

Orbifloxacin

BRAND NAME: ORBAX

**AVAILABLE IN
5.7 mg, 22.7 mg & 68 mg
TABLETS**

BACKGROUND

Human beings have been at odds with microbes since the beginning of time and the quest for new medications continues even today. When sulfa drugs came on the scene in the 1940's, an "age of antibiotics" was born and a new dimension had opened in the combat against microbes. From there a proliferation of antibiotics developed, each new medication exploiting a different aspect of bacterial metabolism until it seemed that the war on microbes would soon be won.

Despite this progress, one particular bacterial species remained seemingly invincible: *Pseudomonas aeruginosa*. This species of bacteria was able to change its antibiotic susceptibility with each antibiotic exposure, become resistant to multiple drugs in response to every medication used against it. Eventually, the aminoglycoside class of antibiotics was developed and there was finally a way to kill *Pseudomonas* fairly reliably but the price was that medication was injectable only, necessitating hospitalization for the patient, and potential kidney damage could result with prolonged use.

A major breakthrough against *Pseudomonas* came with the development of the fluoroquinolone class of antibiotics (including enrofloxacin, its counterpart for human use ciprofloxacin, and eventually orbifloxacin). 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.

HOW THIS MEDICATION WORKS

DNA is very tightly coiled in order to fit inside a cell. Segments of DNA to be used in protein production must be uncoiled by an enzyme called DNA gyrase. The fluoroquinolone antibiotics deactivate DNA gyrase making the reading of DNA impossible. With its DNA now useless, the bacterial cannot make protein and dies. How do the cells of the host survive? It turns out that mammalian DNA gyrase is of a completely different shape and remains untouched. The DNA of the mammal host is unaffected.



Strand of DNA

HOW THIS MEDICATION IS USED

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 skin infections. It is not helpful against anaerobic infections (such as are typical in the mouth or in bite wound abscesses), however, but is commonly used in combination with other antibiotics for a boost in function.

- Orbifloxacin is best given on an empty stomach but if nausea becomes an issue, it can be given with food. It is usually given either once or twice daily as a tablet or as an oral suspension. If a dose is accidentally skipped, do not double up on the next dose.
- Do not use cheese (or other dairy product) as a treat to hide the pill as calcium will interfere with absorption of this medication
- The oral suspension does not require refrigeration and should be stored at room temperature in the accompanying packaging. The dosing syringe that comes with the packaging should be rinsed after each use.
- Tablets should be stored at room temperature, protected from light.

If a dose is accidentally skipped, do not double up on the next dose. Simply give the medication when it is remembered or pick up with the next dose, allowing at least the proper interval between doses according to the label instructions.

SIDE EFFECTS

Side effects can be divided into common side effects and severe side effects. It is good to be familiar with both.

The only common side effect of orbifloxacin is upset stomach. At approximately ten times the recommended dose vomiting and diarrhea may be seen with this medication. At normal doses, this should not be seen but could be. Dogs with *Pseudomonas* ear infections require very high doses of orbifloxacin and nausea may indeed become a problem. Giving a small amount of food with the medication generally solves the problem.

More severe side effects include the following issues:

- 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.
- Orbifloxacin promotes nervous system stimulation and should be used with caution or not at all in patients with seizure disorders.

The recently described problem with blindness in cats associated with higher doses of enrofloxacin has been found with higher doses of orbifloxacin as well..

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 useful in several immune-mediated conditions), 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).

CONCERNS AND CAUTIONS

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.

Orbifloxacin is best given on an empty stomach but may be given with a small amount of non-dairy food if nausea is a concern.

