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H. J. Fernandes

State University of Mato Grosso do Sul, Brazil

J. Cavali

Federal University of Viçosa, Brazil

A. G. Silva

Federal University of Viçosa, Brazil

M. F. Paulino

Federal University of Viçosa, Brazil

A. A. Rocha

Federal University of Viçosa, Brazil

See next page for additional authors

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Presenter Information

H. J. Fernandes, J. Cavali, A. G. Silva, M. F. Paulino, A. A. Rocha, M. O. Porto, and L. M. Paiva

Nutritional parameters of grazing nursing calves 1 : rumen microbial production

H .J .Fernandes^{1,2} ; J .Cavali² ; A .G .Silva² ; M .F .Paulino² ; A .A .Rocha² ; M .O .Porto² and L .M .Paiva^{1,2}

¹ State University of Mato Grosso do Sul/FUNDECT Aquidauana-CERA road ,Km 12 Aquidauana ,MS ,79200-000 ,Brazil ,
E-mail : ike .fernandes@hotmail .com ; ² Animal Science Department ,Federal University of Viçosa ,MG ,36570-000 .

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Introduction Brazil has the largest commercial cattle herd in the world .Approximately 95% of the meat production in the country came from animals on pasture .In spite of this little has been studied about the effects of the interaction between pasture conditions ,animal life phase and fed supplement .Protein supplementation has been widely used because it potential to improve the pasture digestibility .Finally ,although the milking phase is responsible for up to 50% of the final weight of beef cattle ,it has been little studied .The objective of this study was to evaluate the response of ruminal microbial production in nursing calves receiving different protein levels supplement under Brazilian autumn conditions .

Materials and methods This work was carried out in the region of Viçosa ,MG ,Brazil .A total of 52 Nellore beef calves with initial age of 100 days and initial weight of 129 kg were used in the study .The animals with their mothers were separated into four groups that received different concentrate supplement in a " Creep-Feeding " system .The animals were kept in pastures formed with *Brachiaria decumbens* Stapf .At every seven days ,the lots were rotated among the pastures .The evaluated supplements were : *ad libitum* mineral salt (control treatment) ,and rations with 8 and 32% of crude protein (CP) formulated with corn and soybean meal ,daily fed at 1.2 kg/animal .The pastures were sampled every 28 days (McMeniman ,1997) .On the 65th day of the experiment ,spot urine samples were collected to determine the daily purine derivatives excretion as suggested by Valadares et al .(1999) .The significance level used was 5% .

Results and discussion The pasture conditions (Figure 1) showed that were mainly qualitative variation from March to May ,with changes in the proportions of components of the pasture (green or dry leaves and stems) ,but without change in the availability of total dry matter .On the other hand ,in June ,parallel to the reduction in DM availability ,there was also a reduction in the proportion of green materials ,especially leaves ,with prevalence of dry materials .No differences were found for daily excretion of Uric Acid (Table 1) ,whereas the excretion of Alantoine and consequently total Purine derivatives ,was affected by the type of concentrate supplement fed to the animals .Data showed a larger production of microbial protein by animals supplemented with rations with low protein level .As the protein level in the supplement increases ,or when the animals are supplemented with mineral salt only ,the production of microbial protein is reduced .This can be explained by the largest level of starch in the rations with low protein level .The starch may have stimulated a larger ruminal microbial growth in earlier ages .

Table 1 Urine volume (UV) ,Uric Acid (UA) ,Alantoine (AL) and total Purine (TP) excretions ,and microbial Nitrogen (Nmic) and Crude Protein (CPmic) productions of supplemented nursing calves .

	Protein level in Supplements ¹				CV (%)
	Salt	8% CP	22% CP	32% CP	
UV ²	2.94 ^b	4.86 ^a	3.32 ^{ab}	2.82 ^b	58.7
UA ³	2.17 ^a	3.74 ^a	2.36 ^a	2.48 ^a	71.6
AL ³	35.77 ^b	52.61 ^a	44.44 ^{ab}	39.65 ^b	34.8
TP ³	37.94 ^b	56.35 ^a	46.86 ^{ab}	42.14 ^b	35.2
Nmic ⁴	16.39 ^b	31.46 ^a	23.02 ^{ab}	19.06 ^b	57.9
CPmic ⁴	102.42 ^b	196.60 ^a	143.87 ^{ab}	119.16 ^b	57.9

Means in the same row followed by the same letter are not significant different by the *t* test ($p < 0.05$) ; ² l/day ; ³ mmol/day ; ⁴ g/day .

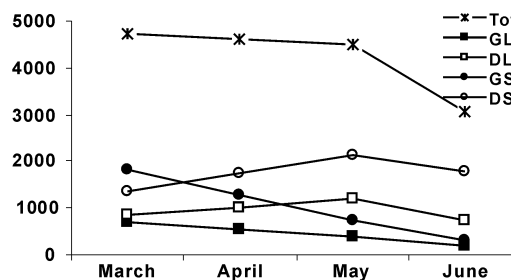


Figure 1 Variations (kg DM/ha) in total availability (Tot) and component (green leaves-GL ,dry leaves-DL ,green stems-GS , and dry stems-DS) of pasture during the experimental period .

Conclusions The use of concentrated supplements with until 22% of crude protein was capable to increase the ruminal microbial production in grazing nursing calves under autumn conditions in Brazil .It is recommended further researches to evaluate the effects of protein supplementation of grazing nursing calves on their future productive capacity .

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