Which Products Make Sense for Your Bottom Line? You Be the Judge.

MILKOUT PERIODS OF SELECT MASTITIS TUBE TREATMENTS

Antibiotic	Number of Treatments	Milk Hold (Hrs)	Day 1 AM	Day 1 PM	Day 2 AM	Day 2 PM	Day 3 AM	Day 3 PM	Day 4 AM	Day 4 PM	Day 5 AM	Day 5 PM	Day 6 AM	Day 6 PM	Day 7 AM	Day 7 PM	Day 8 AM	Day 8 PM	Cure Rate[1]
Amoxi-Mast®	3	60	Tube	Tube	Tube						Milk return to tank								**82%**
Dariclox®	3	48	Tube	Tube	Tube					Milk return to tank									**73%**
ToDay®	2	96	Tube	Tube									Milk return to tank						**68%**
Cefa-Lak®	2	96	Tube	Tube									Milk return to tank						**68%**
Pirsue® Sterile Solution	2	36	Tube		Tube				Milk return to tank										**44%**
Spectramast® LC	5	72	Tube		Tube		Tube		Tube		Tube							Milk return to tank	*
Hetacin-K®	3	72	Tube		Tube		Tube							Milk return to tank					**62%**

TOTAL TREATMENT COST (ESTIMATED ON SEPTEMBER 2006)**

Antibiotic	Estimated Treatment Cost ($) A = number of tubes x unit price	Cost of Milk Withold ($) B = number of milkings on withhold x milk price x milk production per milking	Total Treatment Cost ($) A + B	Cure Rate[1]	Estimated Treatment Cost per Cure ($)***
Amoxi-Mast®	$5.05	$40.50	$45.55	**82%**	$55.55
Dariclox®	$5.50	$35.44	$40.94	**73%**	$56.08
ToDay®	$3.60	$50.63	$54.22	**68%**	$79.74
Cefa-Lak®	$3.59	$50.63	$54.22	**68%**	$79.73
Pirsue® Sterile Solution	$6.26	$30.38	$36.63	**44%**	$83.25
Spectramast® LC	$15.66	$81.00	$96.66	*	
Hetacin-K®	$4.76	$55.69	$60.45	**62%**	$97.49

TOTAL TREATMENT COST – MAKE YOUR OWN CALCULATION

Antibiotic	Estimated Treatment Cost ($) A = number of tubes x unit price	Cost of Milk Withold ($) B = number of milkings on withhold x milk price x milk production per milking	Total Treatment Cost ($) A + B	Cure Rate[1]
Amoxi-Mast®				**82%**
Dariclox®				**73%**
ToDay®				**68%**
Cefa-Lak®				**68%**
Pirsue® Sterile Solution				**44%**
Spectramast® LC				*
Hetacin-K®				**62%**

*Subclinical mastitis cure rates of 38.8%, 53.7% and 65.8% were reported for 2-day, 5-day and 8-day ceftiofur therapies respectively. Oliver *et al.* 2004. Efficacy of Extended Ceftiofur Intramammary Therapy for Treatment of Subclinical Mastitis in Lactating Dairy Cows. *J. Dairy Sci.* 87:2393-2400.

**Based on the best price for each product found on a survey in September 2006 – internal data. Cost of milk withhold considers two milkings per day and 37.5 pounds per milking.

[1]Wilson, DJ et al. 1999. Comparison of seven antiobiotic treatments with no treatment for bacteriological efficacy against bovine mastitis pathogens. *J Dairy Sci* 82:1664-1670.

***Treatment cost per cure is calculated by dividing the estimated treatment cost by reported respective cure rate.

TAKE TIME
OBSERVE LABEL DIRECTIONS

Amoxi-Mast®
(amoxicillin)

LACTATING COW FORMULA
(FÓRMULA PARA VACAS LACTANTES)

Intramammary Infusion
(Infusión intramamaria)

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

Amoxi-Mast (amoxicillin) is specially prepared for the treatment of bovine mastitis in lactating cows.

