ERYTHROMYCIN Veterinary—Intramammary-Local

Some commonly used *brand names* for veterinary-labeled products are: *Erythro-36; Erythro-Dry Cow; Gallimycin-36;* and *Gallimycin-Dry Cow.*

Note: For a listing of dosage forms and brand names by country availability, see the *Dosage Forms* section(s).

Category: Antibacterial (intramammary-local).

Indications

General considerations

Erythromycin is an antibiotic that is active primarily against gram-positive bacteria, such as *Staphylococcus* and *Streptococcus* species, including many that are, by means of beta-lactamase production, resistant to penicillins. Resistant strains of streptococci have been reported **{R-1}**, particularly in populations recently treated with erythromycin. **{R-2}** Cross-resistance to the other macrolide antibiotics can also occur. **{R-2}**

Accepted

Mastitis (treatment)—*Cattle:* Erythromycin is indicated in the treatment of mastitis caused by susceptible *Staphylococcus aureus* **{R-4}**, *Streptococcus agalactiae, Streptococcus dysgalactiae*, and *Streptococcus uberis* **{R-3; 14}**. It may be most effective against *Streptococcus agalactiae* **{R-5; 17}** and *Streptococcus dysgalactiae* **{R-4}**. Intramammary therapy alone is indicated only in the treatment of subacute or subclinical mastitis manifested by mild changes in the milk or udder. Cows with acute or peracute mastitis, which has been defined as the presence of gross changes in the milk or udder or systemic signs, should be administered other medications also, which may include systemic antibiotics and/or supportive therapy. **{R-6}**

Regulatory Considerations

U.S. and Canada— **{R-3}**

Withdrawal times have been established. See the *Dosage Forms* section.

Chemistry

Source: Produced from a strain of *Streptomyces erythraeus.*

Chemical group: Macrolide group of antibiotics. **{R-2}**

Chemical name: Erythromycin. **{R-7}**

Molecular formula: $C_{37}H_{67}NO_{13}$. **{R-7}**

Molecular weight: 733.93. **{R-7}**

Description: Erythromycin USP—White or slightly yellow, crystalline powder. Is odorless or practically odorless. **{R-8}**

pKa: Erythromycin base—8.8. **{R-9; 10}**

Solubility: Erythromycin USP—Slightly soluble in water; soluble in alcohol, in chloroform, and in ether. **{R-8}**

Pharmacology/Pharmacokinetics

Mechanism of action/Effect: Bacteriostatic; however, high concentrations may be bactericidal. **{R-2; 11}** Erythromycin is thought to enter the cell and reversibly bind to the 50S ribosomal subunit, inhibiting translocation of peptides and therefore inhibiting protein synthesis. **{R-11}** Erythromycin is effective only against rapidly dividing bacteria. Bacterial resistance occurs by alteration of the ribosome receptor site and/or by not allowing erythromycin to enter the cell.

Distribution: Medications infused into a teat are thought to be fairly evenly distributed in that quarter of the healthy mammary gland; however, in an udder affected by moderate to severe mastitis, the presence of edema, blockage of milk ducts, and reduced blood circulation can cause uneven distribution. **{R-12}**

Precautions to Consider

Pregnancy/Reproduction

Pregnancy—Erythromycin crosses the placenta; however, there was no evidence of teratogenicity or other adverse effects when pregnant rats were fed erythromycin base **{R-13}**.

