



Milk Replacer Research Carbohydrate and Essential Oil Additions to Akey MR

Over the last three years, Akey has evaluated approximately 100 experimental treatments in our calf research nursery. We have previously made two major improvements to our milk replacer (MR) in relation to the composition of fatty acids. Over the last few months, we have focused several trials on the use of alternative carbohydrate (CHO) sources that have functional properties. We have identified a combination of these carbohydrates that have improved calf gains by 5%. Additionally, we have evaluated numerous additives for milk replacers such as microbials and yeasts, probiotics, prebiotics, antibiotics, immunoglobulins, essential oils, and spices. Most have yielded no meaningful changes in calf performance. However, one product called Apex, a proprietary blend of essential oils and spices, has yielded very cost-effective improvements in gains.

Alternative CHO Source

Akey White Gold (all milk protein) MR was compared to a MR where we replaced part of the lactose from whey with a purified, functional CHO blend that was identified to have positive attributes in the gut (Figure 1). This reformulation of White Gold MR yielded 5% more calf gain. This response in calf gain to the new formulation was consistent for each weekly weigh period from day 0 through weaning at day 42. In addition, calves fed this new formulation of MR consumed 7% more starter from day 0 to 42.

Essential Oil and Spice Blend, (Apex)

We tested our White Gold reformulation using the new CHO source, with and without Apex (Figure 2). Additionally, we formulated a generic MR containing soy protein concentrate and fed it with and without Apex. Calves fed Apex in our new formulation gained 5% faster than calves without Apex. Calves fed Apex in the soy-containing MR gained 17% faster than those without Apex. Apex has been fed under field trial conditions in Europe and observed to stimulate gains as we have observed. It also has been shown to be an excellent antimicrobial. In fact, when you compare the results from feeding Apex to a previous trial evaluating neo-terramycin, the improvement in calf gains during the first week of the trial were similar for both products (Figure 3). However, the calves fed Apex had improved gains over a longer period of time than calves fed the antibiotic.

Net Response

These two improvements were additive in nature. The gain response to the alternative CHO was 5%. When Apex was added on top of this formulation, the response to Apex was 8%. If one values a pound of calf gain at \$1.50, this 13% improvement in gain or 5.5 pounds per calf is worth approximately \$8.25 per calf.

Figure 1. Effect of Replacing Lactose with a New Carbohydrate on Calf Gains & Starter Intake 0-6 wk of age

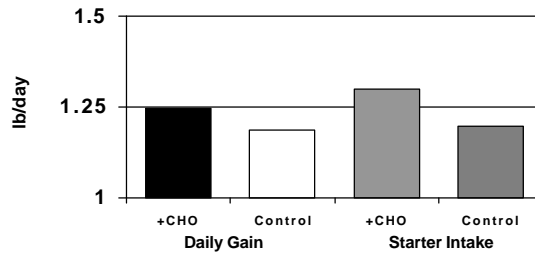


Figure 2. Effect of APEX on Calf Gains 0-6 wk of age

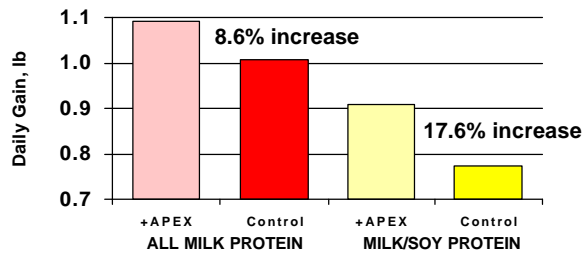


Figure 3. Weekly Pattern of Gains for Apex and NT* (Milk & Milk/Soy MR)

