ZydaClin™
(clindamycin)

Oral Drops
liquid

For Use in Dogs & Cats

Equivalent to 25 mg per mL clindamycin

Not for use in humans

Keep out of reach of children

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

ANADA 200-538, Approved by FDA

DESCRIPTION

ZydaClin™ Oral Drops contain clindamycin hydrochloride which is the hydrate salt of clindamycin. Clindamycin is a semisynthetic antibiotic produced by a 7(S)-chlorosubstitution of the 7(R)-hydroxy group of a naturally produced antibiotic produced by Streptomyces lincolnensis var. lincolnensis.

ZydaClin™ Oral Drops (For Use in Dogs and Cats) is a palatable formulation intended for oral administration. Each mL of ZydaClin™ Oral Drops liquid contains clindamycin hydrochloride equivalent to 25 mg clindamycin; and ethyl alcohol, 8.64%.

ACTION

Site and Mode of Action: Clindamycin is an inhibitor of protein synthesis in the bacterial cell. The site of binding appears to be in the 50S sub-unit of the ribosome. Binding occurs to the soluble RNA fraction of certain ribosomes, thereby inhibiting the binding of amino acids to those ribosomes. Clindamycin differs from cell wall inhibitors in that it causes irreversible modification of the protein-synthesizing subcellular elements at the ribosomal level.

MICROBIOLOGY

Clindamycin is a lincomycin antimicrobial agent with activity against the wide variety of aerobic and anaerobic bacterial pathogens. Clindamycin is a bacteriostatic compound that inhibits bacterial protein synthesis by binding to 50S ribosomal sub-unit. The minimum inhibitory concentrations (MICs) of Gram-positive and obligate anaerobic pathogens isolated from dogs and cats in the United States are presented in the Table 1 and Table 2. Bacteria were isolated in 1998-1999. All MICs were performed in accordance with the National committee for Clinical Standards (NCCLS).
Table 1. Clindamycin MIC Values (µg/mL) from Diagnostic Laboratory Survey Data Evaluating Canine Pathogens in the U.S. during 1998-99

<table>
<thead>
<tr>
<th>Organism</th>
<th>Number of Isolates</th>
<th>MIC&lt;sub&gt;0.5&lt;/sub&gt;</th>
<th>MIC&lt;sub&gt;2&lt;/sub&gt;</th>
<th>MIC&lt;sub&gt;5&lt;/sub&gt;</th>
<th>MIC&lt;sub&gt;10&lt;/sub&gt;</th>
<th>Range</th>
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</thead>
<tbody>
<tr>
<td>Soft Tissue/Wound&lt;sup&gt;1&lt;/sup&gt;</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Staphylococcus aureus</td>
<td>17</td>
<td>0.5</td>
<td>0.5</td>
<td>≥4.0</td>
<td>0.25-24.0</td>
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</tr>
<tr>
<td>Staphylococcus intermedius</td>
<td>28</td>
<td>0.25</td>
<td>0.25</td>
<td>≥4.0</td>
<td>0.125-24.0</td>
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<tr>
<td>Staphylococcus spp.</td>
<td>18</td>
<td>0.5</td>
<td>0.5</td>
<td>≥4.0</td>
<td>0.25-24.0</td>
<td></td>
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<tr>
<td>Beta hemolytic streptococcus</td>
<td>36</td>
<td>0.5</td>
<td>0.5</td>
<td>≥2.0</td>
<td>0.25-24.0</td>
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<tr>
<td>Staphylococcus spp.</td>
<td>16</td>
<td>0.5</td>
<td>0.5</td>
<td>≥4.0</td>
<td>0.25-24.0</td>
<td></td>
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<tr>
<td>Oropharynx/Trachea&lt;sup&gt;1&lt;/sup&gt;</td>
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<td></td>
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<tr>
<td>Staphylococcus aureus</td>
<td>20</td>
<td>0.5</td>
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<td>0.5</td>
<td>≥4.0</td>
<td>0.25-24.0</td>
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<td>Staphylococcus spp.</td>
<td>18</td>
<td>0.5</td>
<td>≥4.0</td>
<td>0.25-24.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Beta hemolytic streptococcus</td>
<td>21</td>
<td>0.5</td>
<td>2.0</td>
<td>2.0</td>
<td>0.25-24.0</td>
<td></td>
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<tr>
<td>Staphylococcus spp.</td>
<td>21</td>
<td>≥4.0</td>
<td>≥4.0</td>
<td>0.25-24.0</td>
<td></td>
<td></td>
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<tr>
<td>Normal/Skin&lt;sup&gt;1&lt;/sup&gt;</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Staphylococcus aureus</td>
<td>25</td>
<td>0.5</td>
<td>≥4.0</td>
<td>0.25-24.0</td>
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<tr>
<td>Staphylococcus intermedius</td>
<td>46</td>
<td>0.5</td>
<td>≥4.0</td>
<td>0.25-24.0</td>
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<tr>
<td>Staphylococcus spp.</td>
<td>32</td>
<td>0.5</td>
<td>≥4.0</td>
<td>0.25-24.0</td>
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<tr>
<td>Beta hemolytic streptococcus</td>
<td>17</td>
<td>0.5</td>
<td>0.5</td>
<td>0.25-0.5</td>
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</tbody>
</table>

