

Hydrated Lime In Milk Replacers

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The results of this feeding trial substantiate the indications from previous work (1) that hydrated lime is not effective in the presence of soybean products. Rather than being effective in the presence of these products, hydrated lime may actually cause a lower rate of growth. In the milk replacer formulas where there are no such products used, the addition of 5 percent hydrated lime produced results which compared favorably with whole milk. The addition of only 2½ percent hydrated lime did not give as satisfactory results as did the 5 percent level.

Work previously done at the North Dakota Agricultural Experiment Station (1) with the use of hydrated lime in milk replacement formulas for dairy calves indicates an advantage in adding hydrated lime to such formulas. This work

also raised the question as to the effectiveness of hydrated lime in the presence of soybean products. This report is a continuation of the work reported previously on the use of hydrated lime in milk replacements. (1).

The formulas used in this feeding trial were based on a commercial milk replacer which was purchased on the local market and is referred to here as formula 66. The same formula was used but with the addition of 5 percent hydrated lime, this formula is referred to as formula 67. Formulas 68 and 69 were non-commercial formulas using larger amounts of dried skim milk and omitting the soybean products and adding 5 percent and 2½ percent hydrated lime, respectively. These formulas are presented in table I.

The calves were all fed from open pails and kept in individual pens.

TABLE I.—Experimental Formulas.

Ingredient	66	67	68	69
Dried skim milk	19.25	18.28	60.0	62.5
Dried buttermilk	19.25	18.28	15.0	15.0
Soya-flour-why solubles	40.00	38.00	0	0
Oat flour	5.00	4.75	5.0	5.0
Dextrose	7.00	6.65	7.0	7.0
Dried brewers yeast	5.00	4.75	5.0	5.0
Vitamin A and D supplement .....	.50	.47	.5	.5
Dicalcium phosphate	2.50	2.38	1.5	1.5
Mico phos50	.47	0	0
Aurofac D	1.00	.95	1.0	1.0
Hydrated lime	0	5.00	5.0	2.5

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TABLE II.—Average Daily Gains in Body Weight.

Formula	To 4 weeks of age (lbs.)	To 8 weeks of age (lbs.)	To 12 weeks of age (lbs.)
66 .....	.82	.95	1.14
67 .....	.38	.84	1.04
68 .....	.82	1.07	1.25
69 .....	.66	.88	.99
Whole milk .....	.91	1.14	1.35

TABLE III.—Adjusted Weight Gains.

Formula	Birth weight	Adjusted weights		
		4 weeks of age	8 weeks of age	12 weeks of age
66	82.3	104.7	134.5	176.8
67	88.6	91.7**	126.3**	163.6**
68	79.2	105.0	142.8	188.3
69	75.3	100.8	133.6	169.9*
Whole milk	83.2	107.3	144.9	193.8

**Significant at the 1 percent level.

* Significant at the 5 percent level.

Body weights and chest measurements were taken weekly by the same person. The stables were artificially lighted and ventilated. The calf starter used and feeding schedules have been published previously. (2).

The average daily gains in body weight are reported in table II. These are the average of the actual gains made by the calves. There were six calves that received each of the formulas.

The weight gains of the calves at 4, 8 and 12 weeks of age were statistically adjusted to allow for the variations in birth weight of the individual calves. The average birth weights and these adjusted weights are presented in table III. These adjusted weights were tested statistically to determine if the differences were significant. The results of this analysis indicate that formula 67 produced growth results significantly lower than the other groups when compared with the calves receiving whole milk. Formula 69 produced slightly significant lower gains for the entire 12-week period. These lower gains from formula 69

were made in the period of 8 to 12 weeks of age.

Summary

The addition of hydrated lime to the formula of a commercial milk replacer containing soybean products did not produce growth rates which compared favorably with the milk replacer without hydrated lime, nor with calves fed whole milk. Hydrated lime used at a level of 5 percent in milk replacer formulas which did not contain soybean products produced growth rates which compared favorably with whole milk. The hydrated lime added at a level of 2½ percent produced less favorable growth rates than at the 5 percent level.

References

1. Williams, J. B. and Jensen, C., 1955, N.D. Exp. Sta. Bimonthly Bulletin, Vol. XVII, No. 5, May-June 1955, pp. 167-170.
2. Williams, J. B. and Jensen, C., 1955, N.D. Exp. Sta. Bimonthly Bulletin, Vol. XVII, No. 3, Jan.-Feb., 1955, pp. 91-94.

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