

THE VALUE OF BY-PASS PROTEIN TO EARLY-WEANED CALVES

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Slow growth of young dairy stock is a major limitation to bringing replacement heifers into milk production at two years of age. This experiment investigated the effects of feeding small quantities of proteins on the feed intake and growth rate of young weaned calves.

Thirty dairy calves (20 male, 10 female) were randomly allocated to one of five diets at 28 days of age. All calves were fed a basal diet consisting of 80% sorghum grain, 20% lucerne chaff, containing 131 g CP / kg DM. The calves were fed no supplement (C), 84 g casein (P), 84 g formaldehyde-treated casein (FP) or 2 l milk (M) daily and basal diet ad libitum. Calves fed the fifth diet (MRC) received 2 l milk but the quantity of basal diet was restricted to a paired calf fed the basal diet alone (diet C). The milk was bucket-fed once daily. Feed intake was recorded daily and animals were weighed weekly until 16 weeks of age.

Morrill et al. (1981) has found that early weaned calves may be stimulated to eat dry food by placing a handful of the food in their milk buckets at the end of each feeding. Two blocks of male and one of female calves were treated in this way from 7 - 28 days of age.

Age (week)	C	P	FP	M	MRC	LSD
<u>Total feed intake (g /day)</u>						
5 - 8	1703	1658	1724	1796	1530	P<0.05 419
9 - 12	2949	2702	3008	2941	2511	529
13 - 16	4028	3844	4169	4425	3671	657
mean	2893	2735	2967	3054	2570	485
<u>Liveweight gain (kg /day)</u>						
5 - 8	0.515	0.557	0.712	0.822	0.650	0.130
9 - 12	0.719	0.786	0.896	0.800	0.880	0.090
13 - 16	0.926	0.846	0.968	1.154	0.967	0.192
mean	0.720	0.730	0.859	0.925	0.832	0.146

The feed intake and liveweight gains of calves fed small quantities of supplementary proteins are shown in the table. The liveweight gains were adjusted by covariance for initial weight. There were no significant effects of the protein supplements on total feed intake in the period of the trial. Supplementing calves with small quantities of milk as a source of by-pass protein did not significantly increase feed intake, but did significantly increase liveweight gain. Supplementation of the diet with casein had no effect on growth but formaldehyde treatment of the casein resulted in superior weight gains. Calves fed milk and limited basal diet had lower intakes than those fed the basal diet alone but still grew more rapidly in weeks 5 to 8.

Adding small quantities of the basal diet to the milk bucket at the end of feeding from 7-28 days of age did not stimulate intake.

MORRILL, J.L., DAYTON, A.D., and BEHNKE, K.C. (1981). *J. Dairy Sci.* 64: 2216.