



Merrick's **TECH BULLETIN**

Milk Replacer Additives

Medications

Chlortetracycline, 20g/ton – Inclusion of chlortetracycline in milk replacer at the rate of 20g/ton is approved to help increase the rate of weight gain and improve feed efficiency in calves.

Oxytetracycline, 20g/ton - Inclusion of oxytetracycline in milk replacer at the rate of 20g/ton is approved to help increase the rate of weight gain and improve feed efficiency in calves.

Neomycin and Oxytetracycline - This antibiotic combination provides broad spectrum activity against a variety of bacterial organisms within the digestive tract. The combination of Neomycin and Oxytetracycline is approved in milk replacer as either an aid in the prevention of bacterial diarrhea or as an aid in the treatment of bacterial diarrhea. Inclusion levels up to 400g/ton Neomycin - 200g/ton Oxytetracycline are preventive doses while levels between 400-800g/ton Neomycin – 200-400g/ton Oxytetracycline are treatment doses.

Deccox - Deccox is a coccidiostat that stops coccidial growth. Although its mode of action is not fully understood, Deccox is known to inhibit the activity of the cell's mitochondria. By acting on five developmental stages of coccidia, Deccox provides the widest range of all the anticoccidial agents.

Bovatec - Bovatec is a coccidiocide, which means it kills coccidia. As an ionophore, Bovatec transports cations such as K^+ , Na^+ , Ca^+ , and Mg^+ into the coccidial cell. These excess cations draw water into the cell, causing the coccidia to burst and die. Bovatec acts primarily on one developmental stage, the sporozoite stage, of the coccidial life cycle. Bovatec should not be fed to horses or dogs. Bovatec is completely safe for calves when fed according to label directions.

Specialty Ingredients

Acidification - Organic acids can be added to milk replacers. Lowering the pH of milk replacers, helps them stay fresher longer when reconstituted. A lower pH in the upper digestive tract may enhance the growth of beneficial bacteria and suppress the growth of pathogenic bacteria.

APEX - a blend of specific plant extracts formulated to encourage feed intake and improve performance in calves. The botanical ingredients in Apex enhance digestion by stimulating appetite and gastric secretion. Specific ingredients provide antimicrobial action against pathogenic bacteria and fungi, optimizing gut flora balance. Apex also has antioxidant activity which can help improve cellular function and reduce the negative physiological effects of stress conditions.

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The Performance Leader in Baby Animal Nutrition

BIO-MOS - Mannanligosaccharides (MOS) contain cell wall fragments of the yeast, *Saccharomyces cerevisiae*. These cell wall fragments provide antigenic binding sites that can bind pathogens such as *E. coli* and *Salmonella*. Since MOS is not digested by the animal, the attached pathogen likely passes from the small intestine without doing any further harm. MOS may also enhance health by stimulating antibody production.

Chelated Minerals - Mineral chelates are organic trace minerals that enhance mineral absorption and improve bioavailability. Research with organic trace minerals shows improvements in production characteristics such as feed efficiency, growth, breeding, body composition and hoof integrity. Calf research shows better retention of minerals during stress and improved response to vaccines when organic trace minerals are fed. Organic forms of zinc, copper and manganese are provided. Organic selenium is already included in all of our milk replacer product.

Vitamin E – an antioxidant that helps protect cells and improve both cellular and humoral immune responses. Vitamin E supplementation of calves has been shown to increase dry matter intake and growth rate. Calves fed 125 or 250 IU/d of vitamin E gained significantly more body weight compared to non supplemented calves. The optimum inclusion level in milk replacers is 150 IU/lb.

E-guard – provides a blend of specific plant extracts and direct-fed microbials. Allicin (garlic extract) is a non-antibiotic sulfur-containing plant ingredient proven to inhibit the growth of pathogenic bacteria, viruses and protozoa. FOS (fructooligosaccharides) are special sugars, indigestible by the calf, that provide a nutrient source for beneficial bacteria in the large intestine. Direct-fed microbials provide a source of live, beneficial organisms and are the third component in this trio of ingredients designed to optimize gut flora balance.

Gel – A gelling agent is available for inclusion in milk replacer. When reconstituted with water the milk replacer will have a somewhat thicker consistency than regular milk replacer.

Inulin/FOS (fructooligosaccharides) – are complex sugars that nourish beneficial bacteria in the gut, such as *Bifidobacteria*, allowing them to out-compete potential detrimental organisms. Health benefits ascribed to *Bifidobacteria* include: inhibiting the growth of harmful bacteria, stimulating of components of the immune system and aiding the absorption of certain ions and the synthesis of B vitamins. Inulin/FOS also improve the production of volatile fatty acids for energy, calcium and magnesium absorption. Inulin/FOS are poorly utilized by major intestinal pathogens.

Lactobacillus – Lactobacillus are beneficial organisms that rapidly colonize the young calf's digestive tract and become the predominant microorganisms in the young calf's small intestine. Lactic acid lowers the intestinal pH to create an environment unsuitable for harmful organisms. Lactic acid bacteria secrete hydrogen peroxide and bacteriocins that restrict bacterial growth and compete with pathogens for nutrients and colonization sites. Lactobacilli are especially effective competitors with *E. coli*.

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