Patient monitoring

The following may be especially important in patient monitoring (other tests may be warranted in some patients, depending on condition; » = major clinical significance):

Bacteriologic pathogens in milk

(milk samples should be tested 3 weeks after treatment is discontinued; mastitis is not considered bacteriologically cured until samples show an absence of the mastitis-causing organisms)

Clinical signs of mastitis

(although a resolution of clinical signs of mastitis is not an indication that a bacteriologic cure has been achieved, monitoring of the clinical condition of the mammary gland, teat, and milk produced can aid in diagnosis of a recurrence of mastitis or initial diagnosis of mastitis in another cow in the herd)

Somatic cell count

(somatic cell counts performed on milk to monitor the dairy herd are used primarily to maintain milk quality, but they are also used to assess the approximate overall effectiveness of mastitis control programs, which may include antibiotic treatment of cows)

Side/Adverse Effects

The following side/adverse effects have been selected on the basis of their potential clinical significance (possible signs in parentheses where appropriate)—not necessarily inclusive:

Those indicating need for medical attention

Incidence unknown

Cows

Allergic reaction—local or systemic

Overdose

For information in cases of overdose or unintentional ingestion, **contact the American Society for the Prevention of Cruelty to Animals (ASPCA) National Animal Poison Control Center** (888-426-4435 or 900-443-0000; a fee may be required for consultation) **and/or the drug manufacturer.**

Client Consultation

Treatment of mastitis in dairy cattle is best achieved by a comprehensive mastitis control program in which herd management is the primary focus. The program should include good maintenance of milking equipment and constant evaluation of milking procedures and teat health as well as strategic treatment of clinical cases of mastitis. **{R-15}**

Veterinary Dosing Information

The choice of antibiotic for the treatment of mastitis should be based on knowledge of the identity and sensitivity of the pathogens causing mastitis in the cow and the dairy herd.

Before administration of intramammary erythromycin, the following actions should be taken:

• The udder should be milked out completely and the teats and udder washed with warm water and a disinfectant. Care should be taken to avoid washing excess dirt down from the udder onto the teat ends. The area should be dried thoroughly and each teat wiped with a separate cotton ball soaked with an antiseptic such as 70% isopropyl alcohol.

• Persons performing the treatment should wash and dry their hands before each treatment.

• The tip of the syringe should be inserted into the teat end as little as possible and the contents of the syringe should be injected into each streak canal while the teat is held firmly. The medication should then be gently massaged up the teat canal into the udder.

A teat dip is recommended on all teats following treatment.

Intramammary Dosage Forms

ERYTHROMYCIN INTRAMAMMARY INFUSION USP

Usual dose: Mastitis—

Cows, lactating: Intramammary, 300 mg administered into each affected quarter every twelve hours for three treatments. **{R-14; 17}**

Cows, nonlactating: Intramammary, 600 mg administered into each quarter at the time of drying-off. **{R-3; 17}**

Strength(s) usually available:

U.S.— **{R-3; 14; 16}**

Veterinary-labeled product(s):

50 mg per mL (OTC) [*Gallimycin-36* (lactating cows); *Gallimycin-Dry Cow* (dry cows only)].

Canada— **{R-16; 17}**

Veterinary-labeled product(s):

50 mg per mL (OTC) [*Erythro-36* (dry or lactating cows); *Erythro-Dry Cow* (dry cows only); *Gallimycin-36* (dry or lactating cows)].

Withdrawal times:

U.S.— **{R-3; 14; 16}**

	Withdrawal time	
	Meat	Milk
Species	(day)	(hours)
Cows	14	36

Note: Also, for nonlactating cows, treated animals should not be slaughtered for food within 96 hours post-calving. Calves born to treated cows should not be slaughtered for food until they are 10 days of age. **{R-3}**

Canada— **{R-16; 17}**

	Withdrawal time
	Milk
Species	(hours)
Cows, lactating	36

Packaging and storage: Store at 15 to 30 °C (59 to 86 °F). Protect from freezing.

USP requirements: Preserve in single-dose disposable syringes that are well-closed containers. A solution of Erythromycin in a suitable vegetable oil vehicle. Contains one or more suitable preservatives. Label it to state that it is for veterinary use only. Contains the labeled amount, within –10% to +20%. Meets the requirements for Identification, Minimum fill, and Water (not more than 1.0%). **{R-8}**

Developed: 07/25/95
Interim revision: 04/24/96; 05/07/97; 06/16/98; 10/15/99; 9/30/02; 03/28/03

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