THE TOX LAB

Podcast Transcript

Episode 32: Toxic Tails - A Look at Common Pet Poisons

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TRANSCRIPT

Hi everyone, welcome back to the Tox Lab. I'm Rebecca. I'm Rob. This week we're going to be looking at the world of pet poisons, things that can cause harm to our furry friends.

This came up because I was chatting to a friend of mine who asked me why chocolate is famously poisonous to dogs and then proceeded to tell us about their dog that ate, was it six mince pies and a whole Christmas pudding? Might have been half a Christmas pudding and then the rest of the Christmas pudding was served up to guests at Christmas. There was quite a lot going on. So shout out to Teddy, legend of a dog, one of our listeners.

But you know, famously, famously chocolate is poisonous to dogs. We thought we'd look at that and a few other things that are poisonous to our furry friends as if we can't unravel some of the mysteries. Before we jump into today's episode, if you want to stay up to date with our content and when new episodes get released, you can find us on Instagram at @the_tox_lab. We also have a LinkedIn page.

And for those of you who want to get in touch and suggest any content for any future episodes, you can also email us at thetoxlab@gmail.com. So Rebecca, what's first? Chocolate? Yeah.

So chocolate poisons to dogs. It's the theobromine in chocolate, isn't it? Yes. It's a compound similar to caffeine found in chocolate has fairly mild effects in humans, but most dogs can't metabolize it.

And so it accumulates and can cause toxicity symptoms similar to caffeine toxicity. So while the half-life of theobromine in humans is about two to three hours, the absorption in dogs is a lot slower and the half-life is about 18 hours. So you've got more of a chance of building up theobromine and then causing toxicity. So signs of chocolate poisoning in dogs can develop within six to 12 hours of ingestion and symptoms can include polydipsia.

So an increase in thirst, vomiting, diarrhea, abdominal distention, and restlessness. Hyperactivity, ataxia, tremors, and seizures can also occur along with cardiac symptoms like tachycardia and hypertension. Dogs can also exhibit hypothermia, and death due to theobromine toxicity or chocolate ingestion in dogs generally occurs due to cardiac arrhythmias, hypothermia or respiratory failure. And when looking at the lethal dose of theobromine in dogs, it's about 100 to 500 milligrams per kilo of body weight.

So to put that into context, plain chocolate and cocoa powder contain about 15 milligrams to 20 milligrams per gram of theobromine, whereas milk chocolate only contains two milligrams per gram. So a 10 kilo dog would only need to ingest 100 grams of plain chocolate to ingest enough theobromine to be fatal. I think it's quite unpredictable, isn't it? Chocolate toxicity in dogs.

And I think part of the reason is the fact that there's so much variation in size between a chihuahua compared to a Rottweiler. Yeah. I think some breeds are possibly more susceptible than others as well. I'm not sure it's been very well researched, but we've certainly heard stories of some dogs eating huge amounts

of chocolate and not actually getting that unwell.

Similarly, animals eating relatively low amounts getting quite poorly. So I think there probably is quite a lot of variation between breeds too. What's also interesting is cats can also be affected by theobromine toxicity and their toxic dose is a lot lower than for dogs, but because they can't taste the sweetness in chocolate, a lot of cats don't go for it. And I guess that's another factor that might make some dogs more susceptible.

Some dogs will just literally eat anything, right? As I said, our friend's dog that ate the mince pies and the Christmas pudding. So treatment options kind of depend on how soon after ingestion a dog is found. So you can induce vomiting.

Activated charcoal is a popular remedy for a lot of different poisons. It's very nonspecific. But it can also cause hypernatraemia, so a raised sodium. So it's important to make sure the benefits of using activated charcoal outweigh the risks.

Diazepam can be given if a dog is experiencing seizures and fluid therapy is another option. So pretty much how we treat human poisons. Yeah, pretty much. So on the topic of mince pies and Christmas puddings that you were mentioning earlier, did you know that grapes and raisins are poisonous to dogs?

I did not know that. So all members of the Vitis genus family, which includes grapes, raisins and currants, are toxic to dogs. It's not completely understood what is in raisins and currants that causes toxicity. They think that tartaric acid might be to blame as this is present at quite high concentrations and dogs struggle to excrete organic acids because they lack organic acid transporters.

And so tartaric acid can build up in the proximal renal tubular cells. And this can lead to renal failure. I wonder if this is possibly also breed dependent because, I mean, Teddy eating all those mince pies, that's more mince pies than I could eat in one sitting. Apparently more than one grape or raisin per 4.5 kilos of body weight is enough to cause toxicity in certain dogs.

