

HFA-305

Date of Approval:

SEP - 3 2002

FREEDOM OF INFORMATION SUMMARY

ANADA 200-008

SUPPLEMENTAL ABBREVIATED NEW ANIMAL DRUG APPLICATION

Bio-Mycin® 200
(oxytetracycline injection)

“For use in lactating dairy cattle”

Sponsored by:

Boehringer Ingelheim Vetmedica, Inc.

FOIS-1

1.	GENERAL INFORMATION	Page 1
2.	TARGET ANIMAL SAFETY AND EFFECTIVENESS	Page 2
3.	HUMAN SAFETY	Page 2
	TOLERANCES FOR RESIDUES	Page 2
	WITHDRAWAL TIMES	Page 2
	REGULATORY METHOD FOR RESIDUES	Page 5
4.	AGENCY CONCLUSIONS	Page 6
5.	ATTACHMENTS	Page 7

1. GENERAL INFORMATION

- a. ANADA Number: 200-008
- b. Sponsor: Boehringer Ingelheim Vetmedica, Inc.
2621 North Belt Highway
St. Joseph, Missouri 64506
- Drug Labeler Code: 000010
- c. Established Name: Oxytetracycline injection
- d. Proprietary Name: Bio-Mycin® 200
- e. Dosage Form: Sterile injectable solution
- f. How Supplied: 100-, 250-, and 500-mL bottles
- g. How Dispensed: OTC
- h. Amount of Active Ingredients 200 mg oxytetracycline base per mL
- i. Route of Administration: IM, SC, or IV
- j. Species/Class: Beef cattle, dairy cattle, and swine
- k. Recommended Dosage: Cattle: Bio-Mycin® 200 is to be administered by IM, SC, or IV injection to beef cattle and dairy cattle.
- Bio-Mycin® 200 can be administered intramuscularly or subcutaneously as single dosage of 9 mg/lb (20 mg/kg) bodyweight.
- Bio-Mycin® 200 can also be administered 3-5 mg/lb administered IV, SC, or IM once a day for up to 4 days
- l. Pharmacological Category: Antimicrobial
- m. Indications: Cattle: Bio-Mycin® 200 is indicated in the treatment of pneumonia and shipping fever complex associated with *Pasteurella* spp. and *Haemophilus* spp.; infectious bovine keratoconjunctivitis (pinkeye) caused by *Moraxella bovis*; foot rot and diphtheria caused by *Fusobacterium necrophorum*; bacterial enteritis

(scours) caused by *Escherichia coli*; wooden tongue caused by *Actinobacillus lignieresii*; leptospirosis caused by *Leptospira pomona*; and wound infections and acute metritis caused by strains of staphylococci and streptococci organisms sensitive to oxytetracycline.

Swine: Bio-Mycin® 200™ is indicated in the treatment of bacterial enteritis (scours, colibacillosis) caused by *Escherichia coli*; pneumonia caused by *Pasteurella multocida*; and leptospirosis caused by *Leptospira pomona*. In sows, Bio-Mycin® 200™ is indicated as an aid in the control of infectious enteritis (baby pig scours, colibacillosis) in suckling pigs caused by *Escherichia coli*.

- n. Pioneer Product: LIQUAMYCIN® LA-200, (NADA 113-232; Pfizer)
- o. Effect of Supplement: This supplement provides for changes to the product labeling to include lactating dairy cattle.

2. TARGET ANIMAL SAFETY AND DRUG EFFECTIVENESS

This supplemental application does not affect this section of the FOI summary. Refer to the FOI summaries for the original ANADA approved November 16, 1994, and for the supplemental approval, dated May 22, 1996.

3. HUMAN SAFETY

- **Tolerances for Residues:** The tolerances established for the pioneer product apply to all tetracycline products. An acceptable daily intake (ADI) for total tetracycline residues is 25 micrograms per kilogram of body weight per day. A tolerance of 2 ppm in muscle, 6 ppm in liver, and 12 ppm in fat and kidney in the uncooked edible tissues of cattle under 21 CFR 556.500, as published October 27, 1998 (63 FR 57245). 21 CFR 556.500 was amended to reflect the tolerance of 0.3 ppm established for milk effective September 5, 2001.
- **Withdrawal Times:**
 - A. Title: BioMycin® 200 Milk Residue Study in Dairy Cows
 - 1) Type of Study: Milk Residue
 - 2) Study Director: Dan Ronning

Colorado Animal Research Enterprises, Inc.
6200 East County Road 56
Fort Collins, CO 80526

3) General Design:

Purpose: To extend the label claim for use in lactating dairy cows by measuring the oxytetracycline residue levels in milk after one treatment of Bio-Mycin® 200.

Dosage Form: Bio-Mycin® 200 in 100 mL bottle.

Route of Administration: Intramuscular

Dosage Used: 20 mg/kg (9mg/lb) once.

Study Duration: Day -1 through Day 6

Parameters Measured:

Body Weights: Once on Day -1.

Physical Examination: Once on Day -1.

Daily Observations: Clinical observations conducted daily by veterinarian for duration of study.

Milk Sample Collection: Samples were collected from each cow on day -1 (pre-dose) and at 12, 24, 36, 48, 60, 72, 84, 96, 108, 120, 132, and 144 hours post-treatment.

Analyses of Milk Samples: Assays of oxytetracycline levels were conducted by the cylinder-plate microbiology method.

4) Results:

Body Weights: Ranged from 633.0-815.5 kg (1396-1798 lb.).

Physical Examination: All animals were healthy throughout duration of trial.

Daily Observations: No abnormal clinical signs were noted and no adverse events.

Oxytetracycline Residues in Milk (See Table 1).

Table 1. Overall mean Oxytetracycline residue values* (mcg/mL) + SD in milk over time (hr)

Time post dosing (hour)	Oxytetracycline mcg/mL	Number of Animals
Predose	ND	20
12	2.458 + 0.616	20
24	2.647 + 0.504	20
36	2.199 + 0.595	20
48	1.188 + 0.350	20
60	0.924 + 0.355	20
72	<0.522 + 0.258	20
84	<0.363 + 0.228	20
96	<0.202 + 0.173	20
108	<0.160 + 0.179	20
120	<0.150 + 0.142	20
132	<0.150 + 0.109	20
144	<0.150 + 0.064	20

*ND = not detectable, considered 0.0 for computation of means and standard deviations. The limit of quantification for the assay of <0.150 was considered as 0.150 for computations of means and standard deviations. (Individual values for each animal not shown in this table).

By the last sampling at 144 hours, the milk from 18 cows did not have detectable residues. At the time one cow had detectable but non-quantifiable oxytetracycline residue levels and one cow had residue levels of 262-269 ppb, which approached the 300 ppb tolerance limit. The milk oxytetracycline levels of that cow were comparable to the other test cows through the 36 hour time point. Thereafter, the milk oxytetracycline residues markedly exceeded those from any other cow. There were no unusual circumstances associated with the test article administration to her or atypical clinical to explain the divergent residue depletion profile.

