Elanco™

BREATHE EASIER.

CONTROL AND TREAT BOVINE RESPIRATORY DISEASE (BRD) WITH LASTING* CONFIDENCE.

The Elanco cattle portfolio provides solutions that combat BRD and help optimize herd health, efficiency and profit. All Elanco products are held to the company's uncompromising standard for potency, uniformity and quality.

Elanco™ Pradalex™ (pradofloxacin injection)

Elanco™ Increxxa™ (tulathromycin injection)

Elanco Micotil® (tilmicosin injection)

Elanco Tylan® (tylosin injection)

Baytril® 100 (enrofloxacin)

ZELNATE®

*Clinical relevance unknown.

THE COST OF BRD

Bovine respiratory disease (BRD) is a big deal and a big challenge. Commonly known as shipping fever or pneumonia, BRD is one of the most important diseases in the cattle industry. It costs producers about $1 billion annually[1] due to death, reduced performance, treatment and labor. While management and vaccination are common prevention practices, antibiotics are still necessary for treatment.

BRD is caused by a broad range of pathogens and brought on by stressors, such as weather, transportation, weaning and comingling that can leave cattle vulnerable to disease. You can take the challenge of BRD and breathe easier with the Elanco BRD portfolio. With a variety of products for control and treatment, you can choose from multiple modes of action (MOA) to select the right solution to help keep cattle productive and healthy.

BREATHE EASIER WITH ELANCO'S BRD SOLUTIONS

We offer a unique anti-infective portfolio of solutions including Pradalex™ (pradofloxacin injection), Increxxa™ (tulathromycin injection), Micotil® (tilmicosin injection), Baytril® 100 (enrofloxacin), Tylan® 200 Injection (tylosin injection) and Zelnate® DNA Immunostimulant giving you several options for control, treatment and immune system stimulation.

PRODUCT	ANTIBIOTIC CLASS	API	RECOMMENDED PROTOCOL	BOVINE TYPE
Elanco Pradalex™ (pradofloxacin injection)	Fluoroquinolone	Pradofloxacin	First-pull treatment	Beef and non-lactating dairy cattle greater than 2 months of age
Elanco Increxxa™ (tulathromycin injection)	Macrolide	Tulathromycin	Metaphylaxis treatment. First-pull option.	Beef and dairy cattle.
Elanco Micotil® (tilmicosin injection)	Macrolide	Tilmicosin	Metaphylaxis treatment. First-pull option. Pull-and-treat therapy.	Beef cattle and dairy calves.
Injectable Baytril® 100 (enrofloxacin)	Fluoroquinolone	Enrofloxacin	Metaphylaxis treatment. First or second pull depending on modes of action previously used.	Beef and dairy cattle.
Elanco Tylan® (tylosin injection)	Macrolide	Tylosin	Pull-and-treat option.	Beef and non-lactating dairy cattle.
ZELNATE®	NA	NA	Administer during or within 24 hours of a perceived stressful event.	Cattle 4 months of age or older.

BREATHE EASIER BRD TREATMENT PORTFOLIO

GET TO KNOW YOUR OPTIONS

With more than 40 years of BRD technical experience, we have a long heritage of and commitment to continually researching and improving our portfolio with innovative treatments. Our dedication to antibiotic stewardship also ensures you have access to different modes of action and the right products to treat the right diseases. Each solution is backed with quality manufacturing and on-site consultations with the Elanco technical team to develop the right solutions for any operation.

CONSULT YOUR VETERINARIAN TO DETERMINE WHICH ELANCO PRODUCTS ARE RIGHT FOR YOUR BRD PROTOCOL.

INCREXXA™

(TULATHROMYCIN INJECTION)

Increxxa™ contains tulathromycin, the same macrolide antibiotic veterinarians and the cattle industry have depended on to control and treat BRD in cattle for more than 15 years. It's a go-to antibiotic because of its one-time use, extended duration of action, ease of administration and broad-spectrum control.

Increxxa is indicated for the treatment of BRD in beef cattle at high risk of developing BRD associated with *Mannheimia haemolytica, Pasteurella multocida, Histophilus somni* and *Mycoplasma bovi;* treatment of infectious bovine keratoconjunctivitis associated with *Moraxella bovis;* treatment of bovine foot rot (interdigital necrobacillosis) associated with *Fusobacterium necrophorum* and *Porphyromonas levii.* In suckling calves, dairy calves and veal calves, the treatment of BRD is associated with *Mannheimia haemolytica, Pasteurella multocida, Haemophilus somni* and *Mycoplasma bovis.*

CAUTION: Federal law restricts this drug to use by or on the order of a licensed veterinarian. Extra-label use of this drug in food-producing animals is prohibited. Cattle intended for human consumption must not be slaughtered within 18 days from the last treatment. This drug is not approved for use in female dairy cattle 20 months of age or older, including dry dairy cows. Use in these cattle may cause drug residues in milk and/or in calves born to these cows.

VIAL SIZES

• 100 mL • 250 mL • 500 mL

DOSAGE

• 1.1 mL / 100 lbs

ADVANTAGES & BENEFITS:

- Fast-acting, long-lasting* performance with 14 days of duration.
- Cuts retreats up to 50%, mortalities and chronics up to 70% when administered on arrival (metaphylaxis).[2]
- Comes with complimentary bottle protectors to ensure your product is not damaged during use.

*Clinical relevance unknown.

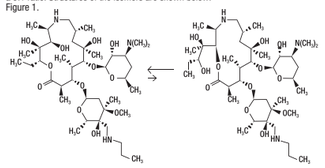
FULL PRESCRIBING INFORMATION FOR USE IN CATTLE ONLY
SEE PRODUCT INSERT FOR COMPLETE DOSING AND ADMINISTRATION INFORMATION

Elanco™ Increxxa™ (tulathromycin injection)

Injectable Solution

Antibiotic
100 mg of tulathromycin/mL
For use in beef cattle (including suckling calves), non-lactating dairy cattle (including dairy calves) and veal calves. Not for use in female dairy cattle 20 months of age or older.
CAUTION: Federal (USA) law restricts this drug to use by or on the order of a licensed veterinarian.

DESCRIPTION
Increxxa Injectable Solution is a ready-to-use sterile parenteral preparation containing tulathromycin, a semi-synthetic macrolide antibiotic of the subclass triamilide. Each mL of Increxxa contains 100 mg of tulathromycin, 500 mg propylene glycol, 19.2 mg citric acid and 5 mg monothioglycerol. Sodium hydroxide or hydrochloric acid may be added to adjust pH. Increxxa consists of an equilibrated mixture of two isomeric forms of tulathromycin in a 9:1 ratio. Structures of the isomers are shown below.
Figure 1.



The chemical names of the isomers are (2R,3S,4R,5R,8R,10R,11R,12S,13S,14R)-13-[[2,6-dideoxy-3-C-methyl-3-O-methyl-4-C-[(propylamino) methyl]-a-L-ribo-hexopyranosyl] oxy]-2-ethyl-3,4,10- trihydroxy-3,5,8,10,12,14-hexamethyl-11-[[3,4,6-trideoxy-3-(dimethylamino)-ß-D-xylo-hexopyranosyl]-oxy]-1-oxa-6-azacyclopentadecan-15-one and (2R,3R,6R,8R,9R,10S,11S,12R)-11-[[2,6-dideoxy-3-C-methyl- 3-O-methyl-4-C-[(propylaminoimethyl]-a-L-ribo-hexopyrano-syl]oxy]-2-[(1R,2R)-1,2-dihydroxy-1-methylbutyl]-8-hydroxy-3,6,8,10,12-pentamethyl-9-[[3,4,6-trideoxy-3-(dimethylamino)-ß-D-xylo-hexopyranosyl]oxy]-1-oxa-4-azacyclotridecan-13-one, respectively.

INDICATIONS
Beef and Non-Lactating Dairy Cattle
BRD – Increxxa Injectable Solution is indicated for the treatment of bovine respiratory disease (BRD) associated with *Mannheimia haemolytica, Pasteurella multocida, Histophilus somni,* and *Mycoplasma bovis;* and for the control of respiratory disease in cattle at high risk of developing BRD associated with *Mannheimia haemolytica, Pasteurella multocida, Histophilus somni, and Mycoplasma bovis.*
IBK – Increxxa Injectable Solution is indicated for the treatment of infectious bovine keratoconjunctivitis (IBK) associated with *Moraxella bovis.*
Foot Rot – Increxxa Injectable Solution is indicated for the treatment of bovine foot rot (interdigital necrobacillosis) associated with *Fusobacterium necrophorum* and *Porphyromonas levii.*
Suckling Calves, Dairy Calves, and Veal Calves
BRD – Increxxa Injectable Solution is indicated for the treatment of BRD associated with M. haemolytica, P. multocida, H. somni, and M. bovis.

