Toxicological Testing in Dogs and Cats

Veterinary clinics are often confronted with a dog or cat with clinical signs or history suggesting exposure to a toxic substance. Owners will often request a “toxin screen” in cases of suspected intoxication. Client communication and education is vital so that expectations of testing are not unrealistic. Toxin testing requires a specific toxin to be nominated as there is no suite of tests that covers all possibilities. Toxin testing is inherently expensive, requires specific sample types and false negatives can occur; for instance the toxin may have been eliminated from the body or be undetectable, but clinical signs may persist.

Gribbles Veterinary Pathology can offer specific testing for a range of toxic substances, however it is important to consider the specific sample requirements and testing limitations for each toxin when advising your clients. Many tests are referred to external laboratories and may have extended turnaround times. Please contact the laboratory if you need testing for a specific toxin not listed here; we can often source unusual tests as needed from our network of referral laboratories.

Clinicians should also consider syndromes which may mimic intoxication such as hypocalcaemia, hypoglycaemia, hepatic encephalopathy, peripheral neuropathies and primary CNS diseases.

Examples of intoxicants that can be tested are provided below. See individual tests in the Pricelist for sample requirements and costs.

Biological control agents

- 1080 (fluoroacetate)
- Strychnine
- Synthetic pyrethroids
- Organophosphates
- Organochlorines
- Carbamates
- Metaldehyde
- Anticoagulant redenticides (warfarin, pindone, coumetetryl, bromadiolone, difenacoum, brodifacoum)

Heavy metals

- Arsenic
- Lead
- Copper
- Selenium
- Zinc

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Human medicinals

- Paracetamol
- Aspirin
- Drugs of addiction (opiates, sympathetic amines, benzodiazapines, cannabinoids, barbiturates, cocaine, methadone)
- Antidepressants (Amitryptyline, tricyclic antidepressants)
- Phenobaritone, pentobarbitone

Biological toxins

- Snake venom
- Cyanobacteria
- *Clostridium botulina* toxin
- Mycotoxins (aflatoxins, fumonisin, Deoxynivalenol, ochratoxin)
- Urea

Plants toxins

- Mycotoxins (aflatoxins, fumonisin, Deoxynivalenol, ochratoxin)
- Nitrate/nitrite
- Cyanide
- Oxalate
- Ergot alkaloids
- Pyrrolizidine alkaloids
- Ptaquilosides
- Pimelea toxin

Specific toxin testing is NOT available for the following compounds

- Fe-EDTA molluscicides
- Cholecalciferol based rodenticides
- Tick paralysis toxin
- Tetrodotoxin
- Lily toxin
- Amatoxin (mushrooms)

General guidelines

Sampling where toxin type is uncertain should aim to provide a wide range of samples for potential testing. Fresh tissue samples should be chilled or frozen for transportation to the laboratory.

Pre-mortem sampling:

- Suspected intoxicant (food, bait, water, medication)
- Vomitus
- Urine
- Faeces
- Whole blood and serum

Post mortem sampling:

- Fresh liver, kidney (ideally enough to fill a yellow-top pot, or the whole organ minus a small histology sample for smaller animals)
- Whole blood and serum
- Urine (yellow top pot)
- Stomach and small intestinal contents (yellow top pot)
- Representative histological samples (the most important organs are liver and kidney, upper GIT). The formalin:tissue ratio should be at least 10:1 to allow adequate fixation

If litigation is threatened then you will need to:

- Keep a detailed record of all findings including digital photographs
- Record the identity of the animal(s) in detail
- Collect and label appropriate specimens
- Seal specimen containers and tape closed, sign and date the tape
- Correctly fill out the sample submission form including animal ID
- Maintain continuity of possession
- Obtain a receipt of specimens from the testing facilities

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