

# NEW DRUGS, NEW INDICATIONS: KEY THERAPEUTIC UPDATES FOR VETERINARIANS

2025 Edition

**James A. Budde, PharmD, RPh, DICVP  
Leonie Carter, DVM**

 **Plumb's®**

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## Authors



**James A. Budde, PharmD, RPh, DICVP**

Chief Pharmacy Officer



**Leonie Carter, DVM**

Medical Writer and Editor

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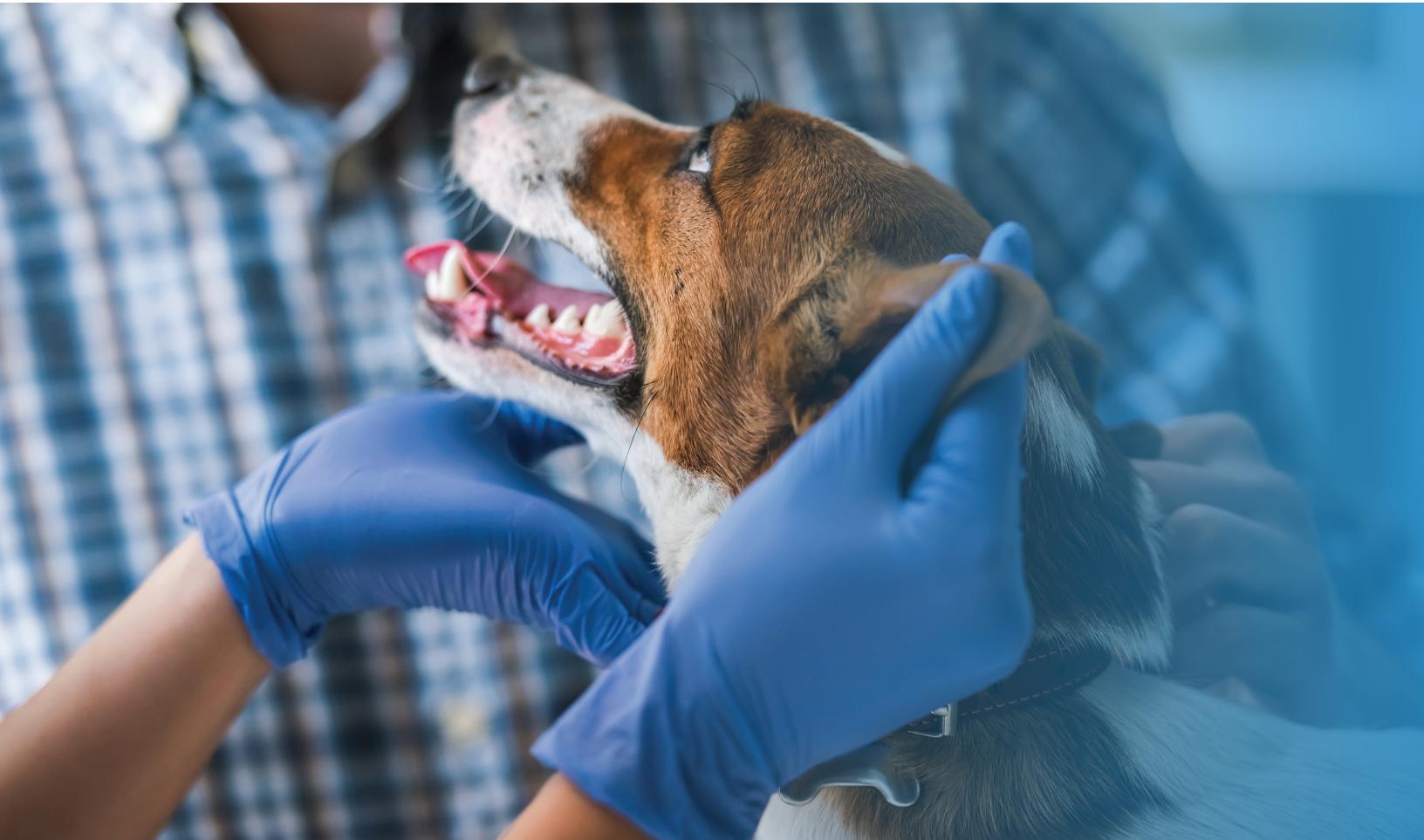
You've been here before—an itchy dog that's cycled through every treatment option with little relief. The owner is frustrated, and so are you. But this time, there's a new therapy to try—one that wasn't available last year.