DOSAGE AND ADMINISTRATION
Cattle
Inject subcutaneously as a single dose in the neck at a dosage of 2.5 mg/kg (1.1 mL/100 lb) body weight (BW). Do not inject more than 10 mL per injection site.
Table 1. Increxxa Cattle Dosing Guide

Animal Weight (Pounds)	Dose Volume (mL)
100	1.1
200	2.3
300	3.4
400	4.5
500	5.7
600	6.8
700	8.0
800	9.1
900	10.2
1000	11.4

CONTRAINDICATIONS
The use of Increxxa Injectable Solution is contraindicated in animals previously found to be hypersensitive to the drug.
WARNINGS
FOR USE IN ANIMALS ONLY.
NOT FOR HUMAN USE.
KEEP OUT OF REACH OF CHILDREN.
NOT FOR USE IN CHICKENS OR TURKEYS.

RESIDUE WARNINGS
Cattle
Cattle intended for human consumption must not be slaughtered within 18 days from the last treatment. This drug is not approved for use in female dairy cattle 20 months of age or older, including dry dairy cows. Use in these cattle may cause drug residues in milk and/or in calves born to these cows.

PRECAUTIONS
Cattle
The effects of Increxxa on bovine reproductive performance, pregnancy, and lactation have not been determined. Subcutaneous injection can cause a transient local tissue reaction that may result in trim loss of edible tissue at slaughter.

ADVERSE REACTIONS
Cattle
In one BRD field study, two calves treated with tulathromycin injection at 2.5 mg/kg BW exhibited transient hypersalivation. One of these calves also exhibited transient dyspnea, which may have been related to pneumonia.

POST APPROVAL EXPERIENCE
The following adverse events are based on post approval adverse drug experience reporting. Not all adverse events are reported to the FDA CVM. It is not always possible to reliably estimate the adverse event frequency or establish a causal relationship to product exposure using these data. The following adverse events are listed in decreasing order of reporting frequency in cattle: Injection site reactions and anaphylaxis/anaphylactoid reactions. For additional information about reporting adverse drug experiences for animal drugs, contact FDA at 1-888-FDA-VETS or http://www.fda.gov/reportanimalae.

CLINICAL PHARMACOLOGY
At physiological pH, tulathromycin (a weak base) is approximately 50 times more soluble in hydrophilic than hydrophobic media. This solubility profile is consistent with the extracellular pathogen activity typically associated with the macrolides.1 Markedly higher tulathromycin concentrations are observed in the lungs as compared to the plasma. The extent to which lung concentrations represent free (active) drug was not examined. Therefore, the clinical relevance of these elevated lung concentrations is undetermined. Although the relationship between tulathromycin and the characteristics of its antimicrobial e ects has not been characterized, as a class, macrolides tend to be primarily bacteriostatic, but may be bactericidal against some pathogens. 2 They also tend to exhibit concentration independent killing; the rate of bacterial eradication does not change once serum drug concentrations reach 2 to 3 times the minimum inhibitory concentration (MIC) of the targeted pathogen. Under these conditions, the time that serum concentrations remain above the MIC becomes the major determinant of antimicrobial activity. Macrolides also exhibit a post-antibiotic e ect (PAE), the duration of which tends to be both drug and pathogen dependent. In general, by increasing the macrolide concentration and the exposure time, the PAE will increase to some maximal duration. Of the two variables, concentration and exposure time, drug concentration tends to be the most powerful determinant of the duration of PAE. Tulathromycin is eliminated from the body primarily unchanged via biliary excretion.

1 *Carbon, C. 1998. Pharmacodynamics of Macrolides, Azalides, and Streptogramins: Effect on Extracellular Pathogens. Clin. Infect. Dis., **27**:28-32.*
2 *Nightingale, C.J. 1997. Pharmacokinetics and Pharmacodynamics of Newer Macrolides. Pediatr. Infect. Dis. J., **16**:438-443.*

Cattle
Following subcutaneous administration into the neck of feeder calves at a dosage of 2.5 mg/kg BW, tulathromycin is rapidly and nearly completely absorbed. Peak plasma concentrations generally occur within 15 minutes after dosing and product relative bioavailability exceeds 90%. Total systemic clearance is approximately 170 mL/hr/kg. Tulathromycin distributes extensively into body tissues, as evidenced by volume of distribution values of approximately 11 L/kg in healthy ruminating calves. [3] This extensive volume of distribution is largely responsible for the long elimination half-life of this compound [approximately 2.75 days in the plasma (based on quantifiable terminal plasma drug concentrations) versus 8.75 days for total lung concentrations (based on data from healthy animals)]. Linear pharmacokinetics are observed with subcutaneous doses ranging from 1.27 mg/kg BW to 5.0 mg/kg BW. No pharmacokinetic differences are observed in castrated male versus female calves.

3 *Clearance and volume estimates are based on intersubject comparisons of 2.5 mg/kg BW administered by either subcutaneous or intravenous injection.*

MICROBIOLOGY
Cattle
Tulathromycin has demonstrated in vitro activity against *Mannheimia haemolytica, Pasteurella multocida, Histophilus somni,* and *Mycoplasma bovis,* four pathogens associated with BRD; against *Moraxella bovis* associated with IBK; and against *Fusobacterium necrophorum* and *Porphyromonas levii* associated with bovine foot rot. The MICs of tulathromycin against indicated BRD and IBK pathogens were determined using methods recommended by the Clinical and Laboratory Standards Institute (CLSI, M31-A2). The MICs against foot rot pathogens were also determined using methods recommended by the CLSI (M11-A6). All MIC values were determined using the 9:1 isomer ratio of this compound.
BRD - The MICs of tulathromycin were determined for BRD isolates obtained from calves enrolled in therapeutic and at-risk field studies in the U.S. in 1999. In the therapeutic studies, isolates were obtained from pre-treatment nasopharyngeal swabs from all study calves, and from lung swabs or lung tissue of saline-treated calves that died. In the at-risk studies, isolates were obtained from nasopharyngeal swabs of saline-treated non-responders, and from lung swabs or lung tissue of saline-treated calves that died. The results are shown in Table 3.
IBK - The MICs of tulathromycin were determined for *Moraxella bovis* isolates obtained from calves enrolled in IBK field studies in the U.S. in 2004. Isolates were obtained from pre-treatment conjunctival swabs of calves with clinical signs of IBK enrolled in the tulathromycin injection and saline-treated groups. The results are shown in Table 3.
Foot Rot - The MICs of tulathromycin were determined for *Fusobacterium necrophorum* and *Porphyromonas levii* obtained from cattle enrolled in foot rot field studies in the U.S. and Canada in 2007. Isolates were obtained from pre-treatment interdigital biopsies and swabs of cattle with clinical signs of foot rot enrolled in the tulathromycin injection and saline-treated groups. The results are shown in Table 3.
Table 3. Tulathromycin minimum inhibitory concentration (MIC) values* for indicated pathogens isolated from field studies evaluating BRD and IBK in the U.S. and from foot rot field studies in the U.S. and Canada.

Indicated pathogen	Date isolated	No. of isolates	MIC_{50}** (µg/mL)	MIC_{90}** (µg/mL)	MIC range (µg/mL)
Mannheimia haemolytica	1999	642	2	2	0.5 to 64
Pasteurella multocida	1999	221	0.5	1	0.25 to 64
Histophilus somni	1999	36	4	4	1 to 4
Mycoplasma bovis	1999	43	0.125	1	≤ 0.063 to > 64
Moraxella bovis	2004	55	0.5	0.5	0.25 to 1
Fusobacterium necrophorum	2007	116	2	64	≤ 0.25 to > 128
Porphyromonas levii	2007	103	8	128	≤ 0.25 to > 128

* The correlation between *in vitro* susceptibility data and clinical e ectiveness is unknown.
** The lowest MIC to encompass 50% and 90% of the most susceptible isolates, respectively.