5) Statistical Results:

The data on assayed oxytetracycline (OTC) concentrations were statistically evaluated according to FDA/CVM's "Guideline for Establishing a Withdrawal Period." Application of CVM's prescribed statistical analysis determined that at 96 hrs the 99% tolerance limit with 95% confidence equaled 0.451 ppm.

B. Pharmacokinetic Comparison of IM and SC Routes of Administration

The milk residue depletion study was conducted in cattle treated intramuscularly (see above). Comparative plasma pharmacokinetic data indicate that the depletion following subcutaneous administration is more rapid than that associated with intramuscular administration as shown in Table 2. This more rapid depletion results therefore in lower terminal oxytetracycline concentrations following subcutaneous administration.

Table 2. Least square means and confidence intervals comparing Bio-Mycin® 200 when administered by the intramuscular (IM) and subcutaneous (SC) routes

Parameter	Mean (IM Dosing)	Mean (SC Dosing)	Ratio (SC/IM)	Lower CI*	Upper CI*
C _{max} (µg/mL)	5.57	9.27	1.66	50%	83%
AUC ₁₀₈ (µg*hr/mL)	178.6	198.3	1.11	7%	15%
T _{max} (hr)	3.19	2.16	N/A	N/A	N/A
T ₁₀₈ (hr)	114.01	92.42	N/A	N/A	N/A
C _{0.5} (µg/mL)	3.553	6.275	1.77	N/A	N/A
C ₂₄ (µg/mL)	3.079	3.148	1.02	N/A	N/A
C ₄₈ (µg/mL)	1.239	0.816	0.66	N/A	N/A
C ₉₆ (µg/mL)	0.177	0.107	0.60	N/A	N/A

* L = lower bound on the 90% confidence interval and U= upper bound on the 90% confidence interval for the difference between the IM and SC formulation product means

The 96 hour Oxytetracycline concentration ratio would indicate that milk residues of Oxytetracycline following subcutaneous administration could be as much as 60% lower than those with intramuscular administration.

C. Milk Discard Withdrawal Conclusion

A milk discard time of 96 hrs is assigned for the prescribed use of Bio-Mycin® 200 in lactating dairy cows. As mentioned above, application of CVM's prescribed statistical analysis determined that at 96 hrs the 99% tolerance limit with 95% confidence equaled 0.451 ppm. Although that value exceeds the tolerance of 0.3 ppm, it assumes that 100% of the animals in the herd have been treated with the drug at its maximum dose and that milk from all of the treated animals will be consumed by humans. However, because oxytetracycline injection will be used therapeutically, it is assumed that no more than one-third of the herd will be treated at a given time and, as such, oxytetracycline residues are expected to be no more than approximately 0.15 ppm.

• **Regulatory Method for Residues:**

The regulatory analytical method for detection of residues in tissues and milk is a microbiological cylinder-plate method (Antibiotic Residues in Milk, Dairy Products, and Animal Tissues: Methods, Reports, and Protocols, FDA, 1968, as reprinted 1974). This

method is found on file at the Center For Veterinary Medicine, 7500 Standish Place, Rockville, MD 20855.

4. AGENCY CONCLUSIONS

The data submitted in support of this ANADA satisfy the requirements of section 512 of the Federal Food, Drug, and Cosmetics Act and 21 CFR Part 514 of the implementing regulations. The data demonstrate that Bio-Mycin®, when used under its proposed conditions of use, is safe and effective for its labeled indications.

Adequate directions for use of the product to treat cattle and swine have been written for the layman, and the conditions for use prescribed on the labeling are likely to be followed in practice. Therefore, the Center for Veterinary Medicine (CVM) has concluded that this product shall continue to have over-the-counter marketing status.

This application would extend the use of oxytetracycline to lactating dairy cows. The previously established tolerance for oxytetracycline in milk is 0.3 ppm. With reference to this tolerance, a milk discard of 96 hours was calculated from the results of a residue depletion study in lactating dairy cattle using a statistical analysis (99% tolerance limit with 95% confidence) and making an allowance for only one-third of the herd being treated at any one time.

Under the Center's supplemental approval policy (21 CFR 514.106(b)(2)(v)), this is a Category II change. The approval of this change is not expected to have any adverse effect on the safety or effectiveness of this new animal drug and, therefore, did not require a reevaluation of the human food or target animal safety data in the parent application.

The pioneer, Liquamycin® LA-200®, Pfizer, Inc., was approved for use in lactating dairy cattle on July 21, 1998.

Bio-Mycin® Injectable Solution is under U.S. patent number 5,075,295, which expires December 12, 2009.

5. ATTACHMENTS

Facsimile Labeling and Currently Approved Pioneer Labeling are attached as indicated below:

- A. BIO-MYCIN® 200 - Vial Labels
- B. BIO-MYCIN® 200 - Package Inserts
- C. Liquamycin® LA-200® - Vial Labels
- D. Liquamycin® LA-200® - Package Inserts

Copies of applicable labeling may be obtained by writing to:

Freedom of Information Staff (HFI-35)
Food and Drug Administration, Room 12A16
5600 Fisher's Lane
Rockville, Maryland 20857

42210

Lot No.:

TEAR HERE →

Exp. Date:

Each mL contains 200 mg of oxytetracycline base as oxytetracycline amphoteric.
For the treatment of disease in beef cattle, dairy cattle and swine.

Dosage
Cattle: A single dosage of 9 mg of oxytetracycline per pound of body weight (4.5 mL/100 lb) administered *intramuscularly* or *subcutaneously* is recommended in the treatment of the following conditions: 1) bacterial pneumonia caused by *Pasteurella* spp. (shipping fever) in calves and yearlings, where retreatment is impractical due to husbandry conditions, such as cattle on range, or where repeated restraint is inadvisable; 2) infectious bovine keratoconjunctivitis (pinkeye) caused by *Moraxella bovis*.

Swine: A single dosage of 9 mg of oxytetracycline per pound of body weight (4.5 mL/100 lb) administered *intramuscularly* is recommended in the treatment of bacterial pneumonia caused by *Pasteurella multocida* in swine, where retreatment is impractical due to husbandry conditions or where repeated restraint is inadvisable.

Warning: Discontinue treatment for at least 28 days prior to slaughter of cattle and swine. Milk taken from animals during treatment and for 96 hours after the last treatment must not be used for food.

Precautions: Exceeding the highest recommended dosage level of drug per pound of body weight per day, administering more than the recommended number of treatments and/or exceeding 10 mL intramuscularly or subcutaneously per injection site in adult beef cattle and dairy cattle and 5 mL intramuscularly in adult swine, may result in antibiotic residues beyond the withdrawal period.

Caution: When administered to cattle, muscle discoloration may necessitate trimming of the injection site(s) and surrounding tissues during the dressing procedure.

