

PROVIDA® TOTAL CALF Improves Calf Performance and Health of High Risk Holstein Calves Fed a Component-Based Milk Replacer



Objectives

The objectives of this study were to determine the health and growth performance of high-risk Holstein bull calves supplemented with PROVIDA® TOTAL CALF in a component-based milk powder.

Study design

Thirty Holstein calves were acquired from a local commercial dairy within 24 hours of birth. Calves were blocked by date of calving and initial total serum protein. Within blocks calves were randomly assigned to 1 of 2 treatments. Treatments included a Negative Control; a 3 component-based milk powder formulated for 22%CP and 20% fat; and PROVIDA Total Calf; fed the same 3 component-based milk powder as the Negative Control, but supplemented with 9 grams per calf per day of PROVIDA Total Calf (MB Nutritional Sciences, Lubbock, TX). The PROVIDA Total Calf daily feeding was divided equally between the 2 daily feedings.

PROVIDA Total Calf is a proprietary blend of D,L-methionine, L-lysine, yeast extracts, dried *Enterococcus faecium* and *Saccharomyces cerevisiae* fermentation products, micro-minerals, fat-soluble vitamins and B-vitamins.

All calves were managed identically. Calves were offered 1.55 pounds per day of the 22% CP and 20% fat, all milk protein powder twice daily at 0700 and 1600 and fed at 12% DM. The 3 components used in the formulation of the milk powder were skim milk, whey permeate, and protein encapsulated fat (Milk Specialties, Eden Prairie, MN). Calves had ad libitum access to a 20% CP texturized calf starter and water. Calves were housed individually in plastic hutches with an attached pen with sand bedding. Calves were step-down weaned beginning at 49 days of age by removing the afternoon milk feeding and completely weaned at 56 days of age. Starter intake was measured daily and body weights, length, height, and heart girth were recorded at enrollment, 28 days and 56 days of age.

Results

There were no differences in the characteristics of the calves at enrollment related to initial body weight, total serum protein, or the proportion of calves that were classified as failure of passive transfer of maternal antibodies. The calves supplemented with the PROVIDA Total Calf had reduced incidences of scours as evident by the decreased fecal scores (Figure 1) as well as the reduced quantity of oral electrolytes offered (Table 1). The calves supplemented with the PROVIDA Total Calf also refused less milk powder during the study (Table 1). Lastly, the calves supplemented with the PROVIDA Total Calf had improved weaning weights by 156% corresponding with numerical increases in calf height, heart girth, and a tendency for an increase in calf length (Table 1).

Table 1. Effects of PROVIDA® Total Calf on the Performance and Health of High-Risk Dairy Calves fed a 3 Component-Based Milk Formula.