EFFECTIVENESS
Cattle
BRD – In a multi-location field study, 314 calves with naturally occurring BRD were treated with tulathromycin injection. Responses to treatment were compared to saline-treated controls. A cure was defined as a calf with normal attitude/activity, normal respiration, and a rectal temperature of ≤ 104°F on Day 14. The cure rate was significantly higher ($P \leq 0.05$) in tulathromycin injection-treated calves (78%) compared to saline-treated calves (24%). There were two BRD-related deaths in the tulathromycin injection-treated calves compared to nine BRD-related deaths in the saline-treated calves. Fifty-two tulathromycin injectiontreated calves and 27 saline-treated calves from the multi-location field BRD treatment study had *Mycoplasma bovis* identified in cultures from pre-treatment nasopharyngeal swabs.

Of the 52 tulathromycin injection-treated calves, 37 (71.2%) calves were categorized as cures and 15 (28.8%) calves were categorized as treatment failures. Of the 27 salinetreated calves, 4 (14.8%) calves were categorized as cures and 23 (85.2%) calves were treatment failures.
A Bayesian meta-analysis was conducted to compare the BRD treatment success rate in young calves (calves weighing 250 lbs or less and fed primarily a milk-based diet) treated with tulathromycin injection to the success rate in older calves (calves weighing more than 250 lbs and fed primarily a roughage and grain-based diet) treated with tulathromycin injection. The analysis included data from four BRD treatment effectiveness studies conducted for the approval of tulathromycin injection in the U.S. and nine contemporaneous studies conducted in Europe. The analysis showed that the BRD treatment success rate in young calves was at least as good as the BRD treatment success rate in older calves.
As a result, tulathromycin injection is considered effective for the treatment of BRD associated with *M. haemolytica, P. multocida, H. somni,* and *M. bovis* in suckling calves, dairy calves, and veal calves.
In another multi-location field study with 399 calves at high risk of developing BRD, administration of tulathromycin injection resulted in a significantly reduced incidence of BRD (11%) compared to saline-treated calves (59%). Effectiveness evaluation was based on scored clinical signs of normal attitude/activity, normal respiration, and a rectal temperature of ≤ 104°F on Day 14. There were no BRD-related deaths in the tulathromycin injectiontreated calves compared to two BRD-related deaths in the saline-treated calves.
Fifty saline-treated calves classified as non-responders in this study had *Mycoplasma bovis* identified in cultures of post-treatment nasopharyngeal swabs or lung tissue.
Two induced infection model studies were conducted to confirm the e ectiveness of tulathromycin injection against *Mycoplasma bovis.* A total of 166 calves were inoculated intratracheally with field strains of *Mycoplasma bovis.* When calves became pyrexic and had abnormal respiration scores, they were treated with either tulathromycin injection (2.5 mg/kg BW) subcutaneously or an equivalent volume of saline. Calves were observed for signs of BRD for 14 days post-treatment, then were euthanized and necropsied. In both studies, mean lung lesion percentages were statistically significantly lower in the tulathromycin injection-treated calves compared with saline-treated calves (11.3% vs. 28.9%, P = 0.0001 and 15.0% vs. 30.7%, P < 0.0001).
IBK – Two field studies were conducted evaluating tulathromycin injection for the treatment of IBK associated with *Moraxella bovis* in 200 naturally-infected calves. The primary clinical endpoint of these studies was cure rate, defined as a calf with no clinical signs of IBK and no corneal ulcer, assessed on Days 5, 9, 13, 17, and 21. Time to improvement, defined as the first day on which a calf had no clinical signs of IBK in both eyes, provided that those scores were maintained at the next day of observation, was assessed as a secondary variable. At all time points, in both studies, the cure rate was significantly higher ($P < 0.05$) for tulathromycin injection-treated calves compared to saline-treated calves. Additionally, time to improvement was significantly less ($P < 0.0001$) in both studies for tulathromycin injection-treated calves compared to saline-treated calves.
Foot Rot - The effectiveness of tulathromycin injection for the treatment of bovine foot rot was evaluated in 170 cattle in two field studies. Cattle diagnosed with bovine foot rot were enrolled and treated with a single subcutaneous dose of tulathromycin injection (2.5 mg/kg BW) or an equivalent volume of saline. Cattle were clinically evaluated 7 days after treatment for treatment success, which was based on defined decreases in lesion, swelling, and lameness scores. In both studies, the treatment success percentage was statistically significantly higher in tulathromycin injection-treated calves compared with saline-treated calves (60% vs. 8%, $P < 0.0001$ and 83.3% vs. 50%, P = 0.0088).

ANIMAL SAFETY
Cattle
Safety studies were conducted in feeder calves receiving a single subcutaneous dose of 25 mg/kg BW, or 3 weekly subcutaneous doses of 2.5, 7.5, or 12.5 mg/kg BW. In all groups, transient indications of pain after injection were seen, including head shaking and pawing at the ground. Injection site swelling, discoloration of the subcutaneous tissues at the injection site and corresponding histopathologic changes were seen in animals in all dosage groups. These lesions showed signs of resolving over time. No other drug-related lesions were observed macroscopically or microscopically. An exploratory study was conducted in feeder calves receiving a single subcutaneous dose of 10, 12.5, or 15 mg/kg BW. Macroscopically, no lesions were observed. Microscopically, minimal to mild myocardial degeneration was seen in one of six calves administered 12.5 mg/kg BW and two of six calves administered 15 mg/kg BW.
A safety study was conducted in preruminant calves 13 to 27 days of age receiving 2.5 mg/kg BW or 7.5 mg/kg BW once subcutaneously. With the exception of minimal to mild injection site reactions, no drug-related clinical signs or other lesions were observed macroscopically or microscopically.

STORAGE CONDITIONS
Store below 25°C (77°F), with excursions up to 40°C (104°F).
100 mL: Use within 2 months of first puncture and puncture a maximum of 67 times. If more than 67 punctures are anticipated, the use of multi-dosing equipment is recommended. When using a draw-off spike or needle with bore diameter larger than 16 gauge, discard any product remaining in the vial immediately after use.
250 mL: Use within 2 months of first puncture and puncture a maximum of 100 times. If more than 100 punctures are anticipated, the use of multi-dosing equipment is recommended. When using a draw-off spike or needle with bore diameter larger than 16 gauge, discard any product remaining in the vial immediately after use.

HOW SUPPLIED
Increxxa (tulathromycin injection) Injectable Solution is available in the following package sizes:
100 mL vial
250 mL vial
500 mL vial
For product questions, to report adverse reactions, or for a copy of the Safety Data Sheet (SDS), call Elanco Product & Veterinary Support at 1-800-428-4441. For additional information about reporting adverse drug experiences for animal drugs, contact FDA at 1-888-FDA-VETS or http://www.fda.gov/reportanimalae.
Approved by FDA under ANADA # 200-666
Product of China.
Manufactured for: Elanco US Inc., Greenfield, IN 46140 U.S.A.

TAKE TIME
OBSERVE LABEL DIRECTIONS
Elanco™

MICOTIL®

(TILMICOSIN INJECTION)

Micotil® is a proven treatment that offers a flexible, cost-effective dose range for both metaphylaxis and individual pull-and-treat therapy. It quickly targets the site of infection and works alongside the immune system to get cattle feeling better.*[3,4,5]

Micotil (tilmicosin injection) is indicated for the treatment of bovine respiratory disease (BRD) associated with *Mannheimia haemolytica*, *Pasteurella multocida* and *Histophilus somni*, and for the control of respiratory disease in cattle at high risk of developing BRD associated with *M. haemolytica.*

Important Safety Information: Before using this product, it is important to read the entire product insert, including the boxed human warning.

