

EFFECT OF BENTONITE ON THE PRODUCTIVITY OF DAIRY COWS FED PASTURE DIET

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Sodium bentonite** (NaB) is commonly used as a feed additive with grain diets to improve rumen fermentation and nitrogen retention (Colling and Britton 1975) and has been observed to decrease bloat in pasture fed cows (Carruthers 1985). This experiment examined whether NaB affected the milk production of cows fed solely on pasture. Twelve sets of identical twin cows in the fourth month of lactation were individually fed in stalls on pasture to appetite (DM % 18.7; DMD % 69; N % 1.7; Soluble Carbohydrate % 13.1; Ca % 0.49; Mg % 0.17). One twin of each set received 600 g of NaB per day mixed with its feed. The results are presented in the table.

The effect of sodium bentonite on pasture intake, rumen fluid and plasma parameters, and yields of milk and milk constituents.

	CONTROL	BENTONITE	L.S.D. P=0.05
Number of cows	12	12	-
Pasture intake kg/cow/day	11.3a	10.7b	0.5
Milk yield L/cow/day	12.1	11.6	0.7
Milk fat yield g/cow/day	504	493	36
Milk protein yield g/cow/day	396a	364b	25
Milk fat %	4.29	4.37	0.20
Milk protein %	3.32a	3.20b	0.10
Plasma calcium mg/100 ml	9.63	9.47	0.52
Plasma magnesium mg/100 ml	1.75	1.68	0.19
Rumen fluid pH	6.48	6.48	0.15
Rumen fluid NH ₃ -N mg/100 ml	10.62	9.56	1.52
Rumen fluid Total VFA's mM	106.6	105.2	7.4
VFA Molar %			
Acetic	68.07	68.28	0.87
Propionic	17.81	17.20	0.86
Isobutyric	0.73	0.93	0.23
N Butyric	12.08	12.30	1.02
Isovaleric	0.58	0.60	0.08
N Valeric	0.69	0.63	0.07

Means within a row followed by different letters are significantly different (P=0.05).

In this experiment, NaB had no beneficial effects on the production of dairy cows fed a pasture diet.

NaB significantly decreased pasture intake and as a consequence, milk protein % and protein yield were depressed. NaB had no effect on plasma calcium and magnesium concentrations.

No bloat occurred in this experiment. Rumen pH and rumen fluid concentrations of ammonia and volatile fatty acids were not affected by bentonite.

CARRUTHERS, V.R. (1985). *N.Z. J. Ag. Res.* 28 : 221.

COLLING, D.P. and BRITTON, R.A. (1975). *J. Anim. Sci.* 41 : 395 - 396.

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** Sodium Bentonite (Cudgen R.Z. Pty. Ltd., Brisbane)