

ESSENTIAL OILS

CAN PROMOTE CALF HEALTH, PERFORMANCE

With regulations restricting some antimicrobial use, dairy producers must look to alternatives for disease treatment and prevention in their calves.

By Emma Wall

Recently, the U.S. Food and Drug Administration approved new regulations limiting the use of neomycin/oxytetracycline (NT) in calf milk replacer.

These guidelines no longer allow the use of NT at a 2:1 ratio of neomycin to oxytetracycline. In addition, the new approved 1:1 ratio can only be fed medicinally to treat scours for a 7- to 14-day treatment period.

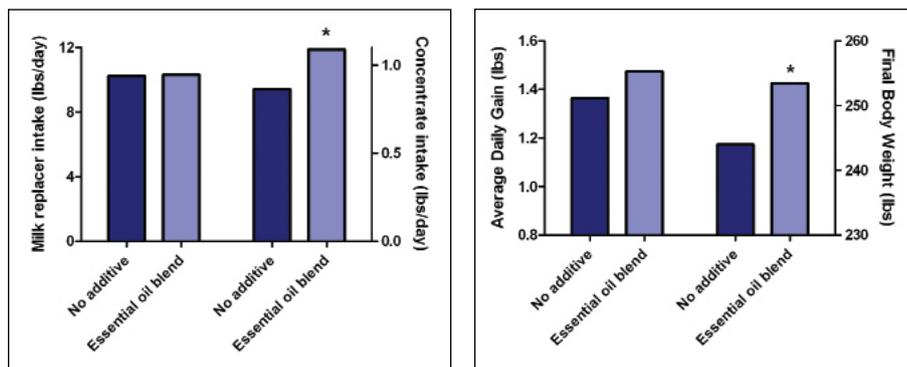
What does this mean to beef and dairy producers, and what are their options?

First, producers need to decide whether or not it is still economically viable to purchase and feed milk replacer containing NT at the 1:1 ratio to treat scours. Although it is approved, and does appear to be an effective treatment option, the costs may outweigh the benefits.

As for preventative measures, producers are now forced to identify alternative approaches to optimizing calf health and preventing disease. Some of these options include improving dry cow vaccination protocols, ensuring newborn calves receive good quality colostrum within the first 12 hours of life, feeding a good quality milk replacer or pasteurized milk, and general improvements in animal handling and husbandry. In addition, a recent and exciting alternative is the use of essential oil additives in milk replacer.

Essential oils are compounds that give

Figure 1. Essential oils impact on calf feed intakes, average daily gain, body weights



Adding an essential oil water soluble blend of carvacrol, cinnamaldehyde (from cinnamon), and capsicum oleoresin (from chili peppers) to milk replacer and starter grain increases starter grain intake (left graph), average daily gain and body weight at weaning (right graph). Calves were fed milk replacer with or without essential oils added, and were offered free choice access to starter grain with or without essential oils added.

* = $P < 0.05$

plants and spices their color and scent. Many essential oils have antifungal, antioxidant and antibacterial properties that are used to protect their plant of origin. The antibacterial properties of many essential oils present in chili peppers, cinnamon, oregano and other plants have been known for years.

Isolating essential oil activity

In addition, it is now possible to isolate the essential oils responsible for antimicrobial activity and produce them commercially. Essential oil products are quickly emerging as promising candidates for enhancing the productive performance of many agricultural animals, and calves are no exception. Adding certain essential oils to milk replacer has been shown to improve calf health and performance by:

- Increasing intake of starter grain
- Increasing average daily gain and body weight at weaning
- Increasing the population of lactobacillus in the gut
- Improving rumen development

In addition, several experiments comparing essential oils to medicated milk replacers have indicated that the essential oils work as well or better at promoting calf

growth and health. With respect to scours, laboratory research has shown that one of the essential oils present in oregano (carvacrol) can inhibit the growth of *E. coli*.

An experiment was conducted to compare the efficacy of oregano to neomycin at treating calf scours, and the results showed they were equally effective. Unfortunately, the researchers did not include an untreated group of calves in their study, so it is difficult to determine exactly how well the treatments worked at reducing scours. Still, both treatments decreased the scour scores significantly, and to the same degree.

A number of essential oil products are emerging in the market, including CRINA (DSM), White Gold (Apex), and Xtract Instant (Pancosma). Research using essential oils (using a water soluble blend of carvacrol, cinnamaldehyde (from cinnamon), and capsicum oleoresin (from chili peppers) has shown some nice improvements in calf performance (**Figure 1**).

Talk to your nutritionist and see if adding essential oils to your calf management program is a good option. Remember, as with any calf management strategy, animal care and handling, and sanitization practices must be optimal if you expect to see results. □

FYI

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