Caution: Federal (USA) law restricts this drug to use by or on the order of a licensed veterinarian. Not for human use. Injection of this drug in humans has been associated with fatalities. Keep out of reach of children. Do not use in automatically powered syringes. Exercise extreme caution to avoid accidental self-injection. In case of human injection, consult a physician immediately and apply ice or cold pack to injection site while avoiding direct contact with the skin. Avoid contact with eyes. Always use proper drug handling procedures to avoid accidental self-injection. Consult your veterinarian on the safe handling and use of all injectable products prior to administration. For use in cattle or sheep only. Inject subcutaneously. Injection of this antibiotic has been shown to be fatal in swine and non-human primates and may be fatal in horses and goats. Do not use in lambs less than 15 kg body weight. Do not use in female dairy cattle 20 months of age or older. Use in lactating dairy cattle or sheep may cause milk residues. The following adverse reactions have been reported: in cattle: injection site swelling and inflammation, lameness, collapse, anaphylaxis/anaphylactoid reactions, decreased food and water consumption, and death; in sheep: dyspnea and death. Micotil has a pre-slaughter withdrawal time of 42 days.

VIAL SIZES

- 250 mL

DOSAGE

- 1.5-3 mL/100 lbs

ADVANTAGES & BENEFITS:

- Only antibiotic that offers a flexible dose range of (1.5-3 mL/100 lbs) for metaphylaxis.
- Works quickly, reaching the lungs of the treated calf in one hour.*[3,4]
- Reduces morbidity and mortality when used in control of BRD in high-risk calves.[5]
- Backed by injectable safety training to help ensure safe handling and use.

*Clinical relevance unknown.

Elanco

Micotil® (tilmicosin injection)™

FULL PRESCRIPTION INFORMATION FOR USE IN CATTLE ONLY. SEE PRODUCT INSERT FOR COMPLETE DOSING AND ADMINISRATION INFORMATION.

Elanco™

Micotil™ 300

250 mL

(tilmicosin injection)

300 mg tilmicosin, USP as tilmicosin phosphate per mL
For Subcutaneous Use in Cattle Only

Administer only with a tube-fed safety syringe. Do not use in automatically powered syringes, single-use syringes, or other delivery devices. Contact Elanco at 1-800-428-4441, or your distributor, for a tube-fed safety syringe for use with this product.

Caution: Federal law restricts this drug to use by or on the order of a licensed veterinarian.
Before using Micotil, please consult the product insert, a summary of which follows:

Indications: For the treatment of bovine respiratory disease (BRD) associated with *Mannheimia haemolytica, Pasteurella multocida* and *Histophilus somni.* For the control of respiratory disease in cattle at high risk of developing BRD associated with *Mannheimia haemolytica.*

Approved by FDA under NADA # 140-929

Micotil must be used with the quick-fit connector made specifically for its use. Contact Elanco or your distributor for this equipment. Read product labeling, including Safe Handling Practices, before use.

Dosage and Administration: Follow instructions for activation of the shroud before first usage. Inject Subcutaneously in Cattle Only. See Safe Handling Practices, Contraindications, and Warnings prior to use. In cattle, administer a single subcutaneous dose of 10 to 20 mg/kg body weight (1 to 2 mL/30 kg or 1.5 to 3 mL per 100 lbs).
Do not inject more than 10 mL per injection site. If no improvement is noted within 48-hours, the diagnosis should be reevaluated.
For cattle injection under the skin in the neck is suggested. If not accessible, inject under the skin behind the shoulders and over the ribs.

Note: Swelling at the subcutaneous site of injection may be observed.
See product insert for complete dosing and administration information.

CONTRAINDICATIONS: Do not use in automatically powered syringes, single-use syringes, or other delivery devices not specified in the labeling. Do not administer intravenously to cattle. Intravenous injection in cattle will be fatal. Do not administer to animals other than cattle. Injection of tilmicosin has been shown to be fatal in swine and non-human primates. Death following exposure to tilmicosin injection has been reported to FDA/CVM in goats, rabbits, pheasants, pigs, dogs, deer, cats, alpacas, and horses.

Residue Warnings: Animals intended for human consumption must not be slaughtered within 42 days of the last treatment. Not for use in lactating dairy cattle 20 months of age or older. Use of tilmicosin in this class of cattle may cause milk residues.

Precautions: The effects of tilmicosin on bovine reproductive performance, pregnancy and lactation have not been determined. Intramuscular injection will cause a local reaction which may result in trim loss of edible tissue at slaughter.

Storage Conditions: Store at or below 86 °F (30 °C). Protect from direct sunlight. Use within 84 days of first puncture. Date of first puncture:_____
To report adverse effects, access medical information, or obtain additional product information, call 1-800-428-4441.

HUMAN WARNINGS: Not for human use. Injection of this drug in humans has been associated with fatalities. Keep out of reach of children. Administer only with a tube-fed safety syringe. Do not use in automatically powered syringes, single-use syringes, or other delivery devices. Exercise extreme caution to avoid accidental self-injection. In case of human injection, consult a physician immediately and apply ice or cold pack to injection site while avoiding direct contact with the skin. Emergency medical telephone numbers are 1-800-722-0987 or 1-800-428-4441. Avoid contact with skin, eyes or mucous membranes.

NOTE TO THE PHYSICIAN: The cardiovascular system is the target of toxicity and should be monitored closely. Cardiovascular toxicity may be due to calcium channel blockade. In dogs, administration of intravenous calcium offset Micotil-induced tachycardia and negative inotropy (decreased contractility). Dobutamine partially offset the negative inotropic effects induced by Micotil in dogs. ß-adrenergic antagonists, such as propranolol, exacerbated the negative inotropy of Micotil in dogs. Epinephrine potentiated lethality of Micotil in pigs. This antibiotic persists in tissues for several days.

Adverse Reactions: The following adverse reactions have been reported post-approval: In cattle: injection site swelling and inflammation, lameness, collapse, anaphylaxis/anaphylactoid reactions, decreased food and water consumption, and death.
For additional information about reporting adverse drug experiences for animal drugs, contact FDA at 1-888-FDA-VETS or http://www.fda.gov/reportanimalae

Effectiveness: In a multi-location field study, 1508 calves with naturally occurring BRD were treated with Micotil. Responses to treatment were compared to saline-treated controls. A cure was defined as a calf with normal attitude and activity, normal respiration, and a rectal temperature of <104°F on Day 13. The cure rate was significantly higher (P=0.004) in Micotil-treated calves (63.1%) compared to saline-treated calves (29.2%). During the treatment phase of the study, there were 10 BRD-related deaths in the Micotil-treated calves compared to 47 in the saline-treated calves.

How Supplied: Micotil (tilmicosin injection) is supplied in 250 mL multi-dose amber glass bottles in a non-removable polymer protector.

Manufactured for:
Elanco US, Inc. Greenfield, IN 46140, USA

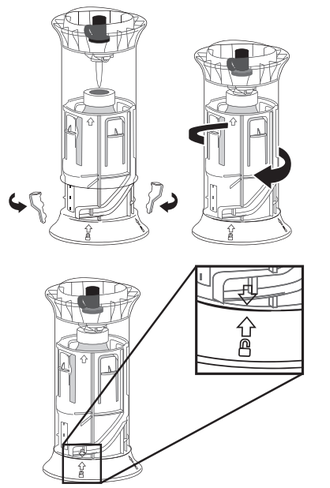
Revised: 09/2021

Instructions for Activation of the Shroud
Before first usage activate the shroud-vial-system as shown in the pictures. Administer only with a tube-fed safety syringe. Do not use in automatically powered syringes, single-use syringes, or other delivery devices. This product must be used with the quick-fit connector made specifically for use with Micotil (tilmicosin injection) that attaches to the shroud fitting. To obtain a tube-fed safety syringe and quick-fit connector, contact Elanco at 1-800- 428-4441, or your distributor

Step 1.
Twist the two tamper-evident tabs to break them off the Shroud Base.

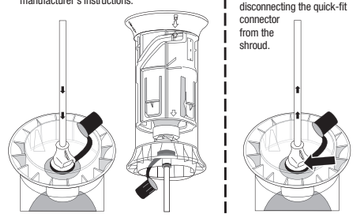
Step 2.
Rotate the Shroud Top through a quarter-turn clockwise. The spike will pierce the vial closure, and the Shroud Top will lock into its final position by an audible "click".

Step 3.
The correct final position can be confirmed by the alignment of the 2 arrows as shown in the picture.



Step 4.
Remove the flexible cap from the fluid connection. Attach the quick-fit connector to tubing if not already attached. Push the quick-fit connector downwards onto the shroud fitting until it clicks into place.

Step 5.
Invert the Micotil Shroud, then prime the tube-fed safety syringe following manufacturer's instructions.