*The correlation between the in vitro susceptibility data and clinical response has not been determined.

*Soft Tissue/Wound: Includes samples from wound, abscess, appendix, lumbar, draining tract, lesion, and mass.

Oropharynx/Trachea: Includes samples from nose, nasopharynx, joint, lung.

*Normal/Skin: Includes samples from skin, with wound, biopsy, inclusion, lip.

Table 2. Clindamycin MIC Values (µg/mL) from Diagnostic Laboratory Survey Data Evaluating Feline Pathogens from Wound and Abscess Samples in the U.S. during 1998

<table>
<thead>
<tr>
<th>Organism</th>
<th>Number of Isolates</th>
<th>MIC&lt;sub&gt;0.5&lt;/sub&gt;</th>
<th>MIC&lt;sub&gt;2&lt;/sub&gt;</th>
<th>MIC&lt;sub&gt;5&lt;/sub&gt;</th>
<th>Range</th>
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<tbody>
<tr>
<td>Bacteroides/Prevotella</td>
<td>30</td>
<td>0.06</td>
<td>4.0</td>
<td>≤0.015-4.0</td>
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<tr>
<td>Fusobacterium spp.</td>
<td>17</td>
<td>0.25</td>
<td>0.25</td>
<td>≤0.015-0.5</td>
<td></td>
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<tr>
<td>Peptostreptococcus spp.</td>
<td>18</td>
<td>0.15</td>
<td>0.5</td>
<td>≤0.015-8.0</td>
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<tr>
<td>Peptococcus spp.</td>
<td>13</td>
<td>0.06</td>
<td>0.25</td>
<td>≤0.015-8.0</td>
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</tbody>
</table>

*The correlation between the in vitro susceptibility data and clinical response has not been determined.

PHARMACOLOGY

Absorption: Clindamycin hydrochloride is rapidly absorbed from the canine and feline gastrointestinal tract.
**Dog Serum Levels:**

Serum levels at or above 0.5 µg/mL can be maintained by oral dosing at a rate of 2.5 mg/lb of clindamycin hydrochloride every 12 hours. This same study revealed that average peak serum concentrations of clindamycin occur 1 hour and 15 minutes after oral dosing. The elimination half-life for clindamycin in dog serum was approximately 5 hours. There was no bioactivity accumulation after a regimen of multiple oral doses in healthy dogs.

![Graph of Dog Serum Levels](image)

**Cat Serum Levels:**

Serum levels at or above 0.5 µg/mL can be maintained by oral dosing at a rate of 5 mg/lb of clindamycin hydrochloride liquid every 24 hours. The average peak serum concentration of clindamycin occurs approximately 1 hour after oral dosing. The elimination half-life of clindamycin in feline serum is approximately 7.5 hours. In healthy cats, minimal accumulation occurs after multiple oral doses of clindamycin hydrochloride, and steady-state should be achieved by the third dose.