DESCRIPTION: Amoxi-Mast is a stable, nonirritating suspension of amoxicillin trihydrate containing the equivalent of 62.5 mg of amoxicillin per disposable syringe. Amoxi-Mast is manufactured by a nonsterilizing process.

Amoxicillin trihydrate is a semisynthetic penicillin derived from the penicillin nucleus, 6-amino-penicillanic acid. Chemically, it is α(-)-α-amino-p-hydroxybenzyl penicillin trihydrate.

ACTION: Amoxicillin is bactericidal in action against susceptible organisms. It is a broad-spectrum antibiotic which is effective against common infectious mastitis pathogens, namely *Streptococcus agalactiae* and penicillin-sensitive *Staphylococcus aureus.*

In vitro studies have demonstrated the susceptibility of the following strains of bacteria: α- and β-haemolytic streptococci, nonpenicillinase-producing staphylococci, and *Escherichia coli.* Susceptibility has not been demonstrated against penicillinase-producing bacteria, particularly resistant staphylococci. Most strains of Pseudomonas, Klebsiella, and Enterobacter are resistant. The clinical or subclinical significance of these *in vitro* studies is not known.

INDICATIONS: Amoxi-Mast is indicated in the treatment of subclinical infectious bovine mastitis in lactating cows due to *Streptococcus agalactiae* and penicillin-sensitive *Staphylococcus aureus.* Early detection and treatment of mastitis is advised.

WARNINGS: Milk taken from animals during treatment and for 60 hours (5 milkings) after the last treatment must not be used for food. Treated animals must not be slaughtered for food purposes within 12 days after the last treatment.

PRECAUTION: Because it is a derivative of 6-amino-penicillanic acid, Amoxi-Mast has the potential for producing allergic reactions. Such reactions are rare; however, should they occur, the subject should be treated with the usual agents (antihistamines, pressor amines).

DOSAGE AND ADMINISTRATION: Milk out udder completely. Wash udder and teats thoroughly with warm water containing a suitable dairy antiseptic. Dry thoroughly. Clean and disinfect the teat with alcohol swabs provided in the carton. Remove the syringe tip cover and insert the tip of the syringe into the teat orifice. Express the suspension into the quarter with gentle and continuous pressure. Withdraw the syringe and grasp the end of the teat firmly. Massage the medication up into the milk cistern.

For optimum response, the drug should be administered by intramammary infusion in each infected quarter as described above. Treatment should be repeated at 12-hour intervals for a total of 3 doses. At the next routine milking after the last dose, the treated quarter should be milked out and the milk discarded.

Each carton contains 12 alcohol swabs to facilitate proper cleaning and disinfecting of the teat orifice.

HOW SUPPLIED: Amoxi-Mast is supplied in cartons of 12 single-dose syringes with 12 alcohol swabs. Each 10-mL disposable syringe contains amoxicillin trihydrate equivalent to 62.5 mg of amoxicillin activity.

Do Not Store Above 24°C (75°F)

NADA #55-100, Approved by FDA

Manufactured by:
G.C. Hanford Mfg. Co.
Syracuse, NY 13201

Schering-Plough Animal Health

10/03 27864503

Distributed by:
Schering-Plough Animal Health Corp.
Union, NJ 07083, USA

Printed in USA

Schering-Plough Animal Health Corp.

Dariclox®
(sodium cloxacillin)

LACTATING COW FORMULA
(FÓRMULA PARA VACAS LACTANTES)

Intramammary Infusion
(Infusión intramamaria)

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

DESCRIPTION: Dariclox (sodium cloxacillin) is a stable, nonirritating suspension of sodium cloxacillin containing the equivalent of 200 mg of cloxacillin in saturated vegetable oils per disposable syringe. Dariclox is manufactured by a nonsterilizing process.

Cloxacillin is a semisynthetic penicillin derived from the penicillin nucleus, 6-amino-penicillanic acid. Sodium cloxacillin is the monohydrate sodium salt of 5-methyl-3-(o-chlorophenyl)-4-isoxazolyl penicillin.