Return shroud to upright position after finishing operation. Leave tubing attached to tube-fed safety syringe and quick-fit connector until dosing equipment has been removed from the shroud. Remove dosing equipment by pushing the trigger as shown in the picture, then disconnecting the quick-fit connector from the shroud.

Micotil should not be stored in dosing equipment. Dosing equipment should be disconnected from the shroud after each use. Store product upright. The dosing equipment should be cleaned according to the manufacturer's instructions. Avoid contact with skin, eyes, or mucous membranes.

1. WHAT ARE THE POSSIBLE EFFECTS OF ACCIDENTAL HUMAN INJECTION?
Human injections of Micotil have been associated with fatalities. Clinical signs from human exposure include off taste in the mouth, nausea, headache, dizziness, rapid heart rate, chest pain, anxiety, or lightheadedness. Local reactions such as injection site pain, bleeding, swelling or inflammation have been reported.

2. WHAT SHOULD I DO IN THE CASE OF ACCIDENTAL HUMAN INJECTION?
- Immediately seek medical attention.
- Apply ice or cold pack to injection site, while avoiding direct contact with the skin, and transport immediately to a hospital.
- Call 1-800-722-0987 or 1-800-428-4441 for further emergency information.

3. WHAT SHOULD MY PHYSICIAN KNOW IN THE CASE OF ACCIDENTAL HUMAN INJECTION?
- The cardiovascular system is the target of toxicity and should be monitored closely.
- Cardiovascular toxicity may be due to calcium channel blockade.
- Intravenous calcium administration reversed the cardiovascular effects of Micotil in dogs and may provide benefit in patients exhibiting low blood pressure (hypotension) or rapid heart rate (tachycardia).
- Dobutamine improved some of the cardiac function in dogs given Micotil.
- Epinephrine increased the toxicity of Micotil in pigs, resulting in death.
- Propranolol (a beta-adrenergic antagonist) further decreased cardiac function in dogs given Micotil.
- The active ingredient in Micotil is tilmicosin phosphate and persists in tissue for several days.
- Call 1-800-722-0987 or 1-800-428-4441 for further emergency information.

4. WHAT ARE THE PROPER WAYS TO HANDLE AND STORE MICOTIL?
- Store at or below 86°F (30°C), out of direct sunlight, in a safe location, not easily accessible to the general public. Use within 84 days of first puncture. Store upright between product dispensing. Disconnect and clean dosing equipment for storing as per manufacturer's instructions.
- Avoid contact with skin, eyes, or mucous membranes.
- Read, understand, and follow all label use directions.
- Wash hands thoroughly with soap and water after handling.

5. WHAT ARE THE PROPER METHODS FOR ADMINISTERING MICOTIL?
- Properly restrain animals prior to administration.
- Work in a team, or if alone, advise someone of your location and how long you plan to be there.
- For subcutaneous use. Administer only with a tube-fed safety syringe. Do not use in automatically powered syringes, single-use syringes, or other delivery devices. Contact Elanco at 1-800-428-4441, or your distributor, for a tube-fed safety syringe for use with this product.
- Use a 1/2-inch to 5/8-inch, 18- to 16-gauge needle.
- With a single hand on the safety syringe insert the needle subcutaneously, at a top-down angle, while avoiding penetration of underlying muscle.
- For cattle, injection under the skin in the neck is suggested. If not accessible, inject under the skin behind the shoulders and over the ribs.
- In cattle, administer a single subcutaneous dose of 1.5 to 3.0 mL of Micotil (tilmicosin injection) per 100 lbs of body weight, in either of the two areas noted in the adjacent drawing.
- For beef cattle, Beef Quality Assurance recommends injection site 1, unless this site is inaccessible or places the operator in a potentially dangerous situation.
- Wash hands thoroughly with soap and water after administration.
- Do not administer intravenously (IV) as IV administration will be fatal.
- Intramuscular injection will cause a local reaction, which may result in trim loss.
- Do not inject more than 10 mL per injection site.
- Do not use in lambs less than 15 kg body weight.

6. WHAT ARE SAFE WAYS TO REMOVE AND CHANGE NEEDLES?
- Always follow the manufacturer's instruction of how to safely remove and change needles from the safety syringe.
- Plan for the safe handling and disposal of needles before use.
- Keep the needle capped until ready to use.
- Avoid recapping a used needle.
- To safely remove used needles, use tools appropriate for the specific type of safety syringe. Do not remove a used needle with your fingers.
- Dispose used needles in an appropriate sharps disposal container. Do not overfill sharps containers and do not put your fingers into a sharps container.
- Never place loose needles in household or public trash cans.

BAYTRIL® 100

(ENROFLOXACIN)

Baytril® 100 is concentration-dependent, delivering effective therapeutic drug concentrations with a single dose.[6] Its an option for pull and treat situations because it has a unique bactericidal mode of action (MOA) with broad spectrum activity.[7] Baytril 100 works by killing the bacterial that causes the infection by destroying bacterial DNA and preventing bacterial replication.[7]

Baytril 100 is indicated for the treatment of bovine respiratory disease (BRD) associated with *Mannheimia haemolytica, Pasteurella multocida, Histophilus somni* and *Mycoplasma bovis* in beef and non-lactating dairy cattle; and for the control of BRD in beef and non-lactating dairy cattle at high risk of developing BRD associated with *M. haemolytica, P. multocida, H. somni* and *M. bovis.*

CAUTION: For use by or on the order of a licensed veterinarian. Extra-label use in food-producing animals is prohibited. Cattle intended for human consumption must not be slaughtered within 28 days from the last treatment. This product is not approved for female dairy cattle 20 months of age or older, including dry dairy cows. Use in these cattle may cause drug residues in milk and/or in calves born to these cows. The effects of enrofloxacin on cattle or swine reproductive performance, pregnancy and lactation have not been determined.

VIAL SIZES

• 100 mL • 250 mL • 500 mL

DOSAGE

- **Single Dose Therapy:** 3.4-5.7 mL/100 lbs
- **Multi-Day Therapy:** 1.1-2.3 mL/100 lbs

ADVANTAGES & BENEFITS:

- First enrofloxacin approved for both multi-day and single-dose treatment and metaphylaxis.
- Reaches therapeutic drug concentrations at the site of infection in the lung in one to two hours.[6]
- Syringable in cold weather, making it an easily stored injectable solution.[8]
- Provides broad-spectrum protection against four major BRD pathogens.
- Projected to be one of the top two performing antibiotics based on risk of retreatment.[9]

Injectable Baytril® 100 (enrofloxacin)

PRESCRIBING INFORMATION FOR USE IN CATTLE ONLY. SEE PRODUCT INSERT FOR COMPLETE DOSING AND ADMINISTRATION INFORMATION

Elanco® Baytril® 100
(enrofloxacin)

100 mg/mL Antimicrobial Injectable Solution
For Subcutaneous Use In Beef Cattle And Non-Lactating Dairy Cattle
Not For Use In Female Dairy Cattle 20 Months Of Age Or Older
Or In Calves To Be Processed For Veal

CAUTION:
Federal (U.S.A.) law restricts this drug to use by or on the order of a licensed veterinarian.
Federal (U.S.A.) law prohibits the extra-label use of this drug in food-producing animals.

Before Using Baytril 100, please consult the complete product insert, a summary of which follows:

INDICATIONS:
Cattle - Single-Dose Therapy: Baytril 100 is indicated for the treatment of bovine respiratory disease (BRD) associated with ***Mannheimia haemolytica, Pasteurella multocida, Histophilus somni*** and ***Mycoplasma bovis*** in beef and non-lactating dairy cattle; and for the control of BRD in beef and non-lactating dairy cattle at high risk of developing BRD associated with ***M. haemolytica, P. multocida, H. somni*** and ***M. bovis***.
Cattle - Multiple-Day Therapy: Baytril 100 is indicated for the treatment of bovine respiratory disease (BRD) associated with ***Mannheimia haemolytica, Pasteurella multocida*** and ***Histophilus somni*** in beef and non-lactating dairy cattle.