Restricted Drug (California): Use only as directed. Keep out of reach of children.

For use in animals only.

Refer to folded label attached to this container for complete directions.

Caution: Store at controlled room temperature, 15°-30° C (59°-86° F). Keep from freezing. Handle aseptically.

U.S. Patent No. 5,075,295

Boehringer Ingelheim Vetmedica, Inc.
St. Joseph, MO 64506 U.S.A.

3495113L-01-0204
Code 349521



Boehringer
Ingelheim



Bio-Mycin® 200

(oxytetracycline) Injection
Antibiotic

200 mg/mL

ANADA 200-008, Approved by FDA

Net Contents: 500 mL

ESU Fix-a-Form Pat. 4488922

Label size: 7" x 3 1/2"
 PMS 2995 Light Blue (above and below ring)
 PMS 287 Blue (ring)
 Black text

NADA 200-008, Approved by FDA

Bio-Mycin® 200

(oxytetracycline) Injection
 Antibiotic

Each mL contains 200 mg of oxytetracycline base as oxytetracycline amphoteric.

For the treatment of disease in beef cattle, dairy cattle and swine.

Read entire insert carefully before using this product.

Bio-Mycin® 200 (oxytetracycline Injection) is a sterile, ready-to-use solution of the broad spectrum antibiotic oxytetracycline by injection. Each mL contains 200 mg of oxytetracycline base as amphoteric; magnesium oxide 1.7% w/v; sodium formaldehyde sulfoxylate 0.5% w/v; polyethylene glycol 400 30% w/v; monoethanolamine to adjust pH; water for injection USP qs. Oxytetracycline is an antimicrobial agent that is effective in the treatment of a wide range of diseases caused by susceptible gram-positive and gram-negative bacteria.

Bio-Mycin 200 does not require refrigeration; however, it is recommended that it be stored at controlled room temperature, 15°-30° C (59°-86° F). The antibiotic activity of oxytetracycline is not appreciably diminished in the presence of body fluids, serum or exudates.

Caution: When administered to cattle, muscle discoloration may necessitate trimming of the injection site(s) and surrounding tissues during the dressing procedure.

Warning: Discontinue treatment at least 28 days prior to slaughter of cattle and swine. Milk taken from animals during treatment and for 96 hours after the last treatment must not be used for food.

Rapid intravenous administration may result in animal collapse. Oxytetracycline should be administered intravenously slowly over a period of at least 5 minutes.

Precautions: Exceeding the highest recommended dosage level of drug per pound of body weight per day, administering more than the recommended number of treatments and/or exceeding 10 mL intramuscularly or subcutaneously per injection site in adult beef cattle and dairy cattle, and 5 mL intramuscularly per injection site in adult swine, may result in antibiotic residues beyond the withdrawal period.

Consult with your veterinarian prior to administering this product in order to determine the proper treatment required in the event of an adverse reaction. At the first sign of any adverse reaction, discontinue use of product and seek the advice of your veterinarian. Some of the reactions may be attributed either to anaphylaxis (an allergic reaction) or to cardiovascular collapse of unknown cause.

Shortly after injection treated animals may have transient hemoglobinuria resulting in darkened urine.

As with all antibiotic preparations, use of this drug may result in overgrowth of nonsusceptible organisms, including fungi. A lack of response by the treated animal, or the development of new signs, may suggest that an overgrowth of nonsusceptible organisms has occurred. If any of these conditions occur, consult your veterinarian.

Since bacteriostatic drugs may interfere with the bactericidal action of penicillin, it is advisable to avoid giving Bio-Mycin 200 in conjunction with penicillin.

Adverse Reactions: Reports of adverse reactions associated with oxytetracycline administration include injection site swelling, restlessness, ataxia, trembling, swelling of eyelids, ears, muzzle, anus and vulva (or scrotum and sheath in males), respiratory abnormalities (labored breathing), frothing at the mouth, collapse and possibly death. Some of these reactions may be attributed either to anaphylaxis (an allergic reaction) or to cardiovascular collapse of unknown cause.

Storage: Store at controlled room temperature, 15°-30° C (59°-86° F). Keep from freezing.

Care of Sick Animals: The use of antibiotics in the management of diseases is based on an accurate diagnosis and an adequate course of treatment. When properly used in the treatment of diseases caused by oxytetracycline susceptible organisms most animals that have been treated with oxytetracycline injection show a noticeable improvement within 24 to 48 hours. It is recommended that the diagnosis and treatment of animal diseases be carried out by a veterinarian. Since many diseases look alike but require different types of treatment, the use of professional veterinary and laboratory services can reduce treatment time, costs and needless losses. Good housing, sanitation and nutrition are important in the maintenance of healthy animals, and are essential in the treatment of diseased animals.

Indications: Bio-Mycin 200 is intended for use in the treatment of the following diseases in beef cattle, dairy cattle and swine when due to oxytetracycline-susceptible organisms:

Cattle: In cattle, Bio-Mycin 200 is indicated in the treatment of pneumonia and shipping fever complex associated with *Pasteurella* spp. and *Haemophilus* spp.; infectious bovine keratoconjunctivitis (pinkeye) caused by *Moraxella bovis*; foot-rot and diphtheria caused by *Fusobacterium necrophorum*; bacterial enteritis (scours) caused by *Escherichia coli*; wooden tongue caused by *Actinobacillus lignieresii*; leptospirosis caused by *Leptospira pomona*; and wound infections and acute metritis caused by strains of staphylococci and streptococci organisms sensitive to oxytetracycline.

Swine: In swine, Bio-Mycin 200 is indicated in the treatment of bacterial enteritis (scours, colibacillosis) caused by *Escherichia coli*; pneumonia caused by *Pasteurella multocida*; and leptospirosis caused by *Leptospira pomona*.

In sows, Bio-Mycin 200 is indicated as an aid in the control of infectious enteritis (baby pig scours, colibacillosis) in suckling pigs caused by *Escherichia coli*.

Dosage:

Cattle: Bio-Mycin 200 is to be administered by intramuscular, subcutaneous, or intravenous injection to beef cattle and dairy cattle.

A single dosage of 9 milligrams of Bio-Mycin 200 per pound of body weight administered intramuscularly or subcutaneously is recommended in the treatment of the following conditions: 1) bacterial pneumonia caused by *Pasteurella* spp. (shipping fever) in calves and yearlings, where retreatment is impractical due to husbandry conditions, such as cattle on range, or where their repeated restraint is inadvisable; 2) infectious bovine keratoconjunctivitis (pinkeye) caused by *Moraxella bovis*.

Cattle Dosage Guide

At the first signs of pneumonia or pinkeye administer a single dose of Bio-Mycin® 200 by deep intramuscular injection or subcutaneous injection according to the following weight categories**

Animal weight (lb)	Number of mL or cc	Animal weight (lb)	Number of mL or cc	Animal weight (lb)	Number of mL or cc
100	4.5	500	22.5	900	40.5
200	9.0	600	27.0	1000	45.0

keratoconjunctivitis (pinkeye) caused by *Moraxella bovis*.