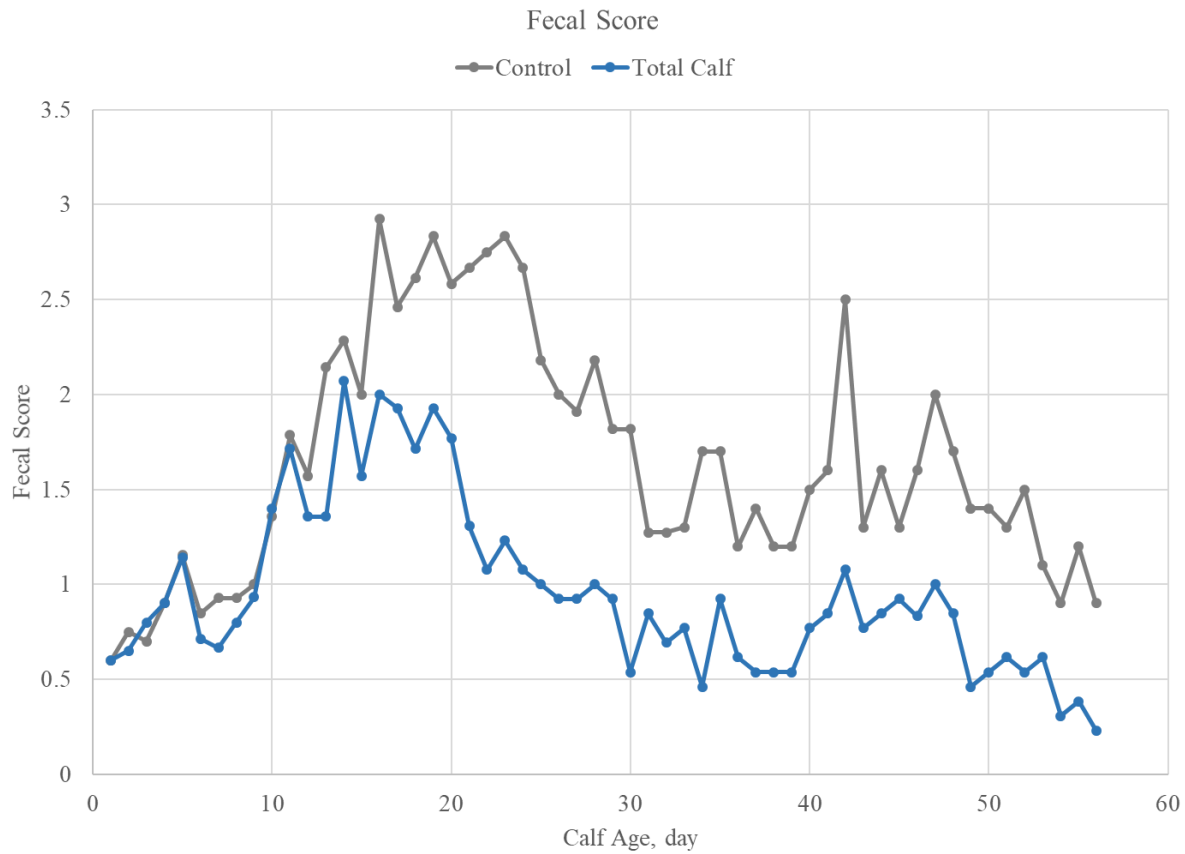
Variable	Control	PROVIDA TOTAL CALF	SEM	Treatment¹ P=
Calves enrolled, n	15	15
Calf mortality, n	4	2
Total serum protein, mg/dL	5.46	5.37	0.211	...
Failure of passive transfer, % ²	46.7	53.3
Initial body weight, lbs	81.8	81.5	1.81	0.869
Weaned body weight, lbs	109.9	125.4	4.23	0.028
Voluntary milk refusal, lbs DM	5.98	1.85	0.64	0.0001
Preweaned starter intake, lbs	24.4	32.5	5.76	0.303
Preweaned ADG, lbs/day	0.503	0.783	0.0847	0.022
Preweaned height gain, inches	3.5	5.8	1.11	0.135
Preweaned length gain, inches	1.6	5.1	0.78	0.060
Preweaned heart girth gain, inches	4.4	5.4	0.58	0.195
Fecal Score	1.84	1.10	0.065	0.0001
Oral electrolytes offered, L	45.1	19.1	3.05	0.0001
Oral electrolytes esophageal fed, L ³	4.6	1.9	0.75	0.012

¹ Treatments included a Control, fed a 3 component milk formula that was formulated to a 22% CP and 20% fat. Calves were step-down weaned starting at 49 days of age and completely weaned at 56 days of age.

² Failure as passive transfer was determined as a total serum protein less than 5.2 mg/dL

³ Calves were esophageal fed electrolyte if they completely refused milk and oral electrolytes

Figure 1. Fecal score of calves fed a 3 component milk powder formula with or without supplementing 9 grams per calf per day of PROVIDA Total Calf. There was a treatment x time interaction ($P \leq 0.0001$) on the fecal score of calves. The feces of each calf was scored twice daily as 0=firm, not hard; 1=soft, pudding-like; 2=loose, pancake batter-like; 3=scours, pulpy orange juice-like.



Conclusions

Feeding PROVIDA Total Calf to calves fed a skim milk, whey permeate, and protein encapsulated fat based milk powder formulated to a 22%CP and 20% fat improved the health and performance of the calves during the preweaned period. The calves in this study were high-risk bull calves that had a high incidence of disease. Overall performance of all the calves in the study were poor; however, supplementing the PROVIDA Total Calf improved the average daily gain and weaning weight by approximately 156%. Further supplementing the PROVIDA Total Calf reduced the refusal of milk replacer by 323% and the quantity of oral electrolytes offered by 236%.

- Directions for use
 - PROVIDA Total Calf: Add 9 grams per calf per day
 - Divided equally among daily feedings.
- Packaging
 - PROVIDA Total Calf: 50 pound multi-wall bag (2,525 daily feedings)
 - Store in cool, dry location