**SPECTRAMAST® DC**

brand of ceftiofur hydrochloride sterile suspension

**For Intramammary Infection in Dairy Cattle Only**

**CAUTION:** Federal (USA) law restricts this drug to use by or on the order of a licensed veterinarian. See directions for use. It contains microcrystalline wax, Oleoyl Polyoxylglyceride (OPG), and Cottonseed Oil, which are not intended to be used as food for human consumption. This product is not for oral administration in the diet of any species.

**INDICATIONS FOR USE**

Staphylococcus aureus, Streptococcus dysgalactiae, and Streptococcus uberis.

Residue: The residue of ceftiofur in milk may be present for up to 14 days after intramammary administration.

**DOSSAGE**

Intramammary injection use only. One (1) syringe into each affected quarter at the time of dry off. For use in dairy cattle only. Not for human use!

**DIRECTIONS FOR USING THE PLASTET® DISPOSABLE SYRINGE**

- The syringe is designed to have the choice of either insertion of the full cannula as has traditionally be practiced, or an insertion which is added by using the PLASTET® Disposable Syringe (500 mg).
- a. Full Insertion: Insert the red end cap by pulling straight up as shown. Gently insert the full cannula into the teat canal; carefully infuse the product.
- b. Partial Insertion: Remove the red end cap by pulling straight up as shown. Gently insert the exposed blunt tip into the teat canal; carefully infuse the product.

**ADDITIONAL INFORMATION**

- Treat management units thoroughly with warm water containing a suitable dialy antibiotic. Dry teats thoroughly. Milk outudder completely. Using an alcohol pad provided, wipe off the end of the affected teat using a separate pad for each teat. Choose the desired insertion length (full or partial) and insert tip into teat canal; push plunger to dispense entire contents, massage the teat to distrib-ute the suspension into the milk column.
- Reinfection: After successful treatment, reinfection may occur unless good herd management, sanitation, and mechanical safety measures are practiced. Affected cows should be watched carefully to detect recurrence of infection and possible spread to other animals.

**CONTRAINDICATIONS**

As with all drugs, the use of SPECTRAMAST® DC Sterile Suspension is contraindicated in animals previously found to be hypersensitive to the drug.

**WARNINGS**

- Pencillins and cephalosporins can cause allergic reactions in sensitized individuals. Topical exposures to such antimicrobials, includ- ing ceftiofur, may elicit mild to severe allergic reactions in some indi-viduals. Repeated or prolonged exposure may lead to sensitization. Avoid direct contact of the product with the skin, eyes, mouth and mucous membranes. Sensitization of the skin may be avoided by wearing protective gloves.
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**Microbial Susceptibility Data**

**SPECTRAMAST® DC** is a liquid suspension containing 500 mg ceftiofur hydrochloride per ml. The MIC for Staphylococcus aureus isolated in the U.S. is usually ≤0.0039 µg/mL ceftiofur hydrochloride (Table 4).

**Table 1. Ceftiofur MIC Values for isolates from a multi-site clini-cal field study evaluating subclinical mastitis in dairy cows in the U.S. during 2000**

<table>
<thead>
<tr>
<th>Organism</th>
<th>Organism (ATCC) reference strains</th>
<th>Zone Diameter (mm)</th>
<th>MIC range (µg/mL)</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Staphylococcus aureus</em></td>
<td>[25923] 27-31 ---</td>
<td>27 to 31 ---</td>
<td>0.0039 to 2.0</td>
</tr>
<tr>
<td><em>Staphylococcus dysgalactiae</em></td>
<td>[25923] 27-31 ---</td>
<td>27 to 31 ---</td>
<td>0.0039 to 2.0</td>
</tr>
<tr>
<td><em>Staphylococcus uberis</em></td>
<td>[25923] 27-31 ---</td>
<td>27 to 31 ---</td>
<td>0.0039 to 2.0</td>
</tr>
</tbody>
</table>

**Table 3. Current recommended interpretive criteria established by CLSI for ceftiofur hydrochloride**

<table>
<thead>
<tr>
<th>Organism</th>
<th>Zone Diameter (mm)</th>
<th>MIC range (µg/mL)</th>
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<tbody>
<tr>
<td><em>Staphylococcus aureus</em></td>
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<td>≤0.0039 to 0.1</td>
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<td><em>Staphylococcus uberis</em></td>
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<td>≤0.0039 to 0.1</td>
</tr>
</tbody>
</table>

**Effectiveness**

The effectiveness of a single intramammary (IMM) infusion of ceftiofur hydrochloride for the treatment of subclinical mastitis present at the time of dry off was documented in a randomized block design study. Nineteen veterinary investigators enrolled cows in 21 herds and from these 21 herds, 431 cows and 1708 quarters met enrollment criteria in the study and calved within a 45 to 60 day period following enrollment. The enrollment criteria were: whole milk somatic cell count greater than 400,000 cells/mL or a linear somatic cell count score greater than or equal to 5. Milk microbio-logic samples were obtained prior to treatment and at Days 3 and 5 after treatment. The primary decision variable was the microbiologic (therapeutic) cure rate. There were 43 cows in the negative control group and 51 cows in the 500 mg ceftiofur group that had a positive pre-test milk culture that were evaluated for treatment success. The primary decision variable was the microbiologic (therapeutic) cure rate when bacteria isolated pre-treatment were absent from both post-treatment samples.