ACTION: Sodium cloxacillin is bactericidal in action against susceptible organisms during the stage of active multiplication. It acts through the inhibition of biosynthesis of cell wall mucopeptide. It is active against most gram-positive organisms associated with mastitis. It is effective against *Streptococcus agalactiae* and nonpenicillinase-producing *Staphylococcus aureus,* and there is laboratory evidence that indicates cloxacillin is resistant to destruction by penicillinase-producing organisms. Milk cultures and antibiotic susceptibility testing is recommended when using this product.

SUSCEPTIBILITY TEST: The Kirby-Bauer* procedure, utilizing antibiotic susceptibility disks, is a quantitative method that may be adapted to determining the sensitivity of bacteria in milk to Dariclox.

For testing the effectiveness of Dariclox in milk, follow the Kirby-Bauer procedure using the 1 mcg oxacillin susceptibility disk. Zone diameters for interpreting susceptibility are:

Resistant	Intermediate	Susceptible
≤ 10 mm	11–12 mm	≥ 13 mm

* Bauer AW, Kirby WMM, Sherris JC, *et al:* Antibiotic testing by a standardized single disk method, *Am J Clin Path* 45:493, 1966. Standardized Disk Susceptibility Test, Federal Register 37:20527–29, 1972.

INDICATIONS: Dariclox is indicated in the treatment of bovine mastitis in lactating cows due to *Streptococcus agalactiae* and nonpenicillinase-producing *Staphylococcus aureus.*

Clinical experience indicates that antibiotic efficacy in the treatment of mastitis in lactating cows is directly related to the duration of infection. Therefore, treatment should be instituted as early as possible after detection.

WARNINGS: Milk taken from animals during treatment and for 48 hours (4 milkings) after the last treatment must not be used for food. Treated animals must not be slaughtered for food purposes within 10 days after the last treatment.

PRECAUTION: Because it is a derivative of 6-amino-penicillanic acid, Dariclox has the potential for producing allergic reactions. Such reactions are rare; however, should they occur, the subject should be treated with the usual agents (antihistamines, pressor amines).

DOSAGE AND ADMINISTRATION: Milk out udder completely. Wash udder and teats thoroughly with warm water containing a suitable dairy antiseptic. Dry thoroughly. Clean and disinfect the teat with alcohol swabs provided in the carton. Remove the syringe tip cover and insert the tip of the syringe into the teat orifice. Express the suspension into the quarter with gentle and continuous pressure. Withdraw the syringe and grasp the end of the teat firmly. Massage the medication up into the milk cistern.

For optimum response the drug should be administered by intramammary infusion in each infected quarter as described above. Treatment should be repeated at 12-hour intervals for a total of 3 doses. The treated quarter should be milked out at the next routine milking.

Each carton contains 12 alcohol swabs to facilitate proper cleaning and disinfecting of the teat orifice.

HOW SUPPLIED: Dariclox is supplied in cartons of 12 single-dose syringes with 12 alcohol swabs. Each 10-mL, disposable syringe contains sodium cloxacillin equivalent to 200 mg of cloxacillin.

Do Not Store Above 24°C (75°F)

