

Increased Productivity in Calves Fed a Fatty Acid Supplement in Milk Replacer

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Introduction

Diarrhea treatment protocols that depend on antibiotic therapy need to be replaced with strategies that utilize management and nutrition to minimize economic losses from calf diarrhea. It is logical to formulate milk replacers that copy cow's milk as closely as possible. Calf milk replacers are typically formulated with a fatty acid profile that does not exactly match that of cow's milk (butterfat). Much research has been done to study the effects of many different nutrients. Recent work has looked at the effect of bringing fatty acid levels closer to cow's milk (Hill *et al*, *J Dairy Sci* 92(2), 2009). This is a study to explore the effect of using a fatty acid supplement in a farm production setting.

Materials and Methods

This study was conducted on an independent farm in northern Indiana in the winter of 2011. Three- to seven-day-old Holstein bull calves were purchased through calf order buyers in New York and Pennsylvania. The 160 head averaged 85.6 lb (38.9 kg) on arrival to the calf farm. Blood samples were drawn to determine serum total protein. The calves were placed in individual pens with straw bedding. Milk replacer containing 21% crude protein and 20% fat was given twice daily. The initial rate was 1 lb (0.45 kg) of milk replacer powder daily. Over a period of five days the amount was increased to 1.25 lb (0.57 kg) daily. Percent solids was maintained at 12.5%. Starter grain was offered, starting the third day, and warm water was offered at noon each day; the barn housing the calves was not heated. Two similar-looking powders were made available to add to the milk replacer each feeding. One powder was a fatty acid supplement (Neotec4, Akey, Inc.), pre-measured to supply seven grams per calf per day, and the other was an equal weight of milk replacer. Calves were assigned to one of the two groups by coin flip. Those receiving the milk replacer with the added test product were tagged with a red ear tag. Those receiving an equal weight of extra milk replacer received a yellow tag. The owner

of the calves was also the feeder and the record keeper. He was masked as to which product was the test material and which was the additional milk replacer. Daily evaluations were made on each calf, including appetite, attitude, and the presence of signs of sickness. Treatments were given according to the farm's protocols. The calves were weighed after five weeks on the test.

Results

The addition of the test product resulted in a 3.96% increase in weight gain. Appetite scores and diarrhea scores improved, and incidence of otitis media was reduced. Treatment costs were reduced by 45.83% (\$1.71/head). There were no differences in depression scores or in number of calves showing signs of respiratory disease. Overall, the number of calves showing any kind of illness was reduced from 25% in the control group to 16.25% in calves receiving the fatty acid supplement. The number of treatment days was 44% lower in the treatment group compared to controls. Mortality rate in the control group was 5%, while the mortality rate in the treatment group was 7.5%.

The use of the fatty acid supplement (Neotec4) resulted in an economic benefit of \$1.73 per head. The cost of the product was \$0.68 per head, the increased weight gain had a value of \$2.24, and less medication was used for a benefit of \$1.71. Less caretaker time was required for treating sick calves, for a benefit of \$0.33. The additional death loss in the calves supplemented with fatty acids resulted in a loss of \$1.88 per head.

Significance

The addition of a fatty acid supplement to milk replacer resulted in improved well-being of the calves as measured by the number of sick days, and there was less need for antibiotics and other medications. In an actual production unit, the use of a fatty acid supplement to more closely mimic milk resulted in an economic benefit to the producer.