**Acknowledgement**

Based on pharmacokinetic, milk residue and clinical effectiveness studies in dairy cattle following intramammary infusion of ceftiofur and the MIC and disk (30 µg) diffusion data from mastitis pathogen, the following breakpoints are recommended by the National Committee for Clinical Laboratory Standards (now the Clinical and Laboratory Standards Institute (CLSI)) (Table 3). Table 3. Current recommended interpretive criteria established by CLSI for ceftiofur hydrochloride.

**Bovine Mastitis**

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<th>MIC range (µg/mL)</th>
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</thead>
<tbody>
<tr>
<td><em>Staphylococcus aureus</em></td>
<td>26 to 31</td>
<td>≤0.0039 to 0.1</td>
</tr>
<tr>
<td><em>Staphylococcus dysgalactiae</em></td>
<td>26 to 31</td>
<td>≤0.0039 to 0.1</td>
</tr>
<tr>
<td><em>Staphylococcus uberis</em></td>
<td>26 to 31</td>
<td>≤0.0039 to 0.1</td>
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**Escherichia coli**

<table>
<thead>
<tr>
<th>Organism</th>
<th>Zone Diameter (mm)</th>
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<tbody>
<tr>
<td><em>Escherichia coli</em></td>
<td>26 to 31</td>
<td>≤0.0039 to 0.1</td>
</tr>
</tbody>
</table>
In another study in eleven study herds, 446 cows with a somatic cell count (SCC) greater than or equal to 400,000 cells/mL or a linear score greater than or equal to 5 were enrolled. Cows with a dry period of at least 45 days were blocked by lactation (1st + 2nd or ≥ 3rd). A single quarter milk sample was aseptically obtained from all four quarters for bacterial culture prior to treatment and on Days 3 and 5 post-calving. There were 4 treatment groups including a negative control. There were 84 cows in the negative control and 73 in the 500 mg ceftiofur group that had a positive pre-treatment milk culture that were evaluated for treatment success. The primary decision variable was the microbiologic (therapeutic) cure in which bacteria isolated pre-treatment were absent from both post-treatment samples.

Ceftiofur was found to be effective against *Staphylococcus aureus*, *Streptococcus dysgalactiae*, and *Streptococcus uberis*, when compared to negative controls. This intramammary ceftiofur formulation was well tolerated. No adverse formulation related events were noted during the entire study. A large multi-location field dose confirmation study and a pilot study demonstrated that 500 mg of ceftiofur infused once per quarter at the time of dry off was effective for the treatment of subclinical mastitis in dairy cattle at the time of dry off.

**ANIMAL SAFETY**

An udder irritation study was conducted in 22 healthy lactating dairy cows to assess udder irritation following a single intramammary infusion of 500 mg of sterile ceftiofur into all four quarters followed by milk-out 12 hours later. Throughout the 10 day post-treatment observation period there was a clinically insignificant rise in SCC to mean levels <200,000 cells/mL from the pre-infusion level of <69,000 cells/mL. No clinical signs of udder irritation (swelling, pain, or redness), changes in rectal temperature, or changes in milk production were noted in this study. Clinical observations were made during a GLP residue depletion study of 36 cows following a single intramammary infusion of a sterile oil based suspension containing 500 mg of ceftiofur into all four quarters at the end of lactation. No report of udder irritation or adverse reaction was noted in the daily visual observations over the 14 days immediately following treatment. Collectively, these studies demonstrate that the intramammary infusion of an oil-based sterile suspension containing 500 mg of ceftiofur once into all four quarters at the end of lactation is clinically safe and non-irritating to the udder of non-lactating dairy cows.

**Milk and Tissue Residue Depletion**

A metabolism study in cattle using radiolabeled ceftiofur provided the data to establish tolerances for ceftiofur-related residues (desfuroylceftiofur) in tissue and milk. These tolerances of ceftiofur residues are 0.1 ppm in milk, 0.4 ppm in kidney, 2.0 ppm in liver, and 1.0 ppm in muscle.

Pivotal residue decline studies were conducted to assess the depletion of ceftiofur-related residues, measured as desfuroylceftiofur using the official analytical method, in tissues of treated cows, in milk of treated cows, and in tissues of calves born to treated cows. These studies demonstrated that milk produced at calving may be used for human consumption with no discard period when the treatment to calving interval is 30 days or more. Tissue residue depletion studies measured residues in the tissues of treated cows and in the tissues of neonatal calves born to treated cows. In neonatal calves, tissue residues were less than the codified tolerances for kidney, liver, and muscle. These data support a 16-day pre-slaughter withdrawal period following intramammary infusion for treated cows.

**Storage Conditions**

Store at controlled room temperature 20° to 25° C (68° to 77° F). Protect from light. Store plastets in carton until used.

**How Supplied**

SPECTRAMAST® DC Sterile Suspension is available in cartons containing 1 unbroken package of 12–10 mL PLASTET® Disposable Syringes with 12 individually wrapped 70% isopropyl alcohol pads and in pails containing 12 unbroken packages of 12–10 mL PLASTET Disposable Syringes with 144 individually wrapped 70% isopropyl alcohol pads.

**NADA# 141-239, Approved by FDA**

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Zoetis Inc.
Kalamazoo, MI 49037

www.spectramast.com or call 1-888-363-8471

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