

# Calf Notes.com

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## ***Calf Note 178 – Probiotics for milk-fed calves***

### **Introduction**

Improved methods to keep calves healthy and reduce the need / use of antimicrobials in young calves is an important research effort and a many research projects. One approach to improving calf health is the feeding of probiotic bacteria. Bacteria are normally found in the intestine of all animals. Certain types of bacteria, including lactobacilli, bifidobacteria, and others, can help protect the intestine from disease-causing bacteria and thereby keep the calf healthy. Thus, some bacteria can be considered beneficial. Adding these bacteria (called probiotic bacteria) to the feed is one strategy to improve intestinal health and reduce the risk of disease. A brief review of research regarding probiotic bacteria can be found in [Calf Note #91](#).

Numerous studies have been reported on the use of probiotic bacteria in calf milk replacer diets. In 2011, researchers in Argentina conducted a meta-analysis of these published studies to determine the effect – if any – of adding probiotic bacteria on growth or feed efficiency (Frizzo et al., 2011).

A meta-analysis is a statistical procedure used to evaluate results from multiple studies that have compared similar experimental treatments. This study reviewed data initially from 66 different studies in the published literature. All studies used preweaned dairy calves fed either milk or milk replacer. Calves began studies at < 10 d of age and had to be healthy and must have been fed colostrum.

The studies used were published between 1980 and 2010. In developing the meta-analysis, the authors evaluated the type of probiotic bacteria and whether the probiotic contain one bacterium or a mixture, length of study, types of feeds fed, and number of calves per treatment. After evaluating the respective studies, a total of 21 studies were used to evaluate the effects of probiotics on growth and 14 studies for feed efficiency.

Both feed efficiency and growth were improved when all eligible studies were evaluated. The evaluation of all studies indicated that addition of probiotics improved body weight gain. However, when studies were broken out by diet, growth was improved when calves were fed milk replacer, but not whole milk. Further, the response was more apparent early in life and tended to be less apparent when calves begin consuming more dry feed. This was particularly true for improved feed efficiency.

The comparison of strain(s) of bacteria did not affect the improvement of growth when probiotics were fed. A large number of different bacteria were fed – but, primarily Lactobacilli strains, Bifidobacteria strains, Bacillus strains, and *Enterococcus faecium*. This analysis suggested that a simple, one strain probiotic was just as effective as multiple strains.

### **Summary**

An evaluation of numerous studies in the scientific literature suggest that using probiotics during the first 60 d of life can improve growth and feed efficiency of calves fed milk replacer. Results suggested that probiotics were not effective when whole milk was fed. Though not evaluated in this study, it's possible that improved growth may be mediated by reduced disease and improved intestinal health. It's possible (though only a supposition) that whole milk may contain a normal

profile of lactic acid bacteria. It was not reported whether the whole milk used any studies in the meta-analysis was pasteurized.

One caution regarding meta-analyses and their interpretation is in order. Analyses such as the study by Frizzo et al. rely on studies in scientific journals. Researchers assume that the total body of data in the literature reflect “the truth” – the real condition. When studies are censored – i.e., results from studies that show no effect of treatment are not published – then the interpretation of a meta-analysis must be questioned. Unfortunately, it is common for studies that do show no significant effect of treatment not to be published. Sometimes, this is because companies manufacturing the treatments fund the studies and they prohibit publication; other times, the journals or reviewers themselves take a negative view to “negative” results. In fact, studies that show no significant effects of treatment are just as important and useful as those that show significant effect of treatment.

## **References**

Frizzo, L. S., M. V. Zbrun, L. P. Soto, M. L. Signorini. 2011. Effects of probiotics on growth performance in young calves: A meta-analysis of randomized controlled trials. *Anim. Feed Sci. & Technol.* 169:147–156.

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