More than one. More than one. It wasn't very specific as to how many more than one, but the symptoms of toxicity usually develop within six to 12 hours and vomiting or diarrhea is a common presenting symptom. Dogs can then experience lethargy, anorexia, abdominal pain, weakness, dehydration and tremors.

And then you get anuric or oliguric renal failure developing and you can monitor this by measuring their creatinine and that will rise disproportionately to urea. And treatment for this is very nonspecific. GI decontamination is recommended or IV fluid therapy. I guess ultimately you could dialyse, but I'm not sure people ever dialyse dogs.

They probably do. They've got the money. I think they do. Cause you get cats that go through dialysis.

I imagine that you'd also get dogs undergoing dialysis too. So chocolate and raisins are bad, Cadbury's Fruit and Nut, therefore, probably really bad. Probably. What else have we got?

What else is poisonous to our furry friends? So the next poison I want to talk about is xylitol, which is a sugar alcohol and it's often used to sweeten sugar-free products, including gum, candies, mints and baked goods, but it's also found in a lot of non-food products such as haircare supplements, sun cream, toothpaste and even some deodorants. So in dogs, xylitol stimulates a rapid dose-dependent release of insulin that can result in a really profound hypoglycaemia, so really low blood sugar. And you can also get a pattern of cellular damage that develops as well.

And this is thought to be possibly from depletion of ATP or the production of reactive oxygen species as a result of its metabolism, and more than a hundred milligrams per kilogram of xylitol are associated with hypoglycaemia and greater than 500 milligrams per kilogram are associated with severe hepatic insufficiency or failure. And these signs can develop within 30 minutes of ingestion, but can be delayed by 12 to 18 hours if what they're ingesting kind of slows its absorption. So if they're eating gum, for example, you're not going to get that xylitol being released and metabolised.

And hypoglycaemia can cause a variety of symptoms, including vomiting, weakness, ataxia, lethargy, seizures and coma. Liver enzymes typically elevate within four to 12 hours after ingestion, but clinical signs of liver injury might not develop for a day or two. So it's quite an interesting effect, isn't it, on dogs' pancreases. Interestingly it doesn't cause the same effect in humans.

It's as if dogs' glucose sensors respond to xylitol, whereas human ones don't, hence why xylitol's found use in diabetic sweets and things like that. In terms of the dose in things like chewing gum, I think it can be quite high, can't it, up to sort of a gram or so of xylitol in a piece of chewing gum. So it's not like it's in very low concentrations. Yeah, I don't think they need to eat a lot.

Potentially and experience quite dramatic effects. But what was interesting is not all dogs who end up with a liver injury will get that hypoglycaemia. Some of them will get a rebound rise in glucose, which you can sometimes see in humans when they overdose on insulin, for example. Okay, interesting.

So don't give your pets chewing gum. Basically. Obviously. And treatments again are very generic.

Early GI decontamination may be useful, but they don't recommend using activated charcoal in instances of xylitol poisoning, and administering IV dextrose can correct any sort of hypoglycaemia. We focused a lot on things that are poisonous to dogs. How about things that are poisonous to cats?

So did you know that alliums are toxic to cats? So this includes garlic, onions, chives and leeks. I didn't know what an allium was until you told me that. So it's the sulfur-containing oxidants within alliums that are toxic to cats.

And toxicosis can occur after ingesting less than a teaspoon of cooked onions or five grams per kilo of raw onions. And it does also affect dogs, but dogs need to eat a lot more to experience the same effects, so between 15 and 30 grams per kilogram. And these sulfur-containing oxidants can lead to haemolysis and cause oxidative damage to red blood cells.

You get Heinz body formation and methemoglobinemia. And this can begin 24 hours after ingestion, peaking around 72 hours. And it's quite hard to spot. The cats will normally present when the symptoms of hemolysis become substantial.

So when they're experiencing a really profound anemia from it and experience things like lethargy, anorexia, fast breathing, tachycardia, weakness, exercise intolerance. But this can have quite serious consequences and can be fatal. I had no idea they were that poisonous to cats. I didn't either until I started researching for this episode.

And so again, treatments like GI decontamination, which seems to be a classic one. Cats can also be given oxygen supplementation or blood transfusions in really severe cases to correct this. And of course, supportive therapies like IV fluid therapy. So what else is poisonous to cats?

I know there's at least one thing which I think you might be about to mention. Essential oils. Yes, that is what we're talking about next. So some essential oils are toxic to cats because they lack the enzyme glucuronyltransferase, which is needed to metabolize phenols and phenolic compounds which are found in some of these essential oils.

They can be rapidly absorbed through the GI tract, skin, and through the airways. And cats are also quite sensitive because of their grooming behaviours. So if they get essential oils on their fur and they start cleaning themselves, they then risk dermal and oral exposure. Interestingly, birds are also affected.