From groundbreaking therapies for allergic skin disease to a novel anxiolytic for cats and an expanded arsenal of parasite preventives, 2024 introduced an impressive range of new treatment options.

Keeping up with these new drugs and therapeutics is essential—but can also feel overwhelming.

That's why we created this guide. We'll break down some of the most important drug approvals for small animals since the start of 2024, covering key details on pharmacology, dosages, adverse effects, and more.

We'll also explore new dosage forms that offer greater treatment flexibility, familiar drugs with expanded indications, and the latest generic approvals.





# NEW PRODUCTS FOR CATS

## **Pregabalin**

Veterinary visits can be stressful—not just for cats, but also for their owners and the entire veterinary team. This newly approved oral solution offers a much-needed way to ease acute anxiety during transport and veterinary visits, providing welcome relief. However, as a controlled substance, it requires careful handling and strict adherence to prescribing regulations.

### **Approved Use**

Pregabalin is an anxiolytic FDA-approved for use in cats with acute anxiety and signs of fear associated with transportation and visits to the clinic.

### **Pharmacology**

Pregabalin, like gabapentin, binds to the alpha2-delta subunit of voltage-gated calcium channels, decreasing calcium influx and inhibiting subsequent release of excitatory neurotransmitters (eg, glutamate, norepinephrine, serotonin).

### **Contraindications**

Pregabalin is contraindicated in cats hypersensitive to it or any of the inactive ingredients.

## Adverse Effects

Adverse effects were uncommon (<5%) in preapproval studies. Reported adverse effects included ataxia, lethargy, emesis, anorexia, weight loss, tremor, and proprioceptive abnormality.<sup>1</sup> Sedation may occur but typically resolves within 6 hours after administration. Hypothermia and depression are also possible.

## Dosage

Pregabalin (**5 mg/kg PO**) can be administered to cats 1.5 hours before transportation or visiting the clinic and can be given for 2 consecutive days.<sup>1</sup>

## Additional Information

Pregabalin is a schedule-V controlled substance in the United States.

## Client Education Support from Plumb's

Plumb's drug handouts are printable, emailable drug information sheets written in clear, straightforward language. They clearly explain how medications are used, what clients need to monitor for, and when to call the practice with concerns. Plumb's subscribers have access to more than 550 drug handouts (including Spanish translations) and can easily print or email them to share with pet owners.





# NEW DOSAGE FORMS FOR CATS

## Methimazole Oral Solution

Methimazole has long been a cornerstone treatment for feline hyperthyroidism. Now, a newly approved oral solution offers an option for more precise dosing. While it is generally well tolerated, awareness of potential adverse effects is important. As a hazardous drug, methimazole requires proper handling and strict safety precautions to protect veterinary teams and pet owners.

### Approved Use

Methimazole oral solution is bioequivalent to the FDA-approved methimazole tablets, meaning the rate and extent of absorption of the oral solution have been demonstrated to be equivalent to the tablet form.<sup>2</sup>

### Dosage

The oral solution dosage is equivalent to the tablet dosage, starting with **2.5 mg/CAT every 12 hours** then titrated in 2.5-mg increments every  $\geq 3$  weeks.<sup>3</sup> The 5 mg/mL dosage form is available in 30-mL and 100-mL bottles.

### Additional Information

Impermeable gloves should be worn when handling this product and hands washed after handling.