![Graph of Cat Serum Levels](image)

**METABOLISM AND EXCRETION**

Extensive studies of the metabolism and excretion of clindamycin hydrochloride administered orally in animals and humans have shown that unchanged drug and bioactive and bioinactive metabolites are excreted in urine and feces. Almost all of the bioactivity detected is serum after clindamycin hydrochloride product administration is due to the parent molecule (clindamycin). Urine bioactivity, however, reflects a mixture of clindamycin and active metabolites, especially N-dimethyl clindamycin and clindamycin sulfoxide.

**ANIMAL SAFETY SUMMARY**

**Rat and Dog Data:** One year Oral toxicity studies in rats and dogs at doses of 30, 100 and 300 mg/kg/day (13.6, 45.5 and 136.4 mg/lb/day) have shown clindamycin hydrochloride to be well tolerated. Differences did not occur in the parameters evaluated to assess toxicity when comparing groups of treated animals with contemporary controls. Rats administered clindamycin hydrochloride at 600 mg/kg/day (272.7 mg/lb/day) for six months tolerated the drug well; however, dogs orally dosed at 600 mg/kg/day (272.7 mg/lb/day) vomited, had anorexia and subsequently lost weight. At necropsy these dogs had erosive gastritis and focal areas of necrosis of the mucosa of the gall bladder.

Safety in gestating bitches or breeding males has not been established.
**Cat Data:** The recommended daily therapeutic dose range for Clindamycin Hydrochloride Oral Liquid is 11 to 33 mg/kg/day (5 to 15 mg/lb/day) depending on the severity of the condition. Clindamycin hydrochloride liquid was tolerated with little evidence of toxicity in domestic shorthair cats when administered orally at 10 X the minimum recommended therapeutic daily dose (11 mg/kg, 5 mg/lb) for 15 days, and at doses up to 5 X the minimum recommended therapeutic dose for 42 days. Gastrointestinal tract upset (soft feces to diarrhea) occurred in control and treated cats with emesis occurring at doses 3 X or greater than the minimum recommended therapeutic dose (11 mg/kg/day; 5 mg/lb/day). Lymphocytic inflammation of the gallbladder was noted in a greater number of treated cats at the 110 mg/kg/day (50 mg/lb/day) dose level than control cats. No other effects were noted. Safety in gestating queens or breeding male cats has not been established.

**INDICATIONS**

ZydaClin™ Oral Drops (for use in dogs and cats) are indicated for the treatment of infections caused by susceptible strains of the designated microorganisms in the specific conditions listed below:

**Dogs:** Skin infections (wounds and abscesses) due to coagulase positive staphylococci (*Staphylococcus aureus* or *Staphylococcus intermedius*). Deep wounds and abscesses due to *Bacteroides fragilis, Prevotella melaninogenicus, Fusobacterium necrophorum* and *Clostridium perfringens*.

**Dental infections** due to *Staphylococcus aureus, Bacteroides fragilis, Prevotella melaninogenicus, Fusobacterium necrophorum* and *Clostridium perfringens*. **Osteomyelitis** due to *Staphylococcus aureus, Bacteroides fragilis, Prevotella melaninogenicus, Fusobacterium necrophorum* and *Clostridium perfringens*.

**Cats:** Skin infections (wounds and abscesses) due to *Staphylococcus aureus, Staphylococcus intermedius, Streptococcus spp.* Deep wounds and abscesses due to *Clostridium perfringens* and *Bacteroides fragilis*.

**CONTRAINDICATIONS**

ZydaClin™ Oral Drops are contraindicated in animals with a history of hypersensitivity to preparations containing clindamycin or lincomycin.

Because of potential adverse gastrointestinal effects, do not administer to rabbits, hamsters, guinea pigs, horses, chinchillas or ruminating animals

**HUMAN WARNINGS**


**PRECAUTIONS**

During prolonged therapy of one month or greater, periodic liver and kidney function tests and blood counts should be performed.