DOSAGE AND ADMINISTRATION:
Baytril 100 provides flexible dosages and durations of therapy.
Baytril 100 may be administered as a single dose for one day for treatment and control of BRD (cattle), or for multiple days for BRD treatment (cattle). Selection of the appropriate dose and duration of therapy for BRD treatment in cattle should be based on an assessment of the severity of the disease, pathogen susceptibility and clinical response.
Cattle:
Single-Dose Therapy (BRD Treatment): Administer, by subcutaneous injection, a single dose of 7.5-12.5 mg/kg of body weight (3.4-5.7 mL/100 lb).
Multiple-Day Therapy (BRD Treatment): Administer daily, a subcutaneous dose of 2.5-5 mg/kg of body weight (1.1-2.3 mL/100 lb). Treatment should be repeated at 24-hour intervals for three days. Additional treatments may be given on Days 4 and 5 to animals that have shown clinical improvement but not total recovery.
Single-Dose Therapy (BRD Control): Administer, by subcutaneous injection, a single dose of 7.5 mg/kg of body weight (3.4 mL/100 lb).
Examples of conditions that may contribute to calves being at high risk of developing BRD include, but are not limited to, the following:
- Transportation with animals from two or more farm origins.
- An extended transport time with few to no rest stops.
- An environmental temperature change of ≥30°F during transportation.
- A ≥30°F range in temperature fluctuation within a 24-hour period.
- Exposure to wet or cold weather conditions.
- Excessive shrink (more than would be expected with a normal load of cattle).
- Stressful arrival processing procedures (e.g., castration or dehorning).
- Exposure within the prior 72 hours to animals showing clinical signs of BRD.

Administered dose volume should not exceed 20 mL per injection site.

Table 1 – Baytril 100 Dose and Treatment Schedule for Cattle*

Weight (lb)	Treatment		Control
	Single-Dose Therapy 7.5 - 12.5 mg/kg Dose Volume (mL)	Multiple-Day Therapy 2.5 - 5.0 mg/kg Dose Volume (mL)	Single-Dose Therapy 7.5 mg/kg Dose Volume (mL)
100	3.5 - 5.5	1.5 - 2.0	3.5
200	7.0 - 11.0	2.5 - 4.5	7.0
300	10.5 - 17.0	3.5 - 6.5	10.5
400	14.0 - 22.5	4.5 - 9.0	14.0
500	17.0 - 28.5	5.5 - 11.5	17.0
600	20.5 - 34.0	7.0 - 13.5	20.5
700	24.0 - 39.5	8.0 - 16.0	24.0
800	27.5 - 45.5	9.0 - 18.0	27.5
900	31.0 - 51.0	10.0 - 20.5	31.0
1000	34.0 - 57.0	11.0 - 23.0	34.0
1100	37.5 - 62.5	12.5 - 25.0	37.5

*Dose volumes have been rounded to the nearest 0.5 mL within the dose range.

See product insert for complete dosing and administration information.

Use within 30 days of first puncture and puncture a maximum of 30 times with a needle or 4 times with a dosage delivery device. Any product remaining beyond these parameters should be discarded.

RESIDUE WARNINGS:
Cattle: Animals intended for human consumption must not be slaughtered within 28 days from the last treatment. This product is not approved for female dairy cattle 20 months of age or older, including dry dairy cows. Use in these cattle may cause drug residues in milk and/or in calves born to these cows. A withdrawal period has not been established for this product in pre-ruminating calves. Do not use in calves to be processed for veal.

HUMAN WARNINGS:
Not for use in humans. Keep out of reach of children. Avoid contact with eyes. In case of contact, immediately flush eyes with copious amounts of water for 15 minutes. In case of dermal contact, wash skin with soap and water. Consult a physician if irritation persists following ocular or dermal exposures. Individuals with a history of hypersensitivity to quinolones should avoid this product. In humans, there is a risk of user photosensitization within a few hours after excessive exposure to quinolones. If excessive accidental exposure occurs, avoid direct sunlight. For product questions, to report adverse reactions, or for a copy of the Safety Data Sheet (SDS), call Elanco Product & Veterinary Support at 1-800-428-4441.

PRECAUTIONS:
The effects of enrofloxacin on cattle reproductive performance, pregnancy and lactation have not been adequately determined.
Subcutaneous injection in cattle can cause a transient local tissue reaction that may result in trim loss of edible tissue at slaughter. Baytril 100 contains different excipients than other Baytril products. The safety and efficacy of this formulation in species other than cattle have not been determined.
Quinolone-class drugs should be used with caution in animals with known or suspected Central Nervous System (CNS) disorders. In such animals, quinolones have, in rare instances, been associated with CNS stimulation which may lead to convulsive seizures. Quinolone-class drugs have been shown to produce erosions of cartilage of weight-bearing joints and other signs of arthropathy in immature animals of various species. See Animal Safety section for additional information.

ADVERSE REACTIONS:
No adverse reactions were observed during clinical trials.
For additional information about reporting adverse drug experiences for animal drugs, contact FDA at 1-888-FDA-VETS or http://www.fda.gov/reportanimalae.

EFFECTIVENESS:
Cattle: A total of 845 calves with naturally-occurring BRD were treated with Baytril 100 in eight field trials located in five cattle-feeding states. Response to treatment was compared to non-treated controls. Single-dose and multiple-day therapy regimens were evaluated. BRD and mortality were significantly reduced in enrofloxacin-treated calves. No adverse reactions were reported in treated animals.
The effectiveness of Baytril 100 for the control of respiratory disease in cattle at high risk of developing BRD was evaluated in a six-location study in the U.S. and Canada. A total of 1,150 crossbred beef calves at high risk of developing BRD were enrolled in the study. Baytril 100 (7.5 mg/kg BW) or an equivalent volume of sterile saline was administered as a single subcutaneous injection within two days after arrival. Cattle were observed daily for clinical signs of BRD and were evaluated for success on Day 14 post-treatment. Treatment success in the Baytril 100 group (497/573, 87.83%) was significantly higher (P = 0.0013) than success in the saline control group (455/571, 80.92%). In addition, there were more treatment successes (n = 13) than failures (n = 3) in the group of animals positive for ***M. bovis*** on Day 0 that were treated with Baytril 100. No product-related adverse reactions were reported.

STORAGE CONDITIONS: Protect from direct sunlight. Do not refrigerate or freeze. Store at 20-30ºC (68-86ºF), excursions permitted up to 40ºC (104ºF). Precipitation may occur due to cold temperature. To redissolve, warm and then shake the vial.

HOW SUPPLIED:
Baytril 100:

100 mg/mL	100 mL Bottle
100 mg/mL	250 mL Bottle
100 mg/mL	500 mL Bottle

For product questions, to report adverse reactions, or for a copy of the Safety Data Sheet (SDS), call Elanco Product & Veterinary Support at 1-800-428-4441.

Revised: January 2022

Baytril 100
Approved by FDA under NADA # 141-068
Manufactured for: Elanco US Inc.
Greenfield, IN 46140 U.S.A
Made in Germany

Elanco™

PRADALEX®

(pradofloxacin injection)

PradalexTM is an innovative third generation fluoroquinolone antibiotic for the treatment of bovine respiratory disease (BRD). Pradofloxacin, the active ingredient in Pradalex, uniquely features two modes of action yielding improved potency and a broader spectrum of activity relative to other fluoroquinolone antibiotics, enabling your cattle to get back to health sooner.1

Pradalex is indicated for the treatment of BRD associated with Mannheimia haemolytica, Pasteurella multocida, Histophilus somni and Mycoplasma bovis in cattle intended for slaughter (beef calves 2 months of age and older, growing beef steers, growing beef heifers, and beef bulls intended for slaughter), and in cattle intended for breeding less than 1 year of age (replacement beef and dairy heifers less than 1 year of age and beef and dairy bulls less than 1 year of age). Not for use in cattle intended for breeding 1 year of age and older (replacement beef and dairy heifers 1 year of age and older, beef and dairy bulls 1 year of age and older, and beef and dairy cows), beef calves less than 2 months of age, dairy calves, and veal calves.

Federal law restricts this drug to use by or on the order of a licensed veterinarian.Not for use in humans. Keep out of reach of children. Avoid contact with eyes and skin. Individuals with a history of hypersensitivity to quinolones should avoid this product. Not for use in animals intended for breeding greater than 1 year of age because the effects of Pradalex on bovine reproductive performance, pregnancy, and lactation have not been determined. Not for use in beef and dairy calves less than 2 months of age, and veal calves; a withdrawal period has not been established for this product in pre-ruminating calves. Quinolones should be used with caution in animals with known or suspected central nervous system (CNS) disorders. Mild to moderate inflammatory changes of the injection site may be seen in cattle treated with Pradalex.