Dosage Guide

At first signs of pneumonia or pinkeye* administer a single dose of Bio-Mycin® 200 by deep intramuscular or subcutaneous injection according to the following weight categories**

Animal weight (lb)	Number of mL or cc	Animal weight (lb)	Number of mL or cc	Animal weight (lb)	Number of mL or cc
100	4.5	500	22.5	900	40.5
200	9.0	600	27.0	1000	45.0
300	13.5	700	31.5	1100	49.5
400	18.0	800	36.0	1200	54.0

package insert for dosing instructions for other indicated diseases and full product information. Do not administer more than 10 mL at any one injection site (1 to 2 mL per site in small calves).

Discontinue treatment at least 28 days prior to slaughter of cattle. Milk taken from animals during treatment and for 96 hours after the last treatment must not be used for food.

Bio-Mycin 200 can also be administered by intravenous, subcutaneous, or intramuscular injection at a level of 5 milligrams of oxytetracycline per pound of body weight per day. In the treatment of severe foot-rot and advanced cases of other indicated diseases, a dosage level of 5 milligrams per pound of body weight per day is recommended. Treatment should be continued 24 to 48 hours following remission of disease signs; however, not to exceed a total of four consecutive days. Consult your veterinarian if improvement is not noted within 24 to 48 hours of the beginning of treatment.

In swine a single dosage of 9 milligrams of Bio-Mycin 200 per pound of body weight administered intramuscularly is recommended in the treatment of bacterial pneumonia caused by *Pasteurella multocida* in swine, where retreatment is impractical due to husbandry conditions or where repeated restraint is inadvisable.

Dosage Guide

At first signs of pneumonia* administer a single dose of Bio-Mycin® 200 by deep intramuscular injection according to the following weight categories**

Animal weight (lb)	Number of mL or cc	Animal weight (lb)	Number of mL or cc	Animal weight (lb)	Number of mL or cc
10	0.5	125	5.6	250	11.3
25	1.1	150	6.8	275	12.4
50	2.3	175	7.9	300	13.5
75	3.4	200	9.0	325	14.6
100	4.5	225	10.1		

package insert for dosing instructions for other indicated diseases and full product information. Do not administer more than 5 mL at any one injection site.

Discontinue treatment 28 days prior to slaughter of swine.

Bio-Mycin 200 can also be administered by intramuscular injection at a level of 3 to 5 milligrams of oxytetracycline per pound of body weight per day.

Treatment should be continued 24 to 48 hours following remission of disease signs; however, not to exceed a total of four consecutive days. Consult your veterinarian if improvement is not noted within 24 to 48 hours of the beginning of treatment.

In cows, administer once intramuscularly 3 milligrams of oxytetracycline per pound of body weight approximately 8 hours before farrowing or immediately after completion of farrowing.

In swine weighing 25 lb of body weight and under, Bio-Mycin 200 should be administered undiluted for treatment at 9 mg/lb but should be administered diluted for treatment at 3 or 5 mg/lb.

Body Weight	9 MG/LB DOSAGE Volume of UNDILUTED Bio-Mycin 200		3 OR 5 MG/LB DOSAGE Volume of DILUTED Bio-Mycin 200	
	9 mg/lb	3 mg/lb	Dilution*	5 mg/lb
5 lb	0.2 mL	0.6 mL	1:7	1.0 mL
10 lb	0.5 mL	0.9 mL	1:5	1.5 mL
25 lb	1.1 mL	1.5 mL	1:3	2.5 mL

To prepare dilutions, add one part Bio-Mycin 200 to three, five or seven parts of sterile water, or 5 percent glucose solution as indicated; the diluted product should be used immediately.

Directions for Use: Bio-Mycin 200 is intended for use in the treatment of disease due to oxytetracycline susceptible organisms in beef cattle, dairy cattle and swine. A thoroughly cleaned, sterile needle and syringe should be used for each injection (needles and syringes may be sterilized by boiling in water for 15 minutes). In hot weather, Bio-Mycin 200 should be warmed to room temperature before administration to animals. Before withdrawing the solution from the bottle, disinfect the rubber cap on the bottle with a suitable disinfectant, such as 70% alcohol. The injection site should be similarly cleaned with the disinfectant. Needles of 18 gauge and 1 to 1 1/4 inches long are adequate for intramuscular injections. Needles 2 1/2 to 3 inches are recommended for intravenous use.

Intramuscular Administration: Intramuscular injections should be made by directing the needle of suitable gauge and length into the fleshy part of a thick muscle such as in the rump, hip or thigh regions; avoid blood vessels and major nerves. Before injecting the solution, pull back gently on the plunger. If blood appears in the syringe, a blood vessel has been entered; withdraw the needle and select a different site.

Do not administer more than 10 mL should be injected intramuscularly at any one site in adult beef cattle and dairy cattle, not more than 5 mL per site in adult swine; rotate injection sites for each succeeding treatment. The volume administered per injection site should be reduced according to age and body size so that 1 to 2 mL per site is injected in small calves.

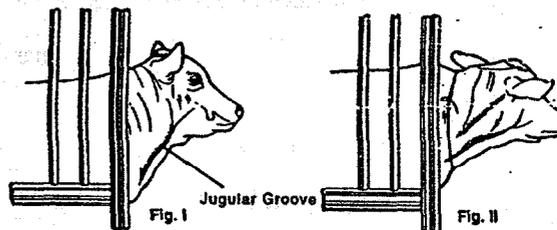
Subcutaneous Administration: Subcutaneous injections in beef cattle and dairy cattle should be made by directing the needle of suitable gauge and length through the loose folds of the neck skin in front of the shoulder. Care should be taken to ensure that the tip of the needle has penetrated the skin but is not lodged in the muscle. Before injecting the solution, pull back gently on the plunger. If blood appears in the syringe, a blood vessel has been entered; withdraw the needle and select a different site. The solution should be injected slowly into the area between the skin and muscle.

rotate injection sites for each succeeding treatment. The volume administered per injection site should be reduced according to age and body size so that 1 to 7 mL per site is injected in small calves.

Intravenous Administration: Bio-Mycin 200 (oxytetracycline injection) may be administered intravenously to beef cattle and dairy cattle. As with all highly concentrated materials, Bio-Mycin 200 should be administered slowly by the intravenous route.

