

# Orbifloxacin

**BRAND NAME: ORBAX**

AVAILABLE IN  
5.7 mg, 22.7 mg & 68 mg  
TABLETS  
and  
FLAVORED ORAL SUSPENSION

## BACKGROUND

Until sulfa drugs and penicillin came on the scene in the 1940's, our efforts to combat bacterial infection were largely ineffective. As different antibiotics were developed, different types of bacteria were conquered, yet one bacterial species remained seemingly invincible: *Pseudomonas aurugenosa*. Eventually antibiotics (the aminoglycoside class) were developed that could kill *Pseudomonas* but they were available only as injectable products and had potential to cause significant kidney damage if used too long. With these kind of side effects and the ability to treat *Pseudomonas* limited to hospitalized patients (where injections could be given regularly); the battle with *Pseudomonas* was far from won.

A major breakthrough was the development of the fluoroquinolone class of antibiotics (including enrofloxacin, its counterpart for human use ciprofloxacin, and several others). These medications are active against many bacterial types including *Pseudomonas*. They are available as tablets and are not associated with the serious side effects that plagued the aminoglycoside group.

Fluoroquinolones act by deactivating bacterial enzymes necessary for the transcription of DNA. DNA is very tightly coiled in order to fit inside a cell. Segments to be used must be uncoiled by an enzyme called DNA gyrase. The fluoroquinolone antibiotic deactivates DNA gyrase making the reading of DNA impossible. The bacterial cell dies. Mammalian DNA gyrase is of a completely different shape and remains unharmed.

Enrofloxacin, the first veterinary fluoroquinolone, enjoyed great success on the market and was soon joined by Orbifloxacin, Marbofloxacin and others. Orbifloxacin has the following special advantages:

- Especially rapid absorption into the body after oral dosing (complete absorption in 46 minutes).
- Lower doses are generally necessary, which means fewer tablets to give and often less expense (especially in larger dogs).

## USES OF THIS MEDICATION

This medication may be used in either dogs or cats to combat different types of infections, especially those involving *Pseudomonas*. Orbifloxacin is also active against *Staphylococci*, and thus is commonly used for infections of the skin. Orbifloxacin has poor activity against anaerobic infections (such as are typical in the mouth or in bite wound abscesses).

## SIDE EFFECTS

- At approximately ten times the recommended dose vomiting and diarrhea may be seen with this medication. At normal doses, this should not be seen. Dogs with *Pseudomonas* ear infections require very high doses of orbifloxacin and nausea may indeed become a problem.
- In immature dogs (less than 8 months of age) damage to joint cartilage can occur. This phenomenon is only seen in growing dogs and does not seem to be a problem in cats. It is preferable not to use this medication in puppies unless the severity of the infection present warrants it.
- The long term use of the related antibiotic enrofloxacin can lead to enrofloxacin crystals in urine. These crystals may show up on a laboratory test thus it is important to be aware of this side effect. While urinary crystal formation has not been reported with orbifloxacin, there is no reason to think that orbifloxacin cannot form crystals in urine as well.
- The recently described problem with blindness in cats associated with higher doses of enrofloxacin has not been reported in orbifloxacin. Orbifloxacin has a slightly different chemical structure which leads to less drug accumulation in the feline eye.

## INTERACTIONS WITH OTHER DRUGS

- Sucralfate (a medication used to treat stomach ulcers) may bind orbifloxacin and prevent it from entering the body. These medications should be given at least 2 hours apart if they are used together.
- Theophylline (an airway dilator) blood levels may be higher than usual if this medication is used concurrently with orbifloxacin. The dose of theophylline may need to be reduced.
- If orbifloxacin is used with oral cyclosporine (an immunosuppressive medication used for inflammatory bowel disease or for atopic dermatitis), the kidney damaging properties of cyclosporine may become worse.
- Medications or supplements containing iron, zinc, magnesium or aluminum will bind orbifloxacin and prevent absorption into the body. Such medications should be separated from orbifloxacin by at least 2 hours.
- Orbifloxacin can synergize with other antibiotics (making their combined effect greater than expected from simply adding their two effects together). Commonly used antibiotics felt to synergize with orbifloxacin include extended spectrum penicillins (such as amoxicillin) and third generation cephalosporins (such as cefpodoxime).

## CONCERNS AND CAUTIONS

- Orbifloxacin tablets are enteric coated to hide the drug's naturally bitter taste. If the tablets are crushed for some reason, the bitter taste is more readily apparent. Crushing tablets to put in an animal's food is unlikely to be an effective way to administer orbifloxacin.
- *Pseudomonas* infections are especially common in ears. In this location, especially high doses of orbifloxacin are needed to clear this infection.
- Orbifloxacin should be avoided in pregnant, or nursing pets nor in immature dogs unless the severity of the infection warrants it because of the potential damage that can occur to developing cartilage as mentioned above).
- Orbifloxacin may lower the seizure threshold (meaning that it can facilitate seizures). This is not a problem for normal animals but fluoroquinolones are best not used in animals with known seizure disorders.



## Mar Vista Animal Medical Center

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Additional drug and general pet care information can be found on our world wide web site:

<http://www.marvistavet.com>