VIAL SIZES

• 100 mL • 250 mL

DOSAGE

2.3 mL/100lbs

ADVANTAGES & BENEFITS:

- Concentration dependent antibiotic with a dual mode of action that kills bacteria before they can replicate
- Highly potent and rapidly absorbed, delivering faster* BRD treatment than traditional time-dependent antibiotics
- Quickly eliminated from the body, resulting in a shorter withdrawal period, less potential impact on the microbiome, and reduced chance for resistance development
- Convenient, single dose, low-volume antibiotic with best-in-class syringeability

*Clinical relevance unknown

Elanco™
Pradalex™
(pradofloxacin injection)
™

PRESCRIBING INFORMATION FOR USE IN CATTLE ONLY

Elanco™ Pradalex™

(pradofloxacin injection)

200 mg pradofloxacin/mL injectable solution Antimicrobial

CAUTION
Federal law restricts this drug to use by or on the order of a licensed veterinarian.
Federal law prohibits the extra-label use of this drug in food-producing animals.
To ensure responsible antimicrobial drug use, use of pradofloxacin should be limited to treatment of bovine respiratory disease (BRD) in cattle and treatment of swine respiratory disease (SRD) in swine only after consideration of other non-fluoroquinolone therapeutic options.
Before using Pradalex, please consult the product insert, a summary of which follows:

INDICATIONS
Cattle: Pradalex is indicated for the treatment of BRD associated with Cattle: Pradalex is indicated for the treatment of BRD associated with Mannheimia haemolytica, Pasteurella multocida, Histophilus somni and Mycoplasma bovis in cattle intended for slaughter (beef calves 2 months of age and older, growing beef steers, growing beef heifers, and beef bulls intended for slaughter), and in cattle intended for breeding less than 1 year of age (replacement beef and dairy heifers less than 1 year of age and beef and dairy bulls less than 1 year of age). Not for use in cattle intended for breeding 1 year of age and older (replacement beef and dairy heifers 1 year of age and older, beef and dairy bulls 1 year of age and older, and beef and dairy cows), beef calves less th

DOSAGE AND ADMINISTRATION
Cattle: Administer once as a subcutaneous injection at a dosage of 10 mg/kg (2.3 mL/100 lb) body weight. Do not inject more than 15 mL per subcutaneous injection site.

Table 1. Pradalex Dose Guide for Cattle (2.3 mL/100 lbs)

Weight (lb)	Dose Volume (mL)
100	2.3
200	4.6
300	6.9
400	9.2
500	11.5
600	13.8
700	16.1
800	18.4
900	20.7

See product insert for complete dosing and administration information.

Use bottle within 6 months of first puncture. When administering from the 250 mL bottle, puncture a maximum of 120 times. If more than 120 punctures are anticipated, the use of multi-dosing equipment is recommended. When using a draw-off spike or needle with bore diameter larger than 16-gauge, discard any product remaining in the vial immediately after use.

WITHDRAWAL PERIODS and RESIDUE WARNINGS
Cattle intended for human consumption must not be slaughtered within 4 days of treatment. Not for use in female dairy cattle 1 year of age and older, including dry dairy cows; use in these cattle may cause drug residues in milk and/or in calves born to these cows. Not for use in beef calves less than 2 months of age, dairy calves, and veal calves; a withdrawal period has not been established for this product in pre-ruminating calves.

ANIMAL SAFETY WARNINGS
Not for use in animals intended for breeding because the effects of Pradalex on bovine reproductive performance, pregnancy, and lactation have not
been determined.

ADVERSE REACTIONS
Mild to moderate inflammatory changes of the injection site may be seen in cattle treated with Pradalex.

CONTACT INFORMATION
To report suspected adverse drug experiences, for technical assistance or to obtain a copy of the Safety Data Sheet, contact Elanco at 1-800-428-4441. For additional information about reporting adverse drug experiences for animal drugs, contact FDA at 1-888-FDA-VETS or http://www.fda.gov/reportanimalae.

EFFECTIVENESS
Cattle: The effectiveness of Pradalex for the treatment of BRD associated with Mannheimia haemolytica, Pasteurella multocida, Histophilus somni and Mycoplasma bovis was demonstrated in a multi-site natural infection field study conducted in the U.S. A total of 630 commercial, mixed-breed male and female calves with clinical BRD were enrolled. Calves were administered a single subcutaneous dose of either Pradalex at 10 mg/kg body weight or an equivalent volume of sterile saline. Calves were evaluated for clinical success on Day 10. The success rate of Pradalex-treated calves (49.7%) was statistically significantly different ($p = 0.0089$) and numerically greater than that of saline-treated calves (25.6%) (based on back-transformed least squares means). No adverse events associated with Pradalex administration were reported in the study.

STORAGE CONDITIONS
Protect from direct sunlight. Do not refrigerate or freeze. Store at 25ºC (77ºF), excursions permitted up to 40ºC (104ºF) and down to -20ºC (-4ºF).
See in-use instructions provided in the Dosage and Administration section.

HOW SUPPLIED
200 mg/mL 250 mL bottles
200 mg/mL 100 mL bottles

TAKE TIME
OBSERVE LABEL DIRECTIONS

Pradalex is protected by one or more U.S. patents: see patent information at http://www.elancopatents.com

Approved by FDA under NADA # 141-550

Product of Germany

Manufactured by TriRx Pharmaceutical Services, Shawnee Mission, Kansas 66216 U.S.

Revision January 2024

Elanco™

Elanco
Tylan® Injection™

TYLAN® INJECTION

(TYLOSIN INJECTION)

Trusted for more than 30 years, Tylan® injection is a cost-effective tool used to treat cattle for pneumonia as well as foot rot, calf diphtheria and metritis. It's a versatile pull-and-treat option that comes ready to use and does not require mixing, reconstitution or refrigeration.

Tylan Injection is indicated for use in beef cattle and non-lactating dairy cattle for the treatment of bovine respiratory complex (shipping fever, pneumonia) usually associated with *Pasteurella multocida* and *Arcanobacterium pyogenes;* foot rot (necrotic pododermatitis) and calf diphtheria caused by *Fusobacterium necrophorum* and metritis caused by *Arcanobacterium pyogenes.*

CAUTION: Federal law restricts this drug to use by or on the order of a licensed veterinarian. Animals intended for human consumption must not be slaughtered within 21 days of the last intramuscular treatment. This product is not approved for use in female dairy cattle 20 months of age or older, including dry dairy cows. Use in these cattle may cause drug residues in milk and/or calves born to these cows. A withdrawal period has not been established in pre-ruminating calves. Do not use in calves to be processed for veal.

VIAL SIZES

• 100 mL • 250 mL • 500 mL

DOSAGE

• 4 mL/100 lbs

ADVANTAGES & BENEFITS:

- Moves to the lungs, where studies have shown it begins to accumulate within 30 minutes after an intramuscular injection.*[10]
- Approved to treat foot rot, calf diphtheria and metritis.
- Does not require mixing, reconstitution or refrigeration.

*Clinical relevance unknown.

Elanco™

Tylan™ 200 Injection TM

Professional Size
500 mL

(tylosin injection)

200 mg per mL

For Use In Cattle and Swine Only

CAUTION: Federal law restricts this drug to use by or on the order of a licensed veterinarian.

An Antibiotic

Use automatic syringe equipment only

Indications: In Beef Cattle and Non-lactating Dairy Cattle, Tylan 200 Injection is indicated for use in the treatment of bovine respiratory complex (shipping fever, pneumonia) usually associated with *Pasteurella multocida* and *Arcanobacterium pyogenes*; foot rot (necrotic pododermatitis) and calf diphtheria caused by *Fusobacterium necrophorum* and metritis caused by *Arcanobacterium pyogenes.*

In Swine, Tylan 200 Injection is indicated for use in the treatment of swine arthritis caused by *Mycoplasma hyosynoviae*; swine pneumonia caused by *Pasteurella* spp.; swine erysipelas caused by *Erysipelothrix rhusiopathiae*; swine dysentery associated with *Treponema hyodysenteriae* when followed by appropriate medication in the drinking water and/or feed.

Each mL contains 200 mg of tylosin activity (as tylosin base) in 50 percent propylene glycol with 4 percent benzyl alcohol and water for injection.