They have quite a unique respiratory tract. So they're really susceptible to essential oils that might be in the air, for example. And clinical signs will depend on the route of administration and develop within minutes to hours. So ingestion or absorption through the skin can lead to things like vomiting, lethargy, drooling, ataxia, anorexia.

And more serious complications include tremors, hypotension, GI ulcers, bradycardia, seizures, liver and kidney failure and real limb paralysis. And so if essential oils are inhaled, symptoms can include nausea, drooling, vomiting, shortness of breath, coughing and wheezing, production of tears and like a watery nasal discharge as well. And some essential oils are actually hepatotoxic, so it can cause liver damage. And these include things like tea tree and cinnamon bark and others like eucalyptus, sage and cedar can also cause seizures.

This could be a problem, can't it, because there's a lot of natural, in inverted commas, cleaning products now, which try and remove a lot of the harsh detergents and have replaced them with nice-smelling orange oil and things like that. And actually some of it can be quite poisonous to some of our pets. And treatments for this include supportive care, such as fluid therapy. You can give certain drugs to protect the liver, such as N-acetylcysteine.

Anticonvulsants can be given if seizures are present and things like oxygen, steroids and bronchodilators as well. And something else that can affect cats in a similar way is paracetamol. So as we talked about with essential oils, cats lack glucuronyltransferase, which is needed to metabolise phenol compounds, but is also needed to help metabolise paracetamol. And you can then get accumulation of toxic intermediates.

And this can lead to methaemoglobinaemia and hepatotoxicity in cats as well. The paracetamol toxicity, the same mechanism as the essential oils. Yeah. I think that human drugs causing poisonings is quite a big chunk of it, actually, isn't it?

Mention paracetamol, which obviously quite prevalent in most people's houses. I've also come across quite a few stories of pets being poisoned by illicit drugs. So particularly dogs eating discarded ends of cannabis joints and then getting stoned certainly come across that more than once. So the final poison I want to talk about today is lilies.

What's interesting about lilies is that only certain lilies or true lilies are toxic. So these are lilies within the Lilium and Hemerocallis families. And these are nephrotoxic to cats. So they can cause damage to renal tubular epithelial cells, which can result in acute renal failure if left untreated.

Signs can normally begin within one to three hours after ingestion and include salivation, anorexia, lethargy and vomiting. And then over 12 to 30 hours, dehydration can develop along with polyuria, continued vomiting, lethargy, weakness and death normally occurs in three to seven days after ingestion. And again, treatments are quite generic for this. So it includes decontamination, monitoring of renal function and IV fluid therapy as well.

How do cats normally get exposed? Is this through people having lilies? I think so. In the house?

Yeah. Yeah. Quite a few things on there, I think, that have surprised me actually is things that we often have in and about our house that can actually be harmful to our pets. Yeah, the list was really long when I was looking at common household poisons that are toxic to a lot of pets.

There are some things on the list that are also poisons to humans if ingested, like weed killers and things like that. But of course, yeah, that makes sense, doesn't it? These were quite common ones that not everyone necessarily thinks about. I was surprised.

I did do a bit of research for this episode, I promise. I was surprised to learn that there is actually a pet poisons information service similar to the human one. Yes, there is, which I had no idea existed. But clearly, I think pet poisonings happen probably fairly often.

And typically, I think probably managed symptomatically rather than developing severe cases that do require extensive treatment. Is there a market for a pet toxicology service? That is the question that has been flying around my mind. I don't know.

I guess a lot of especially with these, there's going to be evidence of them having ingested or come into contact with something that might be toxic, like empty chocolate wrappers, for example, mince pies scattered over the kitchen floor, things like that. Yeah, there's usually some history, isn't there? So I guess

identifying poisoning in these cases is done through circumstantial evidence rather than needing to necessarily test for particular compounds.

But quite a lot to take in this week, quite a lot of take-home messages, making sure that you keep your chocolate away from your dogs and keep your raisins away from your dogs and keep your onions away from your cats, which is a new one to me. Do cats often eat onions? I can't imagine they seek them out. I can't imagine they do.

No. But you get things like onion powders and things that are more concentrated. So there is more of a risk with those than with fresh onions. So basically, in conclusion, be aware of what's around your pets because some things could be poisonous to them that aren't poisonous to us.

So I think we're going to wrap it up here. I hope you've enjoyed listening this week. Do give us a like and follow on social media. You can find us on Instagram at @the_tox_lab.

We also have a page on LinkedIn. And if you want to give us any feedback about any of our episodes or have any suggestions for future ones and don't use social media, you can email us at thetoxlab@gmail.com. I hope you all have an amazing week and we'll see you next time. Bye.