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<b>Chlamydiosis</b>	<b>Chlamydiosis: mild respiratory disease (canisplasmosis) feline upper respiratory tract (extra-label)</b>
a) Using tetracycline soluble powder containing 254 g tetracycline disodium, mix 1/4 teaspoon of soluble powder per gallon of drinking water. Use as an adjunct for patients with other respiratory diseases. Withdraw 10 days prior to breeding. Repeat fresh powder twice daily for 10 days.	
b) Using tetracycline soluble powder containing 254 g tetracycline disodium, mix 1/4 teaspoon of soluble powder per gallon of drinking water and administer for 5-10 days. Prepare fresh solution 2-3 times daily as respiratory is rapidly lost. For converting regimen to pelleted feeds, administer oral suspension 1/2 gram twice daily for 5 days, then twice or twice daily until feeds are accepted; this is not an adequate therapy for long-term treatment of chlamydiosis (pattacino).	
<b>Monitoring</b>	
■ Adverse effects.	
■ Clinical efficacy.	
■ Long-term use or in susceptible patients: periodic renal, hepatic, thyroid, and hematologic evaluations.	
<b>Client Information</b>	
■ Avoid giving a grain drug orally within 1-2 hours of feeding, giving after other dairy products.	
■ If gastrointestinal upset occurs, giving with a small amount of food may help, but this may also reduce the amount of drug absorbed.	
<b>Chemistry/Synonyms</b>	
An antibiotic obtained from <i>Streptomyces aureofaciens</i> or derived semisynthetically from oxytetracycline, tetracycline HCl occurs as a white to light yellow crystalline powder. It is soluble in water, 100 mg/ml, is soluble in alcohol, and 10 mg/ml soluble in alcohol. Tetracycline has a solubility of $0.46 \text{ mg/ml}$ of water and $20 \text{ mg/ml}$ of alcohol. Commercially available tetracycline HCl for IM injection also contains magnesium chloride, procaine HCl and ascorbic acid.	
Tetracycline also has been as tetraacyl hydrazinium, many trade names are available.	
<b>Storage/Stability</b>	
Unless otherwise instructed by the manufacturer, tetracycline oral tablets and capsules should be stored in tight, light resistant containers at room temperature (15-18°C).	
<b>Compatibility/Compatibility Considerations</b>	
No compatibility noted.	
<b>Dosage/Forms (Regulatory Status</b>	
<b>VETERINARY-LABLED PRODUCTS</b>	
Tetracycline HCl Soluble Powder (as a water additive): 324 g/btl $\times$ 5 lb containers; FDA-approved for use in swine, cattle, and poultry. (OTC at time of writing. Not to be used in pre-remating guinea pigs or calves to be processed for veal. Not to be used in turkeys or chickens	
<b>Therapeutic Indication</b>	<b>There's an</b>
<b>Theophylline</b>	
<b>Use(s) (s)</b>	
■ Theophylline and its oral bronchodilator.	
<b>Prescriber Highlights</b>	
■ Theophylline drug with dual bronchodilatory action. Used alone or in combination with other bronchodilators and corticosteroids to be less susceptible to side effects at higher doses.	
■ Narrow therapeutic index. Toxic effects at higher doses.	
■ Many drug interactions. Theophylline (theophylline) can increase theophylline levels substantially.	
<b>Uses/Indications</b>	
The theophyllines (aminophylline and theophylline) are most popular for their bronchodilatory effects especially in animals with chronic obstructive pulmonary disease (COPD).	
Theophylline could potentially be of benefit in dogs with primary arterial hypertension if the therapeutic value in chronic or subacute pulmonary disease (COPD).	
<b>Pharmacology/Actions</b>	
The theophyllines competitively inhibit phosphodiesterase, increasing amounts of cyclic AMP that then increases the release of bronchial smooth muscle. The elevated levels of cAMP may also inhibit the release of histamine and serotonin. It also inhibits the release of $\text{SRS-A}$ (serotonin-releasing substance A) from mast cells. The myosin and myosin light chain kinase effects that the theophyllines possess may be a result of translocating intracellular calcium.	
The theophyllines directly relax smooth muscle in the bronchial and pulmonary airways, increase ciliary motion, increase gastric acid secretion, inhibit uterine contractions, and may have anti-inflammatory, ocular clarity and inhibit mast cell release. They can also cause cholinergic and inotropic actions, stimulate the CNS and cause CNS depression, stimulation (centrally-mediated).	
<b>Pharmacokinetics</b>	
Theophylline is distributed throughout the extracellular fluids and body tissues. In dogs, at therapeutic doses levels usually decline 7-14% in plasma protein. The volume of distribution is approximately $0.25 \text{ L/kg}$ . The half-life of theophylline is $0.8-2.1 \text{ h}$ . At therapeutic doses, mean theophylline plasma levels are $0.78-0.86 \text{ mg/kg}$ (mean half-life was $0.9 \text{ hours}$ ). It has been shown that half-life is increased in dogs with chronic renal failure.	

app for that

**Commonly Asked Questions/Precautions/Warnings**

Theophylline is contraindicated in patients who are hypersensitive to any of the substances including aminophylline, theophylline, or caffeine.

