METABOLIC PARAMETERS OF THREE LEVELS OF CONCENTRATE SUPPLEMENT FOR BEEF CATTLE IN PASTURE

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INTRODUCTION

Most beef cattle produced in Brazil come from pasture systems, during the dry season, is necessary supplementation to complement the shortcomings of forage. The amount of supplement provided influences metabolic aspects, and can influence the animal performance. The aim of this study was to evaluate the effects of three levels of supplementation (1.0, 1.5 and 2.0% of body weight-BW), for beef cattle during the dry season, grazing Marandu grass on the ruminal parameters.

METHODS

The experimental area was 18 paddocks of 1.3, 1.0 and 0.7 hectares. Six Nellore cattle with an average BW 300 kg fitted with ruminal cannula were used. The experimental design was a double Latin square 3 x 3,with three treatments and three experimental periods. The samplings were performed for the evaluation of the pH and ammonia concentration on ruminal fluid at 3, 6, 12, 18 and 24 hours after supplementation.

RESULTS

During the experimental period the average leaf mass was 2446.7 ± 128.95 kg ha-1, that resulted in forage allowance of 3.76 ± 0.26% BW with 8.66 ± 0.7% CP, 74.33 ± 0.88% of NDF. It was noted minimum pH value (6.08), six hours after the supplement supply of 2% BW, and 6.69 in the 1% BW. When the supplementation was 1.5% BW, the minimum pH value was observed after 12 hours after supplementation. The concentrations of ruminal ammonia-N (mg / dL) in the present study was higher three hours after the animals supplementation without significant effect of concentrate levels (P> 0.05). Ammonia level is related to the high rumen degradable protein in the concentrate, associated to urea that is rapidly hydrolyzed and converted into ammonia (RUSSELL, 2002). Although a decrease in ruminal pH was observed when increasing the supply of concentrate (P <0.01) from zero until to 18 hours, critical levels of this parameter were not observed in animals receiving concentrated supplementation in pastures up to 2% concentrate of body weight.

TABLE 1: Ruminal pH values after supplementation with different levels of concentrate for finishing beef cattle in the dry season grazing of Marandu grass.

Time	Body Weight (%)			Effect	P Value	CV (%)
	1.0	1.5	2.0			
0	7.01	7.00	6.82	L	0.0079	1.22
3	6.84	6.64	6.40	L	0.0006	1.73
6	6.69	6.45	6.08	L	<0.0001	1.31
12	6.71	6.42	6.17	L	0.0002	1.79
18	6.84	6.67	6.59	L	0.0149	1.88
24	7.01	6.85	6.86	NS	0.29568	3.21

TABLE 2: Ammonia nitrogen values after supplementation with different levels of concentrate for finishing beef cattle in the dry season grazing of Marandu grass.

Time	Body Weight (%)			Effect	P Value	CV (%)
	1.0	1.5	2.0			
0	14.03	12.26	15.10	Q	0.0078	8.51
3	36.92	32.61	37.44	NS	0.3007	14.96
6	20.65	16.63	12.63	L	0.0023	16.46
12	9.92	8.43	5.12	L	0.0008	16.93
18	11.65	11.80	9.80	L	0.0241	9.63
24	9.62	12.22	13.83	L	0.0047	14.04

CONCLUSIONS

Supplement level affected the rumen parameters, however, were not observed damage to ruminal metabolism and can be recommended for beef cattle grazing tropical grass during dry season.

REFERENCES

RUSSELL, J. B. 2002. Rumen Microbiology and its role in Ruminant Nutrition. Dept of Microbiology, 157 Wing Hall, Cornell U., Ithaca, NY 14853