ADMINISTRATION AND DOSAGE: Tylan 200 Injection is administered intramuscularly.

BEEF CATTLE AND NON-LACTATING DAIRY CATTLE—Inject intramuscularly 8 mg per pound of body weight one time daily (1 mL per 25 pounds). Treatment should be continued 24 hours following remission of disease signs, not to exceed 5 days. Do not inject more than 10 mL per site.

SWINE—Inject intramuscularly 4 mg per pound of body weight (1 mL per 50 pounds) twice daily. Treatment should be continued 24 hours following remission of disease signs, not to exceed 3 days. Do not inject more than 5 mL per site.

Read accompanying directions fully before use.

CAUTION:

Do not mix Tylan 200 Injection with other injectable solutions as this may cause a precipitation of the active ingredients.

WARNINGS:

NOT FOR HUMAN USE. KEEP OUT OF REACH OF CHILDREN.

Adverse reactions, including shock and death may result from overdosage in baby pigs.

Do not attempt injection into pigs weighing less than 25 pounds (0.5 mL) with the common syringe. It is recommended that Tylan 50 Injection be used in pigs weighing less than 25 pounds.

Do not administer to horses or other equines. Injection of tylosin in equines has been fatal.

RESIDUE WARNING: Swine: Swine intended for human consumption must not be slaughtered within 14 days of the last use of this drug product.

RESIDUE WARNING: Cattle: Cattle intended for human consumption must not be slaughtered within 21 days of the last use of this drug product. This drug product is not approved for use in female dairy cattle 20 months of age or older, including dry dairy cows. Use in these cattle may cause drug residues in milk and/or in calves born to these cows. This product is not approved for use in calves intended to be processed for veal. A withdrawal period has not been established in pre-ruminating calves.

If tylosin medicated drinking water is used as a follow-up treatment for swine dysentery, the animal should thereafter receive feed containing 40 to 100 grams of tylosin per ton for 2 weeks to assure depletion of tissue residues.

Store at or below 25°C (77°F).

Approved by FDA under NADA # 012-965

For additional information about reporting adverse drug experiences for animal drugs, contact FDA at 1-888-FDA-VETS or http://www.fda.gov/reportanimalae.

Manufactured for: Elanco US Inc.
Greenfield, IN 46140, USA
Product of Ireland

ZELNATE®

DNA IMMUNOSTIMULANT

Zelnate® is an antibiotic alternative with innovative technology that jump-starts an animal's natural defenses to aid in the treatment of BRD. The unique DNA liposome complex in Zelnate stimulates the innate immune system and has been shown to provide a rapid, potent and broad protective response to infectious agents in cattle 4 months of age and older.

VIAL SIZES

- 10 doses
- 50 doses

DOSAGE

- Inject 2 mL intramuscularly at the time of or within 24 hours of a perceived stressful event.
- Spray 2 mL into one nostril with a syringe using an atomization tip.

ADVANTAGES & BENEFITS:

- Zelnate contains no antibiotics and no preservatives and can be used in natural programs.
- In a study, calves that received Zelnate within 24 hours of BRD exposure have been shown to have significantly reduced mortality rates due to BRD relative to calves that did not receive Zelnate.[11]
- Zelnate has been demonstrated to significantly reduce lung lesions and mortality (death loss) compared to untreated animals ($P < 0.05$).[12]

See productdata.aphis.usda.gov for a summary of the studies approved by the USDA for licensing this product. This package insert may also contain additional information developed by the licensee.

DNA Immunostimulant

ZELNATE®

For Intramuscular or Intranasal Administration to Cattle

FOR VETERINARY USE ONLY **02337**

READ IN FULL

DESCRIPTION

The innate immune system in cattle has been shown to provide a potent, rapid, nonspecific, protective response to infectious agents, such as *Mannheimia haemolytica* that can lead to Bovine Respiratory Disease (BRD). BRD is a serious condition that commonly causes lung lesions, reduced lung capacity and mortality.

ZELNATE® is a bacterial-produced plasmid DNA with a liposome carrier that stimulates the innate immune system and has been shown to be effective against bovine respiratory disease due to *Mannheimia haemolytica.*

The freeze-dried (desiccate) product is packaged with two different sterile diluents. The First Sterile Rehydrator (vial 1) is used to reconstitute the desiccate cake (vial 2), and then transferred to the Final Sterile Solution (vial 3) to achieve the proper concentration for administration.

INDICATION

This product has been shown to be effective for the treatment of cattle, 4 months of age or older, against bovine respiratory disease due to *Mannheimia haemolytica.* For more information regarding efficacy and safety data, see productdata.aphis.usda.gov.

This product has been shown to be effective at the time of, or within 24 hours after, a perceived stressful event.

IMPORTANT STORAGE CONDITIONS

Store Refrigerated

2°C to 8°C (35°F to 46°F)

DO NOT FREEZE.

Stability has been demonstrated for at least 8 hours after reconstitution if vial is refrigerated and sterility is maintained.

Individual Study Summary - Study# 200270

Study Type	Efficacy
Pertaining to	*Mannheimia haemolytica*
Study Purpose	Efficacy against bovine respiratory disease
Product Administration	One dose administered by IM route at the time of challenge. Control group administered diluent only
Study Animals	64 Holstein steers of 3-4 months of age; randomized into 2 groups of 32 calves each
Challenge Description	live *M. haemolytica* inoculum
Interval observed after challenge	Observed daily for 5 days. Lungs were evaluated 5 days after challenge.
Results	The percent of lung mass that was abnormal (consolidated) was calculated/scored for every animal. For animals that died prior to Day 5, the necropsy lung score was not included in the analysis. 5 number summary for lung consolidation Treatment — Minimum — Q1 — Median — Q3 — Maximum Controls — 0% — 6% — 10% — 15% — 33% Treated — 0% — 1% — 4% — 10% — 22% Raw data shown on the table below. The animals that died prior to Day 5 are marked with an asterick (*). The deaths prior to Day 5 were: 1/32 in Treated group: 1/32 in Control group. Diagnosis was severe bovine respiratory disease for calf in Control group.
USDA Aproval Date	28-Feb-2013

Lung consolidation scores (%), in order to rank:

Treated	0%	0%	1%	1%	1%	1%	1%	1%	2%	2%	3%	3%	3%*	4%	4%	4%
Control	0%	0%	3%	3%	3%	4%	6%	6%	6%	7%	7%	7%	8%	8%	10%	10%

Treated (Cont.)	4%	5%	5%	6%	8%	9%	10%	10%	10%	11%	12%	13%	13%	15%	18%	22%
Control (Cont.)	10%	10%	10%	11%	13%	14%	15%	15%	18%	18%	21%	23%	27%	29%	33%	34%*

*** death prior to Day 5**

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METHOD OF ADMINISTRATION

Inject 2 mL intramuscularly at the time of, or within 24 hours after, a perceived stressful event (for example: weaning, shipping, commingling or adverse environmental conditions). Alternatively, spray 2 mL into one nostril using an atomization tip attached to the syringe; the atomizer should produce a fine mist of particles 30-100 microns in size for delivery to the mucosal membranes.

CAUTION

In case of human exposure, contact a physician. Use entire contents when first opened. Inactivate unused contents before disposal.

PRECAUTION

Do not administer within 21 days of slaughter. Do not mix with other products, except as specified on this label. This product has not been tested in pregnant animals.

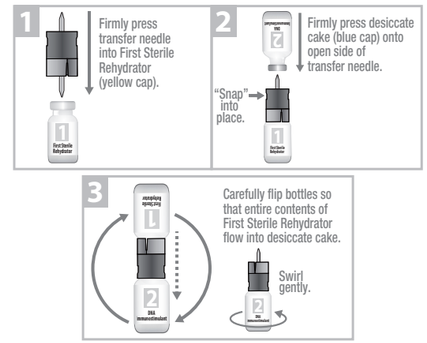
OTHER INFORMATION

Contains no antibiotics and no preservatives.

HOW SUPPLIED

Vials of 10 and 50 doses.

Mixing process must be completed in the appropriate order. Transfer needle must be fully inserted to prevent spillage.



ZELNATE® is ready for use.

DIAMOND

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Diamond Animal Health, Inc.
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U.S. Veterinary License No. 213
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December, 2020
LV2012

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