Theophylline should be administered with caution in patients with severe cardiac disease, seizure disorders, peptic ulcers, hyperthyroidism, mild to hepatic disease, severe hypoxia, or severe hypertension. A 50% reduction in theophylline dose has been suggested for patients in septic shock. Because it may cause arrhythmias, patients with preexisting arrhythmias, patients with cardiac arrhythmias should receive theophylline only with caution and enhanced monitoring. Neurological and psychiatric patients may have decreased clearance of theophylline and should be more sensitive to its toxic effects. Patients with hepatic disease should receive theophylline with half the dose of theophylline and should be initiated at 25-50% lower dosages.

**Adverse Effects**

The theophyllines can produce CNS stimulation and gastrointestinal irritation after administration by any route. Most adverse effects are related to theophylline's pharmacological actions. The effects of theophylline on blood levels, dogs appear to tolerate levels that may be very toxic to humans. Some mild CNS excitement and GI disturbance are not uncommon when starting therapy and generally resolve with chronic administration in conjunction with monitoring and adjustment of the dose.

Dogs can exhibit clinical signs of nausea and vomiting, insomnia, increased gastric acid secretion, diarrhea, polyuria, polydipsia, and polyuria. Side effects in horses are generally dose related and may manifest as tachycardia, arrhythmias, hypertension, and/or hypotension, diaphoresis, tachycardia, and ataxia. Seizures or cardiac dysrhythmias may occur in severe intoxications.

**Reproductive/Nursing Safety**

In humans, the FDA categorizes this drug as category C for use during pregnancy. *Animal studies* have shown an adverse effect on the fetus, but there are no adequate studies in humans. There are no adequate studies in humans or animals.

It has been shown to increase uterine contractions.

Theophylline crosses the placenta and is distributed into milk (70% of serum levels).

**Overdose/Cause Toxicity**

Concentrations greater than adverse effects above) are usually associated with serum drug levels  $\geq 20$  microgram/mL in humans and become more severe as the serum level increases that value. Tachycardias, arrhythmias, and CNS effects (excitement, hallucinations) are considered to be the most common types of toxicity. Dogs and cats can tolerate serum levels  $\geq 20$  microgram/mL.

Dogs and cats  $\geq 6$  species appear sensitive to theophylline reported to

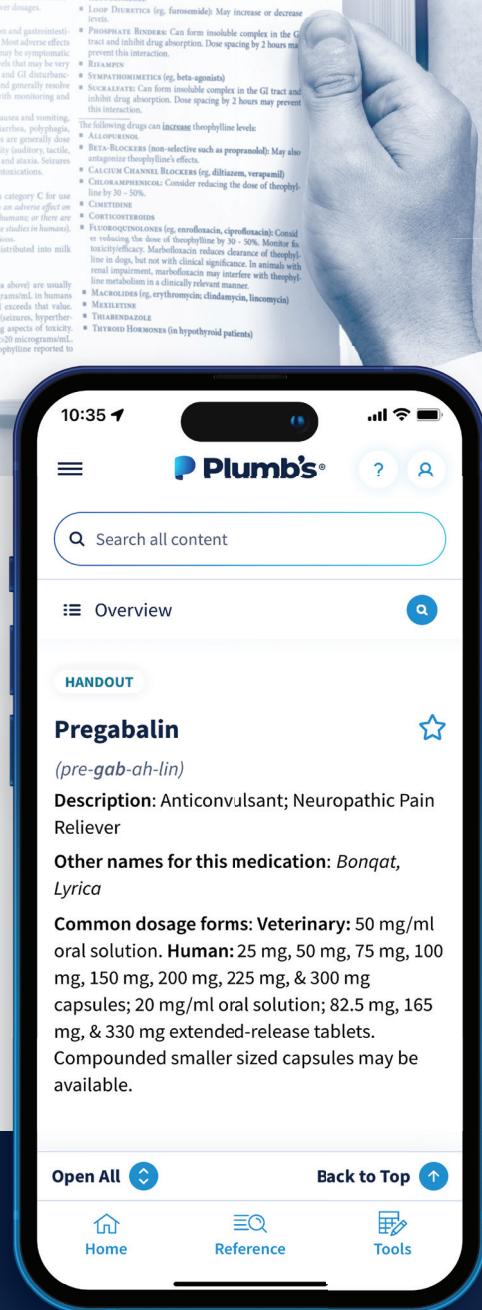
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# NEW PRODUCTS FOR DOGS

## Ilunocitinib

Allergic skin disease is one of the most challenging conditions to manage, making every new treatment option a welcome addition. Ilunocitinib, the latest approved therapy for allergic skin conditions, expands our therapeutic arsenal—but understanding its appropriate use and potential risks is essential before prescribing.

### Approved Use

Ilunocitinib is FDA-approved to control atopic dermatitis and pruritus associated with allergic dermatitis in dogs at least 12 months of age.<sup>4</sup>

### Pharmacology

Ilunocitinib is a nonselective Janus kinase (JAK) inhibitor with a high potency for JAK1, JAK2, and tyrosine kinase 2 inhibition. By inhibiting JAK, ilunocitinib inhibits the function of various proinflammatory, pruritogenic, and allergy-related cytokines.

### Contraindications

Ilunocitinib is contraindicated in dogs hypersensitive to it. This drug should not be used in dogs with serious infections or that are <12 months of age. Vaccines should be up to date prior to treatment. In patients that require vaccination, ilunocitinib should be withheld for at least 28 days both before and after vaccination.

## Adverse Effects

Adverse effects can include nausea, vomiting, anorexia, lethargy, dermal growths, epiphora/ocular discharge, elevated liver enzymes, and weight gain.<sup>4</sup> Ilunocitinib may increase susceptibility to development of neoplasia (benign and malignant), increase risk for infection (eg, demodicosis, respiratory infection, UTI), and exacerbate progression of subclinical or uncomplicated infection into clinical or severe infection.

## Dosage

Ilunocitinib (**0.6-0.8 mg/kg PO every 24 hours**) can be given with or without food.<sup>4</sup> This drug should not be administered concurrently with vaccines.

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## Lotilaner/Moxidectin/Praziquantel/Pyrantel Combination for Dogs

Comprehensive parasite protection is a key component of canine healthcare, and this new combination product simplifies it with a single monthly dose. With four active ingredients targeting a broad range of parasites—including fleas, ticks, heartworms, roundworms, hookworms, and tapeworms—it offers a convenient and effective option for year-round prevention and control.

## Approved Use

Lotilaner/moxidectin/praziquantel/pyrantel tablets are indicated for prevention of heartworm disease caused by *Dirofilaria immitis*; treatment and control of roundworms, hookworms, and tapeworms; treatment and prevention of flea infestations; and treatment and control of black-legged tick, lone star tick, American dog tick, and brown dog tick infestations in dogs  $\geq 8$  weeks of age.<sup>5</sup>

## Pharmacology

Lotilaner, moxidectin, praziquantel, and pyrantel are antiparasitic agents that result in paralysis and death of susceptible parasites. Lotilaner causes prolonged neuronal hyperexcitation by inhibiting insect and acarine gamma-aminobutyric acid (GABA)-gated chloride channels in the parasite CNS. Moxidectin binds selectively to glutamate-gated chloride ion channels in invertebrate nerve and muscle cells and enhances the release of GABA at presynaptic neurons. Praziquantel is thought to disrupt the tegument of tapeworms and induce sustained muscle contractions by increasing calcium release and influx across the tegument. Pyrantel causes neuronal depolarization via binding at the nematode nicotinic cholinergic receptors, acts as a neuromuscular-blocking agent, and inhibits cholinesterase.

## Contraindications

The manufacturer states there are no known contraindications; however, this product should not be used in patients hypersensitive to any of the active or inactive components.

## Adverse Effects

This product was well tolerated in preapproval studies. The most common adverse effects reported were diarrhea (11%), vomiting (9.4%), lethargy (6.3%), anorexia (5.8%), and dermatitis (5.2%).<sup>5</sup> Drugs in the isoxazoline class can cause neurologic adverse effects (eg, muscle tremors, ataxia, seizures), which have been noted in patients with and without history of neurologic disorders. Moxidectin is safe for use in dogs with the multidrug sensitivity gene (*MDR1* gene, also known as *ABCB1* gene) mutation (also known as *ABCB1-1delta*) at labeled heartworm-preventive doses.<sup>6,7</sup>

## Dosage

Lotilaner (minimum, **20 mg/kg**), moxidectin (minimum, **0.02 mg/kg**), praziquantel (minimum, **5 mg/kg**), and pyrantel (minimum, **5 mg/kg**) PO is given once per month with food or within 30 minutes of a meal.<sup>5</sup> Dogs weighing >100 lb (45.5 kg) require a combination of chewable tablets. Year-round administration is recommended for parasite prevention or control. Intermittent use can begin at least 1 month prior to fleas and ticks becoming active and within 1 month of mosquito exposure; administration should continue for at least 1 month after the last mosquito exposure.

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## Torsemide

Managing congestive heart failure in dogs requires a delicate balance. Torsemide offers a new option for controlling pulmonary edema secondary to myxomatous mitral valve disease. As a loop diuretic, it offers potent diuresis but demands careful monitoring to minimize risks. The FDA approval is conditional, so strict adherence to labeled use is required.

### Approved Use

Torsemide is conditionally FDA-approved for concurrent use with pimobendan, spironolactone, and angiotensin-converting enzyme inhibitor therapy for the management of pulmonary edema in dogs with congestive heart failure caused by myxomatous mitral valve disease.<sup>8</sup>

### Pharmacology

Torsemide is a loop diuretic that inhibits sodium and chloride reabsorption in the ascending loop of Henle, leading to diuresis via decreased water reabsorption.

### Contraindications

Torsemide should not be used in dogs hypersensitive to it; with renal failure or anuria; or with severe dehydration, hypovolemia, or hypotension. This drug should not be used concurrently with other loop diuretics. Administration should be discontinued in dogs with progressive renal disease if increasing azotemia and oliguria occur during treatment.

## Adverse Effects

The most common adverse effects include polyuria and polydipsia, renal insufficiency, increased BUN and serum creatinine, and urinary incontinence.<sup>8</sup>

## Dosage

Torsemide (**0.11-0.44 mg/kg PO every 24 hours**) administration should not exceed 0.44 mg/kg per day.<sup>8</sup> Dose adjustments should be made in 25% increments.

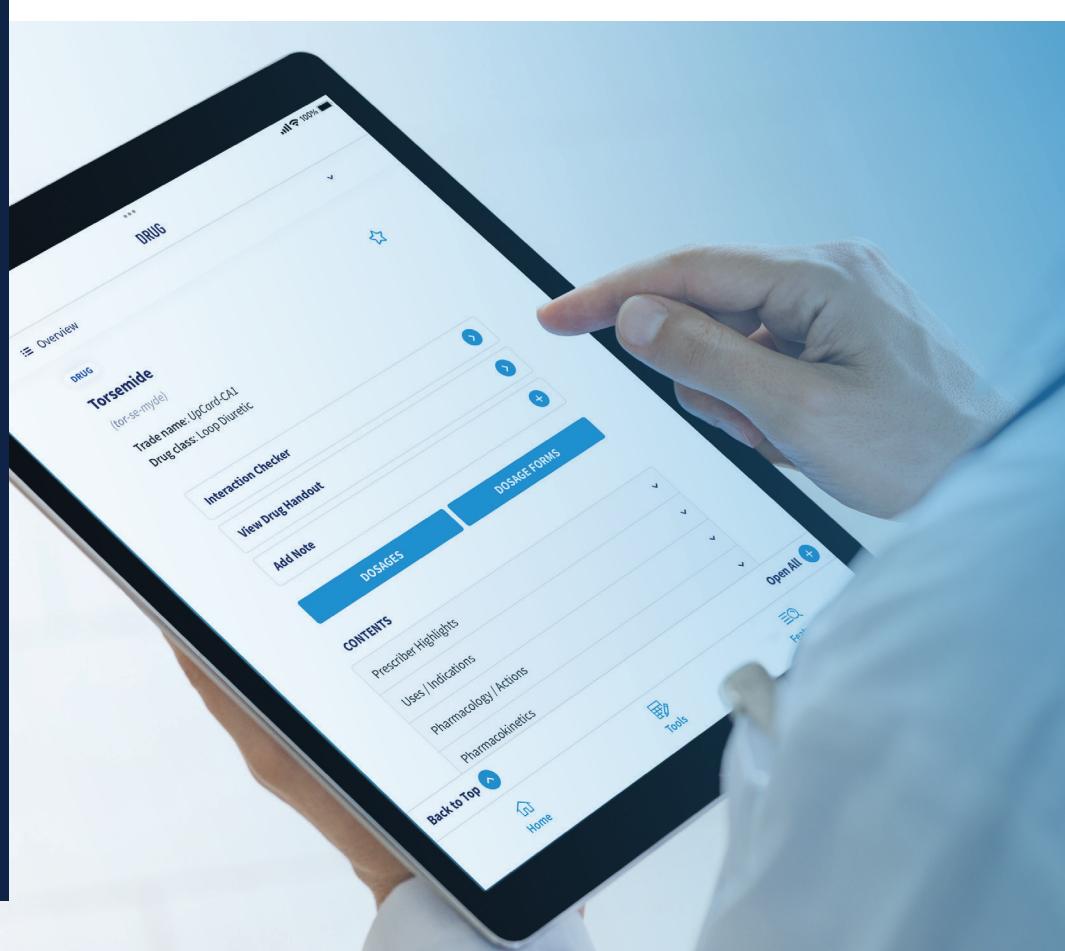
## Additional Information

Extra-label use (ie, unapproved species, dose, route, frequency, duration) of a conditionally approved drug is prohibited by the FDA.

## Prescribe Confidently From Anywhere

No more flipping through outdated books or cross-checking a dozen tabs. Each Plumb's drug monograph includes current dosages, dosage forms, indications, adverse effects, and more crucial details—continually updated by our team of veterinarians and pharmacists, so you can confirm treatment plans with confidence.

Search by drug or trade name to find accurate, fully referenced information for a wide range of species and clinical scenarios. Plus, a built-in calculator makes quick conversions and calculations even easier.



# NEW DOSAGE FORMS FOR DOGS

## Pimobendan Oral Solution

New dosage forms can simplify treatment, improve compliance, and enhance dosing precision. The newly approved oral solution of pimobendan provides a convenient alternative for managing heart disease in dogs, offering good bioavailability and the flexibility to fine-tune dosing.

### Approved Use

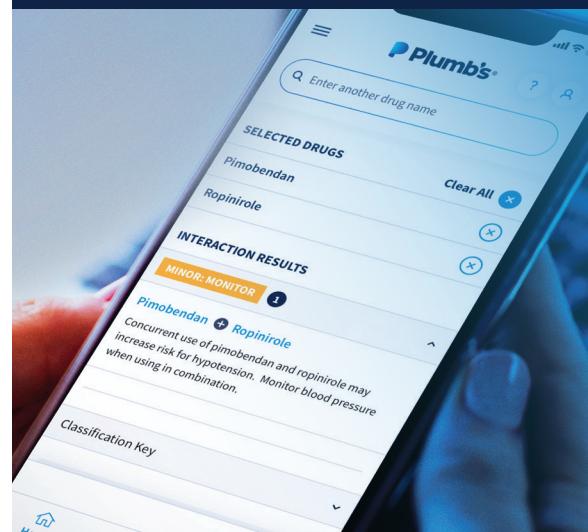
Pimobendan oral solution is bioequivalent to the FDA-approved chewable tablets.<sup>9</sup>

### Dosage

Pimobendan oral solution (**0.25 mg/kg PO every 12 hours**) should be administered directly into the mouth, not mixed into food. The 1.5 mg/mL dosage form is available in 50-mL bottles.

### Check for Potential Drug Interactions With Plumb's

Get veterinary-specific guidance with the drug interaction checker in Plumb's. Enter two or more drugs into this interactive tool to check for drug-to-drug interactions—from minor additive effects to major absorption concerns—and find the best path forward for your patient. Plumb's subscribers can access this interactive tool easily from any internet-connected device.





# UPDATED INDICATIONS

The advancements this year go beyond new drug approvals. Several familiar medications have also received FDA approval for additional indications, expanding their use.

An additional indication for treatment and control of *Haemaphysalis longicornis* (ie, longhorned tick) was added to several products, including fluralaner 1-month tablets, sarolaner tablets, and the combination products that contain sarolaner/moxidectin/pyrantel and afoxolaner/moxidectin/pyrantel.

For cats, the combination sarolaner/selamectin topical solution has an added indication of prevention of *Dipylidium caninum*, which results from the product's adulticidal activity against fleas.

## How Plumb's Stays Up to Date

Behind every drug monograph is a team of veterinarians and pharmacists working to keep drug information accurate, current, and clinically relevant. Want to learn more about how the content in Plumb's is updated? Get the details in this [blog post](#).





# FIRST GENERIC APPROVALS

Generic drugs are required to offer the same quality, safety, and efficacy as their brand-name counterparts and can expand treatment accessibility and flexibility.

In 2024, the first generic pimobendan chewable tablets received FDA approval, potentially expanding future treatment options for dogs with heart disease. The product was not yet commercially available at the time of publication.

Propofol, one of the most commonly used induction agents in small animal practice, also received generic approval in multidose vials for dogs—expanding the available options for anesthetic induction.