Preparation of the Animal for Injection:

1. Approximate location of vein. The jugular vein runs in the jugular groove on each side of the neck from the angle of the jaw to just above the brisket and slightly above and to the side of the windpipe. (See Fig. I).
2. Restraint. A stanchion or chute is ideal for restraining the animal. With a halter, rope, or cattle leader (nose tongs), pull the animal's head around the side of the stanchion, cattle chute, or post in such a manner to form a bow in the neck (See Fig. II), then snub the head securely to prevent movement. By forming the bow in the neck, the outside curvature of the bow tends to expose the jugular vein and make it easily accessible. Caution: Avoid restraining the animal with a tight rope or halter around the throat or upper neck which might impede blood flow. Animals that are down present no problem as far as restraint is concerned.
3. Clip hair in area where injection is to be made (over the vein in the upper third of the neck). Clean and disinfect the skin with alcohol or other suitable antiseptic.



Entering the Vein and Making the Injection:

1. Raise the vein. This is accomplished by tying the choke rope tightly around the neck close to the shoulder. The rope should be tied in such a way that it will not come loose and so that it can be untied quickly by pulling the loose end (See Fig. II). In thick-necked animals, a block of wood placed in the jugular groove between the rope and the hide will help considerably in applying the desired pressure at the right point. The vein is a soft flexible tube through which the blood flows back to the heart. Under ordinary conditions, it cannot be seen or felt with the fingers. When the flow of blood is blocked at the base of the neck by the choke rope, the vein becomes enlarged and rigid because of the back pressure. If the choke rope is sufficiently tight, the vein stands out and can be easily seen and felt. In thin-necked animals, as a further check in identifying the vein, tap it with the fingers in front of the choke rope. Pulsations that can be seen or felt with the fingers in front of the point being tapped will confirm the fact that the vein is properly distended. It is impossible to put the needle into the vein unless it is distended. Experienced operators are able to raise the vein simply by hand pressure, but the use of a choke rope is more certain.
2. Inserting the needle. This involves three distinct steps. First, insert the needle through the hide. Second, insert the needle into the vein. This may require two or three attempts before the vein is entered. The vein has a tendency to roll away from the point of the needle, especially if the needle is not sharp. The vein can be steadied with the thumb and finger of one hand. With the other hand, the needle point is placed directly over the vein, slanting it so that its direction is along the length of the vein, either toward the head or toward the heart. Properly positioned this way, a quick thrust of the needle will be followed by a spurt of blood through the needle, which indicates that the vein has been entered. Third, once in the vein, the needle should be inserted along the length of the vein all the way to the hub, exercising caution to see that the needle does not penetrate the opposite side of the vein. Continuous steady flow of blood through the needle indicates that the needle is still in the vein. If blood does not flow continuously, the needle is out of the vein (or clogged) and another attempt must be made. If difficulty is encountered, it may be advisable to use the vein on the other side of the neck.
3. While the needle is being placed in proper position in the vein, an assistant should get the medication ready so that the injection can be started without delay after the vein has been entered.
4. Making the injection. With the needle in position as indicated by continuous flow of blood, release the choke rope by a quick pull on the free end. This is essential—the medication cannot flow into the vein while it is blocked. Immediately connect the syringe containing Bio-Mycin 200 (oxytetracycline injection) to the needle and slowly depress the plunger. If there is resistance to depression of the plunger, this indicates that the needle has slipped out of the vein (or is clogged) and the procedure will have to be repeated. Watch for any swelling under the skin near the needle, which would indicate that the medication is not going into the vein. Should this occur, it is best to try the vein on the opposite side of the neck.
5. Removing the needle. When injection is complete, remove needle with straight pull. Then apply pressure over area of injection momentarily to control any bleeding through needle puncture, using cotton soaked in alcohol or other suitable antiseptic.

Package Information: Bio-Mycin 200 is available in 100-mL, 250-mL and 500-mL bottles containing 200 mg oxytetracycline per mL.

Keep out of reach of children.

U.S. Patent No. 5,075,295.

3495113L-01-0204

Code 349521



**Boehringer
Ingelheim**

Coordinator Joe Seewald
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PMS 116 PMS 477 PMS 485 Black 60% Black

Pattern Varnish

Net Contents: 250 mL

(oxytetracycline injection)

Liquamycin®
LA-200®

4696



Liquamycin®
LA-200®

(oxytetracycline injection)

Cattle Dosage Guide

At the first signs of pneumonia or pink eye, administer a single dose of Liquamycin LA-200 subcutaneously according to the following weight categories:

Animal Weight (lb)	Number of mL per cc	Animal Weight (lb)	Number of mL per cc
100	0.5	700	7.0
200	1.0	800	8.0
300	1.5	900	9.0
400	2.0	1000	10.0
500	2.5	1100	11.0
600	3.0	1200	12.0

See package insert for complete instructions for other indicated diseases and full product information.
 Do not administer more than 5 mL at any one injection site.

Discontinue treatment at least 28 days prior to slaughter.

Swine Dosage Guide

At the first signs of pneumonia, administer Liquamycin LA-200 by deep intramuscular injection according to the following weight categories:

Animal Weight (lb)	Number of mL per cc	Animal Weight (lb)	Number of mL per cc
10	0.5	175	7.9
25	1.1	200	9.0
50	2.3	225	10.1
75	3.4	250	11.3
100	4.5	275	12.4
125	5.6	300	13.5
150	6.8	325	14.6

See package insert for complete instructions for other indicated diseases and full product information.
 Do not administer more than 5 mL at any one injection site.

Discontinue treatment at least 28 days prior to slaughter.

4696

Liquamycin®
LA-200®

(oxytetracycline injection)

Antibiotic

Each mL contains 200 mg of oxytetracycline base as oxytetracycline dihydrate.

For the treatment of disease in beef cattle, dairy cattle, calves, including pre-ruminating (veal) calves; and swine

For animal use only

Net Contents: 250 mL

NADA #113-232, Approved by FDA

Liquamycin®
LA-200®

(oxytetracycline injection)



Liquamycin LA-200 (oxytetracycline injection) is a sterile, preconstituted solution of the broad-spectrum antibiotic oxytetracycline.

Caution: When administered to cattle, muscle discoloration may necessitate trimming of the injection site(s) and surrounding tissues during the dressing procedure.

Warnings: Discontinue treatment at least 28 days prior to slaughter of cattle and swine. Milk taken from animals during treatment and for 96 hours after the last treatment must not be used for food. Rapid intravenous administration may result in animal collapse. Oxytetracycline should be administered intravenously over a period of at least 5 minutes.

Precautions: Exceeding the highest recommended level of drug per lb of body weight per day, administering more than the recommended number of treatments, and/or exceeding 10 mL subcutaneously per injection site in adult beef and dairy cattle, and 5 mL intramuscularly per injection site in adult swine, may result in antibiotic residues beyond the withdrawal period.

Refer to Package Insert for Complete Directions

Storage: Store at room temperature 15°-30°C (59°-86°F). Keep from freezing.

Restricted Drug (California)—Use Only as Directed

Not for Human Use

TAKE TIME



OBSERVE LABEL DIRECTIONS



Distributed by:
Animal Health
 Exton, PA 19341, USA

FPO - Code 128

4697

Liquamycin® LA-200®

(oxytetracycline injection)

Antibiotic

Each mL contains 200 mg
of oxytetracycline base as
oxytetracycline dihydrate.

