in T_2 as compared to T_3. There was no significant difference in time spent in rumination between T_1 and T_3 and T_2 and T_3. The resting time during day time was significantly ($p<0.05$) low in T_3 as compared to T_1. However, no significant difference was observed in resting time between T_1 and T_2 and T_2 and T_3.

Average eating time spent during night time by the calves were 158.16 ± 11.352, 139.10 ± 9.656 and 151.13 ± 12.136 minutes and the corresponding figures for rumination and resting time spent during night time were

Table 1 : Average time spent (minutes) in feeding, resting and rumination by the calves under different treatments

Treatments		Time spent in (min.) Eating	Rumination	Resting
	Total time	373.70±16.56	384.13±10.884	691.03^{ab}± 24.212
T_1	Day time	215.53^{a}±8.703	130.07^{b}±5.397	280.57^{a}±14.988
	Night time	158.16±11.352	254.06±10.675	410.46^{b}±17.690
	Total time	352.26±14.09	434.06±17.047	745.16^{a}±26.716
T_2	Day time	213.16^{a}±9.841	168.17^{a}±6.742	274.77^{ab}±18.566
	Night time	139.10±9.656	265.90±13.822	470.40^{a}±23.031
	Total time	333.70±16.66	412.60±26.735	649.26^{b}±35.071
T_3	Day time	182.03^{b}±10.318	152.0^{ab}±11.475	226.03^{b}±18.540
	Night time	151.13±12.136	260.60±17.911	423.23^{ab}±23.031

Means with different superscripts differ significantly ($P<0.05$)

254.06 ± 10.675, 265.90 ± 13.822 and 260.60 ± 17.911 minutes and 410.46 ± 17.690, 470.40 ± 17.528 and 423.23 ± 23.031 minutes in T_1, T_2 and T_3 groups, respectively revealed that eating and rumination time was not significantly influenced due to feeding different sources of protein. The resting time was significantly ($P<0.05$) higher in T_2 as compared to T_1. However, no significant difference was observed in resting time between T_1 and T_3 and T_2 and T_3.

The studies of several workers (Gill and Castle, 1983 and Castle *et al.*, 1979) reported that eating time per day was not significantly higher due to increased feeding frequency. However, total eating time per day was slightly more with increased frequency of feeding. The eating time increased slightly with the type of protein present in the feed.

Conclusion :

The total time spent in 24 hours by the calves for eating, rumination and resting was 373.70 ± 16.56, 352.26 ± 14.09 and 333.16 ± 16.66 minutes and 384.13 ± 10.884, 434.06 ± 17.047 and 412.60 ± 26.735 minutes and 691.03 ± 24.212, 745.16 ± 26.716 and 649.26 ± 35.071 minutes in T_1, T_2 and T_3 groups, respectively. The analysis of variance revealed that total resting time was significantly ($P<0.05$) low in T_3 as compared to T_1 and T_2. Eating time was significantly low during day time in T_3 as compared to T_1 and T_2. The time spent on resting during night was significantly higher (470.40 minutes) in T_2 as compared to T_1.

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