

4 of the Deadliest Foods for Dogs

You may already know that a small amount of these two fruits can cause kidney damage, neurological problems and death in dogs. But did you know that even their juices (used in some baked goods and protein bars) are harmful? Be aware, researchers have now added two other items to the 'deadly' list.

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Mar 13, 2023 • 4 min read

STORY AT-A-GLANCE

- In 2021, a group of veterinarians made an important connection between tartaric acid and potassium bitartrate (aka cream of tartar) and the toxicity of grapes in dogs
- At the end of 2022, the team published the results of their research on this topic, concluding that tartaric acid is the likely toxic component in grapes and tamarinds
- Questions remain, and other potential causes of grapes' toxic effects in dogs also require investigation
- Grapes, raisins, sultanas, currants, and any product containing them should not be fed to dogs, including grape juice, trail mix with raisins, raisin bread, and wine; also be aware that some cookies, bread, and protein bars contain raisin paste and/or raisin juice that can also be toxic

Grapes and raisins always appear on lists of **foods that are toxic to dogs**, even though these fruits provide health benefits to humans in the form of antioxidants, fiber, vitamins, and the phytonutrient resveratrol. Unfortunately, research shows that just a few grapes can cause kidney damage, neurological problems, and even death in dogs.¹

Until recently, scientists couldn't identify exactly what caused this toxicity, especially since not every dog who eats grapes or grape products has a reaction. However, a study published in late 2022 in the Journal of Veterinary Emergency and Critical Care documents what seems to be a critical connection between grapes and raisins, and tamarinds and cream of tartar.²

The study reports on four dogs who became so ill after eating tamarinds and cream of tartar that they were euthanized.

The tamarind is a sweet-sour fruit that grows like a bean pod and hangs from tropical trees. The fruit isn't common in non-tropical regions, but it contains a chemical — tartaric acid, or potassium bitartrate — that's also found in grapes and cream of tartar (which is made from the potassium acid salt of tartaric acid).

The study authors reported that after eating either tamarinds or cream of tartar, dogs developed kidney failure and other physical signs like those seen in dogs poisoned by grapes or raisins.

"Connecting these reports with findings in grape and raisin toxicosis and the sensitivity to tartaric acid in dogs, tartaric acid is identified as the likely toxic component in grapes and tamarinds," the study's authors wrote.

Tartaric Acid Initially Identified in 2021

The co-authors of the Journal of Veterinary Emergency and Critical Care study, all veterinarians, began unraveling the mystery behind grape and raisin toxicity two years ago.³

In a 2021 letter to the editor of the Journal of the American Veterinary Medical Association (JAVMA), the co-authors suggested that tartaric acid and potassium bitartrate — the potassium salt of tartaric acid, also known as cream of tartar — could be the substance in grapes that makes dogs sick.⁴ The revelation came from a case involving homemade playdough, which contains cream of tartar.

It's generally known that salt poisoning can occur if your pet ingests homemade play dough or salt dough ornaments, but in a case reported by one of the letter's co-authors, Colette Wegenast, DVM, senior consulting veterinarian in clinical toxicology at the ASPCA Animal Poison Control Center, a dog became sick after consuming playdough that contained a small amount of salt.

Salt poisoning did not develop, but azotemia — high levels of nitrogen — and significant vomiting, both signs of grape poisoning, did.

"The lightbulb moment came with the realization that tartaric acid and potassium bitartrate are uniquely present in high concentrations in grapes, and that dogs are [members of] a species that has been shown to be sensitive to tartaric acid — with acute renal failure reported in the older studies," Wegenast said in a 2021 American Animal Hospital Association (AAHA) news release.

"Upon further investigation ... tartaric acid and potassium bitartrate kept checking off the boxes in support of the theory that they're the toxic principles in grapes and raisins."⁵

Questions Remain

The amount of tartaric acid in grapes varies depending on variety, growing method and ripeness, so this could help explain why dogs have such different outcomes when consuming grapes. Further, as noted in the AAHA letter, the documented toxic range of tartaric acid is similar to that found in some grapes and raisins.

Tamarind, which is also high in tartaric acid and potassium bitartrate, has also led to poisoning, including severe vomiting and acute kidney failure, in dogs after large ingestