



Methimazole

Methimazole is a popular antithyroid drug used for treating hyperthyroid cats in the U.S., particularly when radioiodine is not readily available or is cost prohibitive.

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Overview

- ⚠️ Methimazole is approved for use in animals (Felimazole; dechra-us.com) and humans.
- ⚠️ Methimazole compounded with pluronic lecithin organogel (PLO) is one of few veterinary drugs with demonstrated efficacy when administered transdermally.
 - Concentration: 50 mg/mL
 - Starting dose: 2.5 mg/cat q12h

Toxicities

- ⚠️ Dose-dependent
 - In 10%–20% of cats treated with oral methimazole, mild-to-moderate vomiting, diarrhea, and decreased appetite typically developed during the first 4 weeks of treatment.^{1,2}
 - GI signs are significantly less common in cats receiving transdermal treatment than in those receiving oral methimazole.¹

- Cats often develop mild increases in BUN and creatinine with treatment to the euthyroid state.³
 - Low urine specific gravity and high serum thyroxine (T_4) concentrations may increase risk for posttreatment development of azotemia,⁴ although cats with highly concentrated urine can still be at risk.⁵
 - Serum T_4 concentrations should be targeted to the mid-normal range, as overtreatment to low serum T_4 can worsen azotemia and lead to shortened survival times.⁶
- ⚠️ Idiosyncratic
 - Acute, apparently nondose-dependent (ie, idiosyncratic) toxicities can develop at 1–4 weeks of treatment and typically include
 - Facial excoriation around the neck and pinnae, blood dyscrasia (eg, neutropenia, thrombocytopenia), and new hepatopathy
 - Leukopenia resulting from only lymphopenia does not indicate methimazole discontinuation.
 - Idiosyncratic hepatopathy is typically a mixed pattern (ie, with elevations in both hepatocellular and cholestatic enzymes) and may involve hyperbilirubinemia.
 - Liver enzyme activity should be compared with values obtained before treatment, as many hyperthyroid cats have elevated ALT and/or ALP at diagnosis.⁷
 - These should resolve with treatment.
 - Cats may develop myasthenia gravis, characterized by neuromuscular weakness and positive acetylcholine receptor autoantibodies during the first few months of treatment^{8,9}; however, this is rare.

Methimazole is one of few veterinary drugs with demonstrated efficacy in a compounded formulation for transdermal administration.

Management of Adverse Events

- ⚠ For simple GI upset without biochemistry abnormalities, discontinue methimazole until signs resolve.
 - Restart at a 50% dose reduction or switch to transdermal methimazole.¹
- ⚠ Idiosyncratic toxicities fail to respond to dose reduction.
 - Discontinue methimazole and schedule alternative treatment (eg, radioiodine, Hill's Prescription Diet y/d Feline Thyroid Health [hillsvet.com], thyroidectomy).
 - For facial excoriation and if pruritus is severe, consider short-term antiinflammatory doses of prednisolone.
 - For blood dyscrasia, evaluate for fever or bruising.
 - Neutropenia and thrombocytopenia will typically resolve after drug discontinuation without additional intervention.¹⁰

- In cases of severe neutropenia (ie, <1000–1500 μ L), antibiotics (eg, amoxicillin–clavulanate) may be indicated.
- Recheck CBC 1 week after discontinuation.
- For hepatopathy, consider short-term treatment with glutathione precursor (eg, S-adenosylmethionine [SAME])
 - Recheck liver enzyme activity 1–2 weeks after discontinuation.
- For myasthenia gravis, consider pyridostigmine treatment.
 - Follow clinical response and acetylcholine receptor antibody titers after discontinuation.

Monitoring

- ⚠ Clinical monitoring by owners is important, as toxicities can develop between routine rechecks.

- ⚠ Rechecks at 2 and 4 weeks after treatment initiation should be sufficient to determine euthyroidism and presence of toxicity.
 - Along with monitoring serum T_4 concentrations and general clinical status, cats should be monitored for
 - New azotemia via BUN, creatinine, and urine specific gravity
 - Idiosyncratic toxicity via CBC and liver enzyme activities
 - Once euthyroid state reached, routinely (q3–6mo) check renal values, blood pressure, and serum T_4 concentrations.

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T_4 = thyroxine



THERAPEUTICS SNAPSHOT

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WORDS OF CAUTION

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