NADA #55-070, Approved by FDA

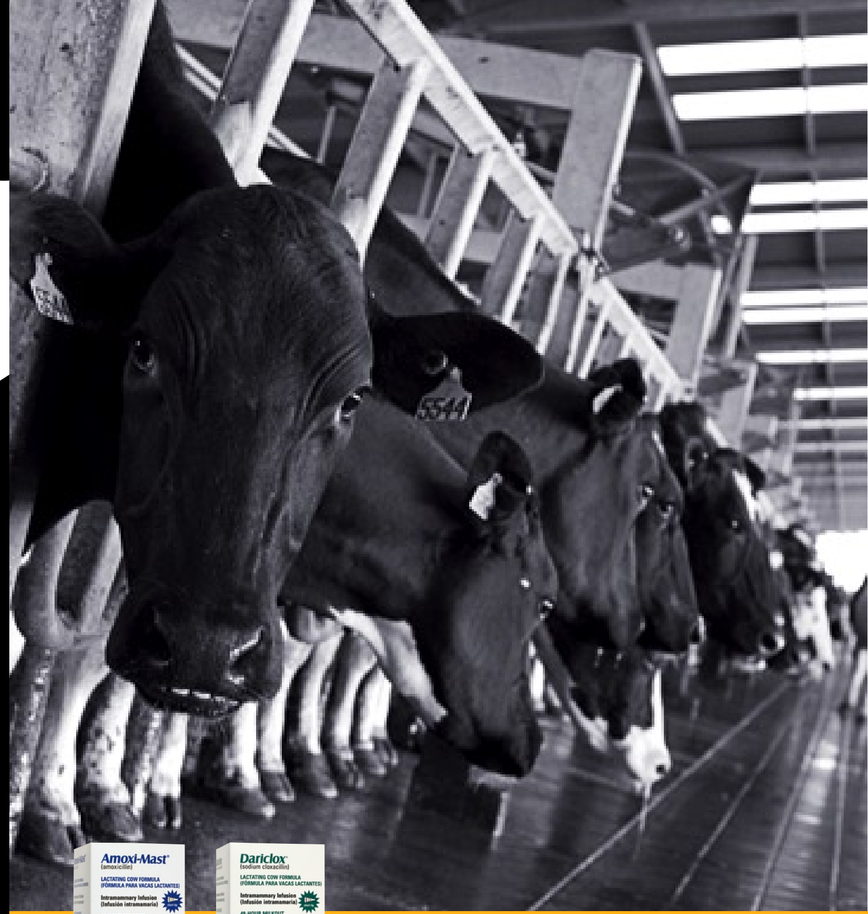
Manufactured by:
G.C. Hanford Mfg. Co.
Syracuse, NY 13201

TAKE TIME
OBSERVE LABEL DIRECTIONS

Schering-Plough Animal Health

10/03 27865500

DISCLAIMER: Every effort has been made to ensure the accuracy of the information published. However, it remains the responsibility of the readers to familiarize themselves with the product information contained on the product label or package insert.



Schering-Plough Animal Health Corp.

Mastitis Tubes

Tube tip length, antibiotic efficacy, and milk withhold period impact your bottom line

The Mastitis Infection Process

Mastitis is an inflammatory response of the mammary gland.

Keratin is a sticky substance that is secreted into the teat canal. It acts as a plug to prevent bacteria from entering the mammary gland and contains substances that inhibit bacteria growth.

In spite of the inhibitory nature of the keratin, some bacteria can colonize the keratin.

Disruption of the keratin that lines the teat canal may jeopardize the protective properties of the teat canal.

Insertion of a mastitis tube tip through the canal and into the teat cistern is a major compromise of the teat canal integrity.

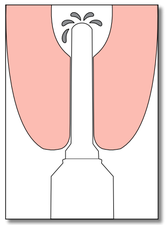
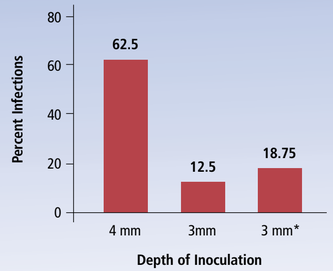


Figure 1. Common treatment procedure[1]

When teat ends are disinfected before intramammary treatment, many bacteria are killed, but many are not.

When a mastitis tube tip is inserted through the "sanitized" teat end, surviving bacteria may be carried along into the teat cistern.

PERCENT INFECTIONS BY DEPTH OF MASTITIS TUBE TIP IN THE TEAT CANAL[2]



*No post-milking teat dipping

Figure 2. Percent infections by depth of inoculation[1]

Figure 2 represents the results of a study designed to evaluate how far into the teat canal organisms need to be to produce intramammary infections.[2]

There was a very significant difference between 3 mm and 4 mm from the outside of the teat opening.

The lowest number of colony-forming units that induced mastitis was 34. That is not very many.

Bacteria in the teat can serve as a reservoir for infection. Full insertion of a long mastitis tube tip may push bits of keratin with bacteria into the teat cistern. This may result in a new case of mastitis or compound an existing case.

