

# What Is Your Vet Not Telling You About These Pet Meds?

Could your pet's prescribed drugs contain hidden dangers? Learn how to identify and prevent a potentially deadly syndrome caused by everyday medications.

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## STORY AT-A-GLANCE

- Serotonin is a neurotransmitter that plays a role in regulating behavior, pain sensation, appetite, movement, body temperature, and function of the heart and lungs; too little serotonin is associated with depression, and too much can cause a potentially fatal condition called serotonin syndrome (SS)
- Most SS cases in pets are the result of accidental ingestion or overdose of a single drug that acts on serotonin levels; veterinarians who prescribe these drugs must be knowledgeable regarding the clinical effects and their associated contraindications that could lead to serotonin syndrome
- Symptoms of SS can include agitation, depression, vocalization, seizures, muscle spasms, tremors, change in heart rate, and elevated blood pressure
- Treatment of serotonin syndrome involves decontamination (removing the drug from the animal's body), managing clinical symptoms, and supportive care; if treated quickly, SS is less likely to be fatal
- It makes sense to try a variety of natural remedies first before resorting to the use of psychotropic drugs to address a pet's emotional or behavioral issues; the use of drugs should be reserved for extreme, intractable cases and/or when a pet is causing harm to himself

Serotonin (aka 5-hydroxytryptamine) is a neurotransmitter produced in the body that plays a role in regulating behavior, awareness of pain, appetite, movement, body temperature, and function of the heart and lungs.

Too little serotonin in the brain is thought to play a role in depression; too much can lead to excessive nerve cell activity, which in turn can cause a potentially deadly condition known as serotonin syndrome (SS) in which excess stimulation of serotonergic receptors in the nervous system leads to mentation changes, autonomic dysfunction, and neuromuscular abnormalities.

The incidence of serotonin syndrome in both pets and people has been on the rise over the last couple of decades due to the increased use of antidepressants, especially selective serotonin reuptake inhibitors (SSRIs) and selective norepinephrine reuptake inhibitors (SNRIs).

In humans, SS is often the result of concurrent administration of two serotonergic drugs. In veterinary medicine, the most common cause is accidental ingestion of human prescription medications. However, veterinarians are also prescribing these medications more frequently to treat behaviors including separation anxiety, cognitive dysfunction, storm phobia, anxiety, and **compulsive disorders**.

Needless to say, veterinarians must be knowledgeable regarding the clinical effects of these medications and their associated contraindications, which could lead to serotonin syndrome.

## Medications and Supplements Linked to Serotonin Syndrome

Medications and supplements that have been implicated in serotonin syndrome in pets include:

- Human drugs like SSRI and SNRI antidepressants, and monoamine oxidase inhibitors (MAOIs)
- Veterinary drugs to alter behavior, including Clomipramine and Fluoxetine
- Mirtazapine (an appetite stimulant used primarily in cats)
- Illicit drugs like amphetamines
- Atypical antipsychotics
- Certain miscellaneous drugs like opioid painkillers, cough suppressants, migraine medications, antiviral drugs, and drugs for Parkinson's disease
- Natural supplements including serotonin, tryptophan, and St. John's wort

Supplements alone are almost never the cause of SS. The problem arises when well-meaning pet parents combine natural supplements and prescribed medications that both act on serotonin levels. S-adenosylmethionine (SAMe), a supplement commonly used for mental, liver, and joint support, should be avoided in combination with serotonergic agents, as should food high in tyramine (e.g., aged cheese, dried meats/fish, soy).

If your pet is taking a drug intended to alter his behavior, you should consult your integrative veterinarian before also giving supplements used for the same purpose.

## Symptoms and Diagnosis of SS in Pets

Symptoms of serotonin syndrome in pets can include:

- Agitation
- Lack of coordination
- Change in heart rate
- Depression
- Muscle rigidity
- Elevated blood pressure
- Aggression
- Muscle twitching
- Change in skin color
- Vocalization
- Muscle spasms
- Hyperthermia

- Seizures
- Tremors
- Diarrhea

Serotonin syndrome is typically diagnosed with a report of ingestion of a serotonergic drug followed by clinical signs of the condition, which can develop in as little as an hour with an overdose, and potentially several days later if ingestion was secondary to synergism/ interaction.

In the case of an animal with clinical signs of SS, but who did not, to the owner's knowledge, ingest a serotonergic drug, urine, blood, and gastric contents should be submitted to a toxicology laboratory and therapy should be instituted while awaiting results.

Neurological testing to measure reflexes and coordination should also be performed to help pinpoint the specific areas of the nervous system that are affected.

## **Treatment of Serotonin Syndrome**

If drug ingestion or overdose is caught early enough — usually within 30 minutes — activated charcoal may be given to try to limit the amount of drug absorbed into the animal's system. This is especially important if extended- or sustained-release medications have been ingested. If the pet is stable and the drug is still in the stomach, vomiting may be induced, or the stomach may be pumped to remove the drug from the body.

Targeted drugs may be administered to manage severe central nervous system effects, seizures, and severe tachycardia (rapid heartbeat). Drugs known to block the effects of serotonin may be given to help manage symptoms of agitation, hyperthermia and vocalization.

Fluid therapy is also an important feature of managing SS to help support the cardiovascular system and protect the kidneys. And needless to say, all medications and supplements that may increase serotonin levels should be discontinued.

If treated quickly, serotonin syndrome is less likely to be fatal. When the condition results from immediate-release types of medications, symptoms will diminish within 12 to 18 hours. If the product ingested was extended- or sustained-release, the pet can be symptomatic for up to 48 to 72 hours.

## **How to Treat Your Pet's Behavior Issues Without Drugs**

As a general rule, I don't believe in using psychotropic drugs as a first line of defense to treat emotional or behavioral issues in animals. They are sometimes appropriate in extreme, intractable cases and/or when a pet is causing harm to himself. Sometimes they can be used as an interim measure to interrupt the cycle of behavior at the same time other less harmful remedies are being attempted.

But my general recommendation is to try a wide variety of natural remedies first, since every drug has side effects, and there's always at least some risk of overdose.

- If your pet hasn't been seen by a vet in six months or longer, I recommend scheduling a **wellness exam**. Illness in animals can cause stress and affect mood, so you'll want to rule out any underlying physiological issues that may be contributing to behavior or emotional problems.
- Evaluate your pet's diet and consider transitioning to a fresh, balanced, species-specific diet. Switching an animal to the right food can sometimes improve certain behavior problems.
- Dogs and cats get bored just like we do, and boredom can be stressful. Increased daily exercise for dogs and **environmental enrichment** for kitties can be tremendously beneficial in curbing undesirable behaviors.
- Consult your integrative veterinarian about natural calming remedies like Holistic Solutions. You can also investigate using herbs and nutraceuticals such as 5-HTP, L-theanine, ashwagandha, vitamin B3 and B6, GABA, rhodiola, holy basil (Tulsi), and chamomile. There are also excellent traditional Chinese herbs that can reduce anxiety, as well as homeopathic remedies.

Most importantly, I recommend trying to address the root cause of your pet's issues through behavior modification and training for the best long-term success. And if you feel your pet's anxiety is getting worse, consider consulting with a board certified **veterinary behaviorist**.

## Sources and References

[dvm360, February 2, 2021](#)

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