

## **Hyperthyroidism in Cats**

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Since there are no veterinary approved products for the treatment of hyperthyroidism, veterinarians typically turn to pharmacists for prescription needs and drug information. Methimazole (Tapazole®) is the drug of choice for treating feline hyperthyroidism. (Propylthiouracil, a related drug, has significantly higher incidences of serious adverse reactions in cats when compared to methimazole and is not usually recommended). Methimazole inhibits the synthesis of thyroid hormones, which is reversible after the drug is withdrawn, but has no effect on the release or activity of thyroid hormones already formed or in the general circulation. Response to the medication is consequently delayed. Methimazole is indicated for the long-term control of feline hyperthyroidism and for stabilization of cats prior to treatment with radioactive iodine or surgery.

Tapazole® is available commercially as a 5mg tablet, a convenient size for dosing cats. Some cats, however, are not easy to "pill," and an oral suspension can be compounded for those patients. Another option that has been successful, according to anecdotal reports, is a topical formulation of methimazole applied to the inner surface of the pinna, which allows transdermal delivery of the drug.

Cats are usually started on 2.5mg (per cat) by mouth every 12 hours for two weeks, although some clinicians initiate therapy with 5mg twice daily. Cats should be closely monitored for side effects during the initiation period, and the lower starting dose appears to be associated with fewer side effects than the higher dosing regimen. If the cat tolerates the drug well and key laboratory and blood values remain within normal limits, then the dose may be increased to 2.5mg by mouth three times daily for an additional two weeks. At this time, a similar re-evaluation is done and serum T4 is measured. If serum T4 is within the reference range, the methimazole treatment is continued as before. If hyperthyroidism still exists, then the daily methimazole dose is increased in 2.5mg increments every two weeks until a normal serum T4 is obtained. Even though serum T4 levels may normalize within the first few weeks of treatment, clinical improvement may not be observed for another two to six weeks.

Most cats can be controlled with a total daily dose of 10 to 12.5mg. However, some cats may require up to 20mg per day. After good control is achieved, many veterinarians try to maintain control with once or twice daily dosing rather than three times daily to encourage better compliance. Stopping treatment for more than 24 hours causes recurrence of hyperthyroidism (2). Before initiation of drug therapy, it is important to stress to owners that methimazole is not a cure for this disease; therefore, the medication must be continued usually for the life of the pet.

Approximately 15-20 percent of cats treated with methimazole develop adverse effects, with anorexia and vomiting most commonly reported. Other side effects include lethargy, excoriations (may be pruritic) and bleeding. Hepatopathy has also occurred, along with hematological disorders such as thrombocytopenia, agranulocytosis, leukopenia, eosinophilia, and lymphocytosis (3). The gastrointestinal adverse effects appear to generally develop within the first month of treatment and usually resolve even with continued therapy. Another option for dealing with mild complications is to discontinue therapy until side effects have resolved, then restart therapy at a lower dose. Facial excoriations occur in a small percentage of patients and require discontinuation of the medication, since this side effect is not transient in nature. Although most complications from methimazole therapy occur within the first three months of treatment, some cats have a delayed reaction. Ideally, cats should be re-evaluated every three to six months as long as methimazole is administered.

Methimazole crosses the placenta and may induce hypothyroidism in kittens born of queens receiving the drug. Levels found in human breast milk are higher than plasma concentrations. It is suggested that kittens be placed on a milk replacer after receiving colostrum from mothers on methimazole(3).

Carbimazole, a tasteless precursor to methimazole which is bitter, is also effective in controlling feline hyperthyroidism and may be used as an alternative treatment. The drug is available in the United Kingdom but not in the United States or Canada.

If serious complications occur or if the cat cannot tolerate methimazole, sodium or calcium ipodate are also alternative treatment options. Unfortunately, neither of these products is currently available in the United States or Canada. There are several ipodate like drugs on the market, but it not known whether these products can be safely used or if they are clinically effective in cats or other veterinary species.

References:

1. Leib, MS and Monroe, WE, ed. Practical Small Animal Internal Medicine. Philadelphia: WB Saunders, 1997.
2. Trepanier, LA, et al. "Pharmacokinetics of Methimazole in Normal Cats and Cats with Hyperthyroidism," Res Vet Sci 1991;50:69-74.
3. Plumb, DC. Veterinary Drug Handbook, 3rd ed. Ames: Iowa State University Press, 1999.