For the treatment of disease in
beef cattle; dairy cattle; calves,
including preruminating (veal)
calves; and swine

For animal use only

Net Contents: 500 mL

NADA #113-232, Approved by FDA

NEEDLE AND SYRINGE

FPO - UPC

0 8 21 9 1 0 7 6 9 7



Liquamycin® LA-200®

(oxytetracycline injection)

Antibiotic

Each mL contains 200 mg of oxytetracycline base as oxytetracycline dihydrate.
For use in beef cattle; dairy cattle; calves, including preruminating (veal) calves; and swine

For animal use only

Read Entire Package Insert Carefully Before Using This Product

Liquamycin LA-200 (oxytetracycline injection) is a sterile, ready-to-use solution for the administration of the broad-spectrum antibiotic oxytetracycline (Terramycin®) by injection. Terramycin, discovered by Pfizer scientists, is an antimicrobial agent that is effective in the treatment of a wide range of diseases caused by susceptible gram-positive and gram-negative bacteria.

Liquamycin LA-200 administered to cattle or swine for the treatment of bacterial pneumonia at a dosage of 9 mg of oxytetracycline per lb of body weight has been demonstrated in clinical trials to be as effective as 2 or 3 repeated, daily treatments of Terramycin Injectable at 3-5 mg/lb of body weight.

Liquamycin LA-200 does not require refrigeration; however, it is recommended that it be stored at room temperature, 15°-30°C (59°-86°F). The antibiotic activity of oxytetracycline is not appreciably diminished in the presence of body fluids, serum, or exudates.

CAUTION: When administered to cattle, muscle discoloration may necessitate trimming of the injection site(s) and surrounding tissues during the dressing procedure.

WARNINGS: Discontinue treatment at least 28 days prior to slaughter of cattle and swine. Milk taken from animals during treatment and for 96 hours after the last treatment must not be used for food. Rapid intravenous administration may result in animal collapse. Oxytetracycline should be administered intravenously over a period of at least 5 minutes.

PRECAUTIONS: Exceeding the highest recommended dosage level of drug per lb of body weight per day, administering more than the recommended number of treatments, and/or exceeding 10 mL subcutaneously per injection site in adult beef and dairy cattle, and 5 mL intramuscularly per injection site in adult swine, may result in antibiotic residues beyond the withdrawal period.

Consult with your veterinarian prior to administering this product in order to determine the proper treatment required in the event of an adverse reaction. At the first sign of any adverse reaction, discontinue use of the product and seek the advice of your veterinarian. Some of the reactions may be attributed either to anaphylaxis (an allergic reaction) or to cardiovascular collapse of unknown cause.

Shortly after injection, treated animals may have transient hemoglobinuria resulting in darkened urine.

As with all antibiotic preparations, use of this drug may result in overgrowth of non-susceptible organisms, including fungi. A lack of response by the treated animal, or the development of new signs, may suggest that an overgrowth of nonsusceptible organisms has occurred. If any of these conditions occur, consult your veterinarian. Since bacteriostatic drugs may interfere with the bactericidal action of penicillin, it is advisable to avoid giving Liquamycin LA-200 in conjunction with penicillin.

ADVERSE REACTIONS: Reports of adverse reactions associated with oxytetracycline administration include injection site swelling, restlessness, ataxia, trembling, swelling of eyelids, ears, muzzle, anus and vulva (or scrotum and sheath in males), respiratory abnormalities (labored breathing), frothing at the mouth, collapse and possibly death. Some of these reactions may be attributed to anaphylaxis (an allergic reaction) or to cardiovascular collapse of unknown cause.

STORAGE: Store at room temperature 15°-30°C (59°-86°F). Keep from freezing.

CARE OF SICK ANIMALS: The use of antibiotics in the management of diseases is based on an accurate diagnosis and an adequate course of treatment. When properly used in the treatment of diseases caused by oxytetracycline-susceptible organisms, most animals that have been treated with Liquamycin LA-200 show a noticeable improvement within 24-48 hours. It is recommended that the diagnosis and treatment of animal diseases be carried out by a veterinarian. Since many diseases look alike but require different types of treatment, the use of professional veterinary and laboratory services can reduce treatment time, costs, and needless losses. Good housing, sanitation, and nutrition are important in the maintenance of healthy animals, and are essential in the treatment of diseased animals.

INDICATIONS: Liquamycin LA-200 is intended for use in the treatment of the following diseases in beef cattle; dairy cattle; calves, including preruminating (veal) calves; and swine when due to oxytetracycline-susceptible organisms:

Cattle: Liquamycin LA-200 is indicated in the treatment of pneumonia and shipping fever complex associated with *Pasteurella* spp. and *Hemophilus* spp.; infectious bovine keratoconjunctivitis (pinkeye) caused by *Moraxella bovis*; foot rot and diphtheria caused by *Fusobacterium necrophorum*; bacterial enteritis (scours) caused by *Escherichia coli*; wooden tongue caused by *Actinobacillus lignieresii*; leptospirosis caused by *Leptospira pomona*; and wound infections and acute metritis caused by strains of staphylococci and streptococci organisms sensitive to oxytetracycline.

Swine: Liquamycin LA-200 is indicated in the treatment of bacterial enteritis (scours, colibacillosis) caused by *Escherichia coli*; pneumonia caused by *Pasteurella multocida*; and leptospirosis caused by *Leptospira pomona*.

In sows, Liquamycin LA-200 is indicated as an aid in the control of infectious enteritis (baby pig scours, colibacillosis) in suckling pigs caused by *Escherichia coli*.

DOSAGE:

Cattle: Liquamycin LA-200 is to be administered by subcutaneous (SC, under the skin) or intravenous injection according to Beef Quality Assurance Guidelines.

A single dosage of 9 mg of Liquamycin LA-200 per lb of body weight administered subcutaneously is recommended in the treatment of the following conditions: 1) bacterial pneumonia caused by *Pasteurella* spp. (shipping fever) in calves and yearlings, where retreatment is impractical due to husbandry conditions, such as cattle on range, or where their repeated restraint is inadvisable; 2) infectious bovine keratoconjunctivitis (pinkeye) caused by *Moraxella bovis*.

Liquamycin LA-200 can also be administered by subcutaneous or intravenous injection at a level of 3-5 mg of oxytetracycline per lb of body weight per day. In the treatment of severe foot rot and advanced cases of other indicated diseases, a dosage level of 5 mg/lb of body weight per day is recommended. Treatment should be continued 24-48 hours following remission of disease signs; however, not to exceed a total of 4 consecutive days. Consult your veterinarian if improvement is not noted within 24-48 hours of the beginning of treatment.

