

The Performance of Milk Products' Milk Replacers

Milk Products LLC. is a leading milk replacer manufacturer in the U.S. In order to achieve that reputation, consistent quality and performance are expected by our customers. Several important factors have influenced the acceptance of Milk Products' Milk Replacers by the dairy industry:

1. Up-to-date scientific formulation to meet the nutrient requirements of newborn animals for healthy and rapid growth.
2. Continuous product testing and R & D program.
3. Modern and hygienic manufacturing facility incorporating state-of-the-art instantizing process.
4. The use of high quality ingredients.
5. Continuous quality control monitoring system and laboratory testing of ingredients and finished products.

All of the above inputs must be operating to perfection to produce milk replacers that will exceed the customer's needs and expectations. Continuous testing and research is used to not only develop new products and methods of feeding, but also to improve present products.

Experimental Procedure

In order to obtain a large database for comparing the performance of various milk replacers, all calf trials included a control treatment using whole milk and CALF-MANNA[®] Concentrated Ration. CALF-MANNA[®] Concentrated Ration was used from day one until consumption of one pound/head/day for three consecutive days. The calves were then switched to MANNA-MATE[®] Calf Starter/Grower containing CALF-MANNA Concentrated Ration Feed. Each treatment consisted of a minimum of 15 calves of equal sex, initial body weight and blood level of gamma globulin. Performance, body measurements, incidence of scours and blood chemistry profile data were recorded daily. The calves were weaned at 5 weeks of age and weighed weekly up to 10 weeks.

Results and Discussion

Growth Rate Data

Table 1 represents the average total body weight gains at week 1, 5, 6, and 10.

Table 1

Average Body Weight Gains in lbs at Weeks:

Product	1	5	6	10
Whole Milk	4.1	36.0	48.4	106.5



All Milk				
Milk Replacer	2.6	31.6	44.7	102.8
22-10 SPC				
Milk Replacer	2.6	27.3	41.4	95.0
22-15 SPC				
Milk Replacer	3.3	30.2	42.3	95.0

Table 2 represents the range (lowest and highest) in body weight gains at weeks 1, 5, 6, and 10 found in all trials.

Table 2
Range of Weight Gains in lbs. at Weeks:

Product	<u>1</u>	<u>5</u>	<u>6</u>	<u>10</u>
Whole Milk	1.0-8.1	28.7-45.0	37.6-61.4	94.6-119.3
All Milk				
Milk Replacer	2.1-3.6	26.9-40.0	41.1-53.0	99.9-111.0
22-10 SPC				
Milk Replacer	2.1-3.6	19.4-34.0	26.0-47.0	83.9-104.0
22-15 SPC				
Milk Replacer	1.5-6.0	23.1-35.0	33.8-48.0	89.1-105.0

These results show the performance of dairy calves on an All Milk milk replacer during four years of testing was not significantly different from calves on whole milk. Furthermore, Figure 2 shows calves on an All Milk milk replacer were more consistent in body weight gain than on whole milk.

Although calves on the 22-10 soy protein concentrate-based milk replacer and 22-15 SPC milk replacer had slightly lower rates of gain compared to whole milk, their performance was respectable with significant savings. Also it should be noted that the performance of calves on 22-10 SPC milk replacer and 22-15 SPC milk replacer were more consistent in body weight gains than calves on whole milk (Figure 2).

There is a definite and consistent advantage in body weight gain at weeks 1, 5 and 6 for calves fed 22-15 SPC milk replacer vs. 22-10 SPC milk replacer. The higher energy level in the 22-15 milk replacer resulted in additional body weight gains of 0.7 lb and 2.9 lbs. at week 1 and 5 respectively (Table 1). The benefit from higher energy level could be greater for calves raised in a colder environment. The advantage of the 22-15 SPC milk replacer disappears by week 10.

Feed Efficiency Data

A summary of feed efficiency data is shown on Table 3.



Table 3

<u>Product</u>	<u>Feed/Gain*</u> <u>Week 6</u>	<u>Feed/Gain*</u> <u>Week 10</u>
Whole Milk	1.70	2.18
All Milk Milk Replacer	2.08	2.37
22-10 SPC Milk Replacer	2.11	2.35
22-15 SPC Milk Replacer	2.12	2.53

*These figures include milk or milk replacer solids and starter feed consumption. The consumption of free choice hay which was offered to all calves at week 2 is not included.

Scours and Mortality Data

Scours and mortality are critical factors in evaluating the quality of milk replacers. Weaning the greatest number of healthy calves is the real test of any milk replacer.

At the Carnation Research Farm accurate records were kept on mortality, incidence of scours, pneumonia, and other diseases.

Table 4 shows a summary of mortality and incidence of scours for calves on trials during 1982 through 1985.

Table 4

<u>Product</u>	<u>No. of Calves</u>	<u>Scours Days¹</u>	<u>%Mortality²</u>
Whole Milk	286	4.1	1.0
All Milk Milk Replacer	238	3.0	0.8
22-10 SPC Milk Replacer	337	3.4	0.3
22-15 SPC Milk Replacer	143	3.65	0.0

1. Average cumulative days calves were treated for scours over 10 week period.
2. Includes death loss due to congenital defects, accidents and disease.



These results clearly demonstrate that under the same housing and management conditions calves raised on All Milk, 22-10 SPC, and 22-15 SPC milk replacers had lower mortality rates and scouring than calves on whole milk. When considering the time frame, seasonal variations and the use of two different housing facilities (floor pens and crates), these results are outstanding.

Conclusions

A performance summary of All Milk, 22-10 SPC and 22-15 SPC milk replacers covering four years of testing on more than 1000 calves indicated the following:

1. All milk replacers had lower mortality rates (less than 1%) than whole milk.
2. Less calf day scours were recorded on All Milk, 22-10 SPC and 22-15 SPC milk replacers than on whole milk.
3. The performance of Milk Products' milk replacers in terms of rate of gain and feed efficiency showed greater consistency (less variability) than whole milk.

The results representing averages from a large calf population over a period of four years, clearly demonstrate the quality and performance of All Milk, 22-10 SPC and 22-15 SPC milk replacers.