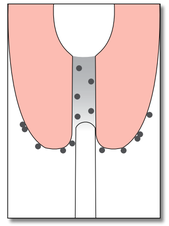


Figure 3. Partial insertion and bacteria in teat canal[1]

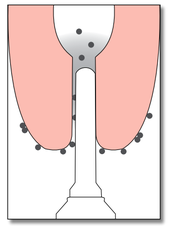


Figure 4. Bacteria being pushed into teat cistern by full insertion[1]

NEW INFECTION AND CURE RATES WITH PARTIAL VS. FULL INSERTION OF MASTITIS TUBE TIP IN TEAT CANAL

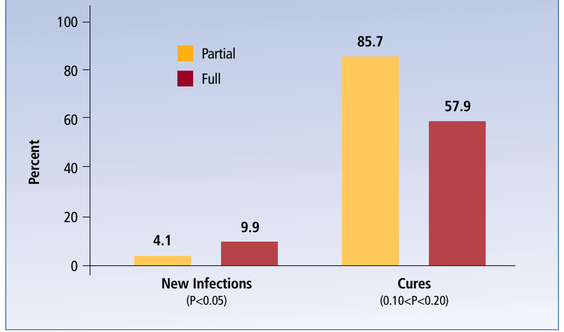


Figure 5. Effect of partial or full insertion[1]

A study was conducted to evaluate new infection rates and cure rates from full insertion or partial insertion of the mastitis tube tip in dry cows.[3]

The reduction in new infections was directly related to method of treatment, as shown in Figure 5.

The trend toward a higher cure rate with partial insertion may be due to placing the antibiotic near the source of bacterial colonization, the teat canal.

Short-tip tubes are definitely the gold standard and scientifically proven as the best option for intramammary mastitis treatment of cows.

The National Mastitis Council Guidelines state that insertion of only 1/8 inch into the teat canal avoids damage to teat end tissues and reduces new infections by 50%.[4]

Amoxi-Mast® (amoxicillin)

- Available in short tip tubes.
- Demonstrated 86% cure rate for *Streptococcus agalactiae*, the target of lactating cow therapy in the U.S.[5]
- Broad-spectrum therapy against the major mastitis-causing agents *Strep. agalactiae* and penicillin-sensitive *Staphylococcus aureus*.
- Consistently associated with increased cure rates for subclinical mastitis.[5]
- Economical 60-hour milk withhold.

Dariclox® (sodium cloxacillin)

- Available in short tip tubes.
- Demonstrated 77% cure rate for *Strep. agalactiae* in study of antibiotic treatments.[5]
- Highly effective against mastitis caused by *Staph. aureus*.
- Quickly achieves high therapeutic levels, with proven antibacterial action for rapid effect.
- One of the highest cure rates for *Strep. agalactiae* and one of the shortest milk withhold periods – 48 hours.

With Amoxi-Mast or Dariclox:

- You can treat with confidence in outcomes.
- You can achieve more cures, which means more milk.
- You can cure subclinical cases, which helps limit the circulation of mastitis in the herd.
- You can have efficacious mastitis treatment with maximum cost-effectiveness.

These products have the potential for producing allergic reactions.

[1]Nickerson, SC. 1987. Applying management practices to the intramammary infusion process. National Mastitis Council 26th Annual Meeting Proceedings. Pages 4-9.
[2]Prasad, LBM and FHS Newbould. 1968. Inoculation of the bovine teat duct with *Staph. aureus*: The relationship of teat duct length, milk yield and milking rate to development of intramammary infection. *Can Vet J* Vol . 9 No. 5:107-115.

[3]Boddie, RL and SC Nickerson. 1986. Dry cow therapy: Effects of method of drug administration on occurrence of intramammary infection. *J Dairy Sci* 69-253-257.
[4]National Mastitis Council Treatment Guidelines. www.nmconline.org/treatment.htm.

[5]Wilson, DJ et al. 1999. Comparison of seven antiobiotic treatments with no treatment for bacteriological efficacy against bovine mastitis pathogens. *J Dairy Sci* 82:1664-1670.