Swine: A single dosage of 9 mg of Liquamycin LA-200 per lb of body weight administered intramuscularly in the neck region is recommended in the treatment of bacterial

where retreatment is impractical

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McGraw-Hill
Editor
Coordinator

Michelle
Joe S.

and swine. Milk taken from animals during treatment and for 96 hours after the last treatment must not be used for food. Rapid intravenous administration may result in animal collapse. Oxytetracycline should be administered intravenously over a period of at least 5 minutes.

PRECAUTIONS: Exceeding the highest recommended dosage level of drug per lb of body weight per day, administering more than the recommended number of treatments, and/or exceeding 10 mL subcutaneously per injection site in adult beef and dairy cattle, and 5 mL intramuscularly per injection site in adult swine, may result in antibiotic residues beyond the withdrawal period.

Consult with your veterinarian prior to administering this product in order to determine the proper treatment required in the event of an adverse reaction. At the first sign of any adverse reaction, discontinue use of the product and seek the advice of your veterinarian. Some of the reactions may be attributed either to anaphylaxis (an allergic reaction) or to cardiovascular collapse of unknown cause.

Shortly after injection, treated animals may have transient hemoglobinuria resulting in darkened urine.

As with all antibiotic preparations, use of this drug may result in overgrowth of non-susceptible organisms, including fungi. A lack of response by the treated animal, or the development of new signs, may suggest that an overgrowth of nonsusceptible organisms has occurred. If any of these conditions occur, consult your veterinarian.

Since bacteriostatic drugs may interfere with the bactericidal action of penicillin, it is advisable to avoid giving Liquamycin LA-200 in conjunction with penicillin.

ADVERSE REACTIONS: Reports of adverse reactions associated with oxytetracycline administration include injection site swelling, restlessness, ataxia, trembling, swelling of eyelids, ears, muzzle, anus and vulva (or scrotum and sheath in males), respiratory abnormalities (labored breathing), frothing at the mouth, collapse and possibly death. Some of these reactions may be attributed to anaphylaxis (an allergic reaction) or to cardiovascular collapse of unknown cause.

STORAGE: Store at room temperature 15°–30°C (59°–86°F). Keep from freezing.

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INDICATIONS: Liquamycin LA-200 is intended for use in the treatment of the following diseases in beef cattle; dairy cattle; calves, including preruminating (veal) calves; and swine when due to oxytetracycline-susceptible organisms:

Cattle: Liquamycin LA-200 is indicated in the treatment of pneumonia and shipping fever complex associated with *Pasteurella* spp. and *Hemophilus* spp.; infectious bovine keratoconjunctivitis (pinkeye) caused by *Moraxella bovis*; foot rot and diphtheria caused by *Fusobacterium necrophorum*; bacterial enteritis (scours) caused by *Escherichia coli*; wooden tongue caused by *Actinobacillus lignieresii*; leptospirosis caused by *Leptospira pomona*; and wound infections and acute metritis caused by strains of staphylococci and streptococci organisms sensitive to oxytetracycline.

Swine: Liquamycin LA-200 is indicated in the treatment of bacterial enteritis (scours, colibacillosis) caused by *Escherichia coli*; pneumonia caused by *Pasteurella multocida*; and leptospirosis caused by *Leptospira pomona*.

In sows, Liquamycin LA-200 is indicated as an aid in the control of infectious enteritis (baby pig scours, colibacillosis) in suckling pigs caused by *Escherichia coli*.

DOSAGE:

Cattle: Liquamycin LA-200 is to be administered by subcutaneous (SC, under the skin) or intravenous injection according to Beef Quality Assurance Guidelines.

A single dosage of 9 mg of Liquamycin LA-200 per lb of body weight administered subcutaneously is recommended in the treatment of the following conditions: 1) bacterial pneumonia caused by *Pasteurella* spp. (shipping fever) in calves and yearlings, where retreatment is impractical due to husbandry conditions, such as cattle on range, or where their repeated restraint is inadvisable; 2) infectious bovine keratoconjunctivitis (pinkeye) caused by *Moraxella bovis*.

Liquamycin LA-200 can also be administered by subcutaneous or intravenous injection at a level of 3–5 mg of oxytetracycline per lb of body weight per day. In the treatment of severe foot rot and advanced cases of other indicated diseases, a dosage level of 5 mg/lb of body weight per day is recommended. Treatment should be continued 24–48 hours following remission of disease signs; however, not to exceed a total of 4 consecutive days. Consult your veterinarian if improvement is not noted within 24–48 hours of the beginning of treatment.

Swine: A single dosage of 9 mg of Liquamycin LA-200 per lb of body weight administered intramuscularly in the neck region is recommended in the treatment of bacterial pneumonia caused by *Pasteurella multocida* in swine, where retreatment is impractical due to husbandry conditions or where repeated restraint is inadvisable.

Liquamycin LA-200 can also be administered by intramuscular injection at a level of 3–5 mg of oxytetracycline per lb of body weight per day. Treatment should be continued 24–48 hours following remission of disease signs; however, not to exceed a total of 4 consecutive days. Consult your veterinarian if improvement is not noted within 24–48 hours of the beginning of treatment.

For sows, administer once intramuscularly in the neck region 3 mg of oxytetracycline per lb of body weight approximately 8 hours before farrowing or immediately after completion of farrowing.

For swine weighing 25 lb of body weight and under, Liquamycin LA-200 should be administered undiluted for treatment at 9 mg/lb but should be administered diluted for treatment at 3 or 5 mg/lb.

Body Weight	9 mg/lb Dosage		3 or 5 mg/lb Dosage	
	Volume of Undiluted Liquamycin LA-200		Volume of Diluted Liquamycin LA-200	
	9 mg/lb	3 mg/lb	Dilution*	5 mg/lb
5 lb	0.2 mL	0.6 mL	1:7	1.0 mL
10 lb	0.5 mL	0.9 mL	1:5	1.5 mL
25 lb	1.1 mL	1.5 mL	1:3	2.5 mL

*To prepare dilutions, add 1 part Liquamycin LA-200 to 3, 5, or 7 parts of sterile water, or 5% dextrose solution as indicated; the diluted product should be used immediately.

DIRECTIONS FOR USE: Liguamycin LA-200 is intended for use in the treatment of disease due to oxytetracycline-susceptible organisms in beef cattle; dairy cattle; calves, including prerinminating (veal) calves; and swine. A thoroughly cleaned, sterile needle and syringe should be used for each injection (needles and syringes may be sterilized by boiling in water for 15 minutes). In cold weather, Liguamycin LA-200 should be warmed to room temperature before administration to animals. Before withdrawing the solution from the bottle, disinfect the rubber cap on the bottle with suitable disinfectant, such as 70% alcohol. The injection site should be similarly cleaned with the disinfectant. Needles of 16-18 gauge and 1-1½ inches long are adequate for intramuscular and subcutaneous injections. Needles 2-3 inches are recommended for intravenous use.

Intramuscular Administration:

Intramuscular injections in swine should be made by directing the needle of suitable gauge and length into the fleshy part of a thick muscle in the neck region; avoid blood vessels and major nerves. Before injecting the solution, pull back gently on the plunger. If blood appears in the syringe, a blood vessel has been entered; withdraw the needle and select a different site. No more than 5 mL should be injected at any one site in adult swine; rotate injection sites for each succeeding treatment.

Subcutaneous Administration:

Subcutaneous injections in beef cattle, dairy cattle, and calves, including prerinminating (veal) calves, should be made by directing the needle of suitable gauge and length through the loose folds of the neck skin in front of the shoulder. Care should be taken to ensure that the tip of the needle has penetrated the skin but is not lodged in muscle. Before injecting the solution, pull back gently on the plunger. If blood appears in the syringe, a blood vessel has been entered; withdraw the needle and select a different site. The solution should be injected slowly into the area between the skin and muscles. No more than 10 mL should be injected subcutaneously at any one site in adult beef and dairy cattle; rotate injection sites for each succeeding treatment. The volume administered per injection site should be reduced according to age and body size so that 1-2 mL per site is injected in small calves.

Intravenous Administration:

Liguamycin LA-200 may be administered intravenously to beef and dairy cattle. As with all highly concentrated materials, Liguamycin LA-200 should be administered slowly by the intravenous route.

Preparation of the Animal for Injection:

1. Approximate location of vein. The jugular vein runs in the jugular groove on each side of the neck from the angle of the jaw to just above the brisket and slightly above and to the side of the windpipe (see Fig. I).
2. Restraint. A stanchion or chute is ideal for restraining the animal. With a halter, rope, or cattle leader (nose tongs), pull the animal's head around the side of the stanchion, cattle chute, or post in such a manner to form a bow in the neck (see Fig. II), then snub the head securely to prevent movement. By forming the bow in the neck, the outside curvature of the bow tends to expose the jugular vein and make it easily accessible. **Caution:** Avoid restraining the animal with a tight rope or halter around the throat or upper neck which might impede blood flow. Animals that are down present no problem so far as restraint is concerned.
3. Clip hair in area where injection is to be made (over the vein in the upper third of the neck). Clean and disinfect the skin with alcohol or other suitable antiseptic.

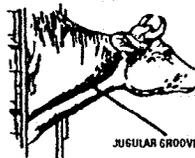


FIGURE I



FIGURE II

Entering the Vein and Making the Injection:

1. Raise the vein. This is accomplished by tying the choke rope tightly around the neck close to the shoulder. The rope should be tied in such a way that it will not come loose and so that it can be untied quickly by pulling the loose end (see Fig. II). In thick-necked animals, a block of wood placed in the jugular groove between the rope and the hide will help considerably in applying the desired pressure at the right point. The vein is a soft flexible tube through which blood flows back to the heart. Under ordinary conditions it cannot be seen or felt with the fingers. When the flow of blood is blocked at the base of the neck by the choke rope, the vein becomes enlarged and rigid because of the back pressure. If the choke rope is sufficiently tight, the vein stands out and can be easily seen and felt in thin-necked animals. As a further check in identifying the vein, tap it with the fingers in front of the choke rope. Pulsations that can be seen or felt with the fingers in front of the point being tapped will confirm the fact that the vein is properly distended. It is impossible to put the needle into the vein unless it is distended. Experienced operators are able to raise the vein simply by hand pressure, but the use of a choke rope is more certain.
2. Inserting the needle. This involves 3 distinct steps. First, insert the needle through the hide. Second, insert the needle into the vein. This may require 2 or 3 attempts before the vein is entered. The vein has a tendency to roll away from the point of the needle, especially if the needle is not sharp. The vein can be steadied with the thumb and finger of one hand. With the other hand, the needle point is placed directly over the vein, slanting it so that its direction is along the length of the vein, either toward the head or toward the heart. Properly positioned this way, a quick thrust of the needle will be followed by a spurt of blood through the needle, which indicates that the vein has been entered. Third, once in the vein, the needle should be inserted along the length of the vein all the way to the hub, exercising caution to see that the needle does not penetrate the opposite side of the vein. Continuous steady flow of blood through the needle indicates that the needle is still in the vein. If blood does not flow continuously, the needle is out of the vein (or clogged) and another attempt must be made. If difficulty is encountered, it may be advisable to use the vein on the other side of the neck.
3. While the needle is being placed in proper position in the vein, an assistant should get the medication ready so that the injection can be started without delay after the vein has been entered.
4. Making the injection. With the needle in position as indicated by continuous flow of blood, release the choke rope by a quick pull on the free end. This is essential—the medication cannot flow into the vein while it is blocked. Immediately connect the syringe containing Liguamycin LA-200 to the needle and slowly depress the plunger. If there is resistance to depression of the plunger, this indicates that the needle has slipped out of the vein (or is clogged) and the procedure will have to be repeated. Watch for any swelling under the skin.

close to the shoulder. The rope should be tied in such a way that it will not come loose and so that it can be untied quickly by pulling the loose end (see Fig. II). In thick-necked animals, a block of wood placed in the jugular groove between the rope and the hide will help considerably in applying the desired pressure at the right point. The vein is a soft flexible tube through which blood flows back to the heart. Under ordinary conditions it cannot be seen or felt with the fingers. When the flow of blood is blocked at the base of the neck by the choke rope, the vein becomes enlarged and rigid because of the back pressure. If the choke rope is sufficiently tight, the vein stands out and can be easily seen and felt in thin-necked animals. As a further check in identifying the vein, tap it with the fingers in front of the choke rope. Pulsations that can be seen or felt with the fingers in front of the point being tapped will confirm the fact that the vein is properly distended. It is impossible to put the needle into the vein unless it is distended. Experienced operators are able to raise the vein simply by hand pressure, but the use of a choke rope is more certain.

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3. While the needle is being placed in proper position in the vein, an assistant should get the medication ready so that the injection can be started without delay after the vein has been entered.

4. Making the injection. With the needle in position as indicated by continuous flow of blood, release the choke rope by a quick pull on the free end. This is essential—the medication cannot flow into the vein while it is blocked. Immediately connect the syringe containing Liquamycin LA-200 to the needle and slowly depress the plunger. If there is resistance to depression of the plunger, this indicates that the needle has slipped out of the vein (or is clogged) and the procedure will have to be repeated. Watch for any swelling under the skin near the needle, which would indicate that the medication is not going into the vein. Should this occur, it is best to try the vein on the opposite side of the neck.

5. Removing the needle. When injection is complete, remove needle with straight pull. Then apply pressure over area of injection momentarily to control any bleeding through needle puncture, using cotton soaked in alcohol or other suitable antiseptic.

Restricted Drug (California)—Use Only as Directed

Not For Human Use

NADA #113-232, Approved by FDA

TAKE TIME



OBSERVE LABEL
DIRECTIONS



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Animal Health

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