

Doxycycline

BRAND NAMES: ADOXA, ALODOX, ATRIDOX, DORYX, DOXY, MONODOX, ORACEA, ORAXYL, PERIOSTAT, VIBRAMYCIN

AVAILABLE AS ORAL SYRUP
OR SUSPENSION and
20 mg, 50 mg, 100 mg and 150
mg
TABLETS, and
20 mg, 40 mg, 50 mg,
75 mg, 100 mg and 150 mg
CAPSULES

HOW THIS MEDICATION WORKS

The tetracycline antibiotic family provides broad anti-bacterial protection by inhibiting bacterial protein synthesis. The mammalian host's protein synthesis mechanisms are not affected because of basic differences in the shape of the cellular machinery (the ribosomes) used to translate RNA into protein.

USES OF THIS MEDICATION

The body possesses many barriers through which antibiotics have difficulty penetrating (the nervous system, prostate gland, and eye are some examples, or organs with special barriers). Infections behind these barriers can be difficult to treat. Doxycycline represents a modification of the basic tetracycline structure to enhance its ability to penetrate such biological barriers and to increase its duration of action. Though unable to reach adequate concentrations in the central nervous system, doxycycline is able to penetrate the prostate gland to treat infections there and can permeate cells to address intracellular parasites. Infectious agents for which members of the tetracycline family are especially helpful are, as mentioned, the intracellular ones including:

- Mycoplasma hemofelis (agent of Feline Infectious Anemia)
- Borrelia burgdorferi (agent of Lyme's disease)
- Chlamydia psittaci (an agent of feline upper respiratory infection)
- Ehrlichia species and Anaplasma species (tick-borne organisms)
- Mycoplasma species (in upper respiratory & urinary infections)
- Brucella infections (usually venereal diseases)
- Doxycycline has been used in the treatment of heartworm infection, not to kill the worms but to kill the *Wolbachia* bacteria carried by the heartworms. *Wolbachia* may increase the tendency for embolism to complicate heartworm disease treatment so killing the *Wolbachia* prior to killing the adult heartworms is often included in the heartworm treatment protocol.

Of course, there are plenty of less exotic bacteria against which doxycycline may be used such as Bordetella bronchiseptica (the chief agent of Kennel Cough).

Doxycycline also has properties by which it modifies immune-mediated diseases. This "immuno-modulating" effect is separate from its antibacterial effects and is useful in treating such conditions as: discoid lupus erythematosus, plasma cell pododermatitis, and other immune-mediated skin diseases. Often doxycycline is combined with the B vitamin, niacinamide, to enhance results in such situations.

Another use would be the treatment of a feline condition known as a "Tetracycline Responsive Abscess" where draining abscesses are caused by "L-form" bacteria (a bacterial type that lacks a cell wall). Treatment of choice for this condition employs members of the tetracycline family.

HOW THIS MEDICATION IS USED

Doxycycline is typically given once or twice daily. Dry pilling is not recommended especially in cats and small dogs as the pill can stick in the esophagus and cause tremendous inflammation. A small amount of food or water should be given to see that the medication travels all the way to the stomach. Alternatively, a liquid product can be used.

Doxycycline tablet should be stored at room temperature away from light. The oral suspension is good for 14 days when stored at room temperature. Compounded liquids should be stored according to the instructions from the compounding pharmacy.

If a dose is accidentally skipped, it should be given when it is remembered and the next dose timed accordingly.

SIDE EFFECTS

Side effects which are generally minor

Nausea and vomiting are the most commonly reported side effects of doxycycline in dogs and cats. If this side effect occurs, it is most easily managed by giving the medication with food. (Other members of the tetracycline class should not be given with food as food binds the drug and prevents its absorption into the body. With doxycycline this effect is not considered significant.)

Drugs of the tetracycline class have potential to permanently stain teeth if given to immature animals. (It binds to calcium, which is needed for growing bones and teeth.) Doxycycline has the least potential for doing this of all of the tetracycline-type antibiotics.

Certain types of urine dipstick tests can erroneously test positive for glucose in patients on tetracycline-type medications. Doxycycline use is also associated with elevation of common liver enzyme test results. The clinical significance of this, if any, remains unknown.

Side effects which are more serious

The tablets have a particularly irritating pH should they become stuck in the esophagus of a smaller patient (especially a cat). If the pill sits in the esophagus, it can cause enough irritation to eventually lead to a scar causing difficulty swallowing. This can be prevented by following the pill with at least 6cc of water or, better yet, using one of the liquid formulations.

INTERACTIONS WITH OTHER DRUGS

Antacids commonly contain calcium, which binds Doxycycline in the GI tract. If these medications are used together, neither may be absorbed properly and the benefits of both are lost. Iron containing vitamin supplements produce the same problem. (Iron supplements might well be used with Doxycycline to treat "Feline Infectious Anemia." Administration of these two medications should be separated by a couple of hours or an injectable iron supplement may be employed.)

Concurrent use of doxycycline with Sucralfate can reduce the absorption and thus the efficacy of the doxycycline.

Concurrent use of doxycycline and phenobarbital may produce lower (possibly not therapeutic) levels of doxycycline thus interfering with efficacy.

Doxycycline may interfere with the effectiveness of enrofloxacin and penicillin-related antibiotics.

CAUTIONS AND CONCERNS

Doxycycline oral suspension does not require refrigeration. Tablets and capsules should be stored away from light.

The reconstituted oral suspension is only good for 2 weeks. After that, it must be discarded.

Doxycycline does not kill bacteria, it merely curtails their ability to reproduce. For the invading bacteria to be killed, the host's immune system must be active and effective. This may not be the best choice medication for immune compromised patients.

Doxycycline oral liquid is made for human children and is thus raspberry flavored. Some animals (particularly cats) do not like this taste. Doxycycline tablets are not flavored.

Be sure to chase tablets with a syringe of water so as to avoid esophageal irritation by the doxycycline tablets. This is especially important in cats and small dogs.

Last revised: 5/5/2021



Mar Vista Animal Medical Center

3850 Grand View Blvd., Los Angeles, CA 90066 • (310) 391-6741 • Fax: (310) 391-6744
Additional drug and general pet care information can be found on our world wide web site:
<http://www.marvistavet.com>