

RESPONSES OF GRAZING DAIRY COWS FED CRACKED BARLEY GRAIN

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Cereal grains are used frequently either as the sole supplement or major proportion of the concentrate for dairy cows. A review of studies on cows with unrestricted access to good quality pasture reported milk responses of 0.3-0.4 kg milk per kg concentrate (Meijs and Hoekstra 1984). The present experiment was conducted to gain an understanding of some of the mechanisms underlying the milk response of grazing dairy cows to feeding cracked barley grain.

Twenty-one Holstein-Friesian cows were allocated to 3 groups of 7 cows matched on the basis of milk yield, age and stage of lactation, in a 3 x 3 Latin square design. Cows were strip-grazed on a perennial ryegrass/white clover pasture, with 64.2 % digestible organic matter in the dry matter (DOMD) and 137 g crude protein (CP)/kg dry matter (DM), during September-November 1990. They were supplemented with cracked barley grain, containing 89 % DOMD and 104 g CP/kg DM, twice daily during milking at 0, 4 or 8 kg/day (as fed). Blood was collected from the coccygeal artery or vein of each cow 2-3 h after feeding grain, on the last day of each experimental period (21 days).

Table 1. Effect of cracked barley grain supplementation on milk yield and blood characteristicsTreatment means followed by the same letter are not significantly different at $P = 0.05$

	Grain intake (kg DM/cow.day)			s.e.m.
	0	3.6	6.9	
4% fat corrected milk yield (kg/day)	14.5a	15.3b	15.6b	0.21
Kg milk/ kg grain DM	—	0.22	0.16	
Plasma glucose (mg%)	65.0a	68.4ab	70.9b	1.50
Plasma 3-hydroxybutyrate (mmol)	1.7a	1.5b	1.4b	0.06

Cows fed barley grain produced significantly more milk than unsupplemented cows, although responses were smaller than those reported by Meijs and Hoekstra (1984). This may have been due to the increase in plasma glucose in the supplemented cows, which would have stimulated insulin secretion, thereby partitioning nutrients away from milk synthesis and toward synthesis of body tissue (Bines and Hart 1982). This suggestion is supported by the reduction in plasma 3-hydroxybutyrate concentrations with use of the supplement.

BINES, J. A. and HART, I. C. (1982). *J. Dairy Sci.* 65: 1375-89.

MEIJS, J. C. A. and HOEKSTRA, J. A. (1984). *Grass Forage Sci.* 39: 59-66.