## Adverse Drug Effects

The FDA continues to monitor drug safety after approval is granted.

Suspected adverse effects should be reported to the product's manufacturer or the FDA.

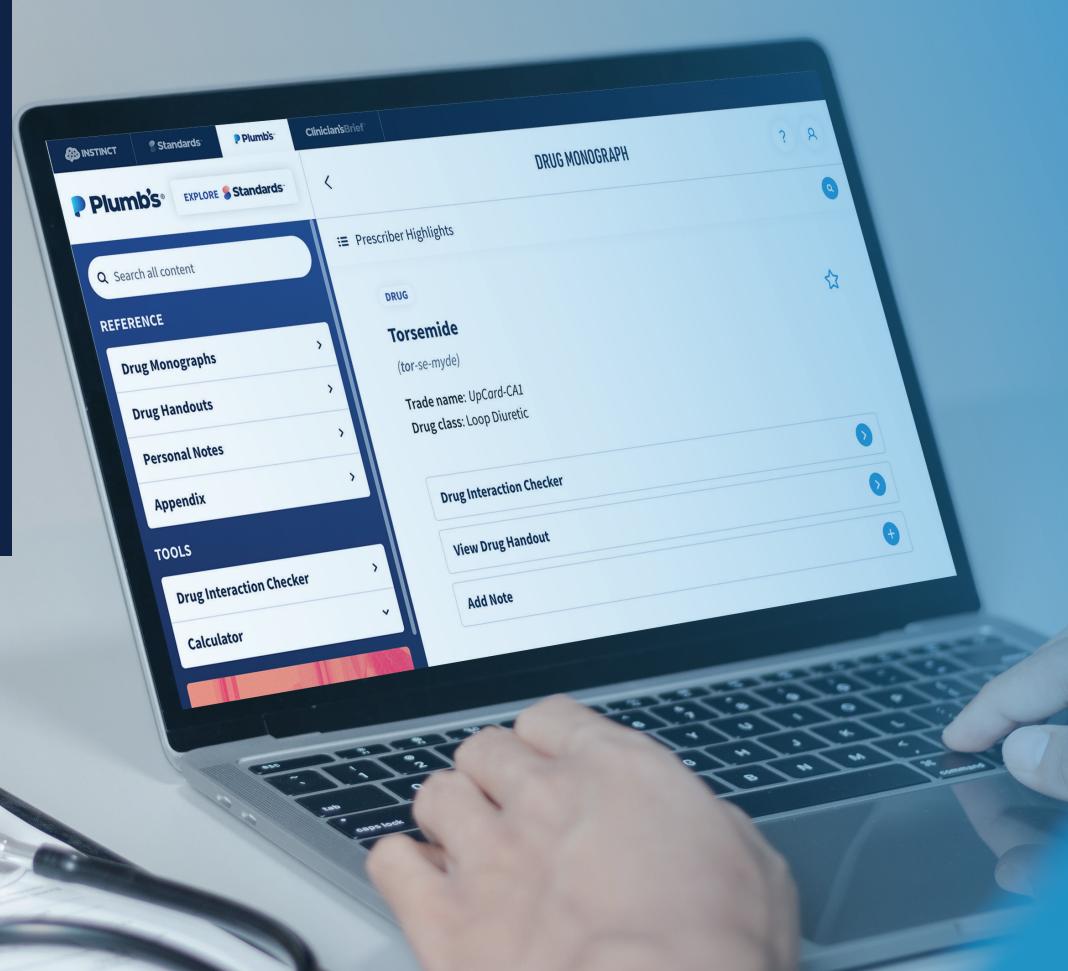
[Learn More](#)

With veterinary medicine constantly advancing, keeping up with new drug approvals, updated indications, and emerging treatment options can be a challenge.

These new drugs and therapeutics offer exciting opportunities to improve patient care, but they also highlight the need for accurate, up-to-date information.

At Plumb's, our team of veterinary and pharmacy experts works continuously to update drug monographs, ensuring they reflect the latest information. As soon as changes are made, the updates are published to the Plumb's website and mobile app, so subscribers always have access to the most current drug information.

**Plumb's delivers reliable, up-to-date veterinary drug information with comprehensive drug monographs, a veterinary drug interaction checker, and clear client handouts—all in one easy-to-use platform. Veterinary teams can quickly access accurate, peer-reviewed prescribing information from any internet-connected device. Learn more about subscribing at [plumbs.com](https://plumbs.com).**



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