

LACTROL® (Virginiamycin and Dextrose)

What is LACTROL?

LACTROL antimicrobial is a dry formulation of Virginiamycin and dextrose soluble in ethanol and dispersible in water; specific for use in ethanol production.

Properties

The use of LACTROL in fuel ethanol production has grown extensively in recent years. LACTROL is effective during emergency and regular maintenance conditions to control Gram-positive bacterial infections, because of its superior stability at low pH and high temperatures during fuel ethanol fermentation. It is much more stable at mash pH levels, as low as 3.0, in contrast to other antibiotics that start degrading rapidly at pH of 5.0. As a result of its stability, LACTROL is effective throughout the entire fermentation process. The degradation of LACTROL is ultimately a function of time and temperature. DDGS dryers typically operate at temperatures as high as 800°F and will cause rapid breakdown of Virginiamycin.

Lactic acid is an undesirable by-product of alcohol fermentation and can stop or seriously inhibit the metabolism of carbohydrates into alcohol by yeast. Lactic acid bacteria (such as *Lactobacillus sp.*) are the most common type of Gram-positive bacteria that produce lactic acid, consume sugar otherwise available for ethanol production and produce enzymes that affect the fermentation process.

How does LACTROL Work?

Virginiamycin kills and stops the multiplication of Gram-positive organisms like *Lactobacillus*.

Present during alcohol fermentation, these organisms produce lactic acid. Specifically, Virginiamycin has a natural distribution of 2 molecules (M & S factors) that inhibit protein synthesis at two different ribosomal subunit locations in the bacterial cell, which prevents bacterial cells from multiplying (bacteriostasis) or to lyse (bacterial death—bacteriocidal).

DDG Regulatory Advantage

Currently marketed under regulatory discretion from the U.S. FDA, LACTROL is the only antimicrobial reviewed by the FDA and deemed safe for the use of its ethanol co-products in animal feed when used following Phibro's instruction and dosage guidelines. Current LACTROL dosing recommendations for fermentation of both potable and industrial ethanol are based on extensive research at the University of Saskatchewan and by Phibro's Ethanol Performance Group (EPG). As part of this research, multiple samples of distiller's grains (wet, modified and dry) were analyzed from various ethanol plants in North America. All distillers' grain samples were taken from plants that follow approved LACTROL antimicrobial dosing guidelines.

This testing showed no detectable Virginiamycin (the active ingredient in LACTROL antimicrobial) in any of the samples in the study. The test method used was an FDA accepted analytical method for the detection of virginiamycin in animal feed and had a limit detection of 1 ppm.

Dosage

If Gram-positive bacterial control is needed, LACTROL is added to the yeast propagator, slurry tank, liquefaction tank and/or fermenter prior to or during fermentation. Normal recommended dosage rates are between 0.25 ppm to 2.0 ppm (0.5 ppm is most common for new users), dependent upon the level of bacteria present. Concentration is calculated using the ratio of 1 ppm equals 1 lb. in 108,000 gallons. Dosage should not exceed 6.0 ppm during the fermentation cycle.

Packaging

1/2 lb. or 1 lb. water-soluble biodegradable bags, packaged at the Prince Agri Facility in Quincy, IL, are contained in 25 lb. plastic pails or 50 lb. circular fiberboard drums.

Shelf Life

The product has a shelf life of 3 years from the date of packaging and must be stored in a dry location.

Specifications on Certificate of Analysis

Virginiamycin: 408.6 - 499.4 g activity/lb. (100% activity)

Appearance: Brown Uniform Mixture

Kosher Status

Kosher Parve certified



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