The use of ZydaClin™ Oral Drops occasionally results in overgrowth of non-susceptible organisms such as clostridia and yeasts. Therefore, the administration of ZydaClin™ Oral Drops should be avoided in those species sensitive to the gastrointestinal effects of clindamycin (see CONTRAINDICATIONS). Should superinfections occur, appropriate measures should be taken as indicated by the clinical situation.

Patients with very severe renal disease and/or very severe hepatic disease accompanied by severe metabolic aberrations should be dosed with caution, and serum clindamycin levels monitored during high dose therapy.

Clindamycin hydrochloride has been shown to have neuromuscular blocking properties that may enhance the action of other neuromuscular blocking agents. Therefore, ZydaClin™ Oral Drops should be used with caution in animals receiving such agents.

Safety in gestating bitches and queens or breeding male dogs and cats has not been established.

**ADVERSE REACTIONS**

Side effects occasionally observed in either clinical trials or during clinical use were vomiting and diarrhea.

To report a suspected adverse reaction or to request a Safety Data Sheet (MSDS) call 1-800-524-6332.

**DOSAGE AND ADMINISTRATION**

**Dogs:**

**Infected Wounds, Abscesses and Dental Infections**

**Oral:** 2.5-15.0 mg/lb body weight every 12 hours.

**Duration:** Treatment with ZydaClin™ Oral Drops may be continued up to a maximum of 28 days if clinical judgment indicates. Treatment of acute infections should not be continued for more that three or four days if no response to therapy is seen.

**Dosage Schedule:**

ZydaClin™ Oral Drops, administer 1-6 mL/10 lb body weight every 12 hours.

**Dogs:**

**Osteomyelitis**

**Oral:** 5.0-15.0 mg/lb body weight every 12 hours.
**Duration:** Treatment with ZydaClin™ Oral Drops is recommended for a minimum of 28 days. Treatment should not be continued for longer the 28 days if no response to therapy is seen.

**Dosage Schedule:**

ZydaClin™ Oral Drops, administer 2-6 mL/10 lb body weight every 12 hours.

**Cats:**

***Infected Wounds, Abscesses and Dental Infections***

**Oral:** 5.0-15.0 mg/lb body weight every 24 hours depending on the severity of the condition.

**Duration:** Treatment with ZydaClin™ Oral Drops may be continued up to a maximum for a minimum of 14 days if clinical judgment indicates. Treatment of acute infections should not be continued for more than three to four days if no clinical response to therapy is seen.

**Dosage Schedule:**

ZydaClin™ Oral Drops, to provide 5.0 mg/lb administer 1 mL/5 lb body weight once every 24 hours; to provide 15.0 mg/lb administer 3 mL/5 lb body weight once every 24 hours.

**HOW SUPPLIED**

ZydaClin™ Oral Drops is available as 20mL filled in 30 mL bottles (25 mg/mL) supplied in packers containing 12 cartoned bottles with direction labels and calibrated dosing droppers.

To report a suspected adverse reaction or to request a Safety Data Sheet (MSDS) call 1-800-524-6332.

**Store at controlled room temperature 20°-25°C (68°-77°F) [see USP].**
ZYDACLIN
clindamycin solution/drops

Product Information

Product Type: PRESCRIPTION ANIMAL DRUG
Route of Administration: ORAL
Item Code (Source): NDC:13985-555

Active Ingredient/Active Moiety

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<th>Strength</th>
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<td>CLINDAMYCIN HYDROCHLORIDE (UNII: T290Q1YNIW) (CLINDAMYCIN - UNII:3U2ELA437C)</td>
<td>CLINDAMYCIN</td>
<td>25 g in 1 mL</td>
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Packaging

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<th>Marketing End Date</th>
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<td>20 mL in 1 BOTTLE</td>
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Marketing Information

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Labeler - MWI (019926120)

Registrant - Bimeda Inc., Division of Cross Vetpharm Group (060492923)

Establishment

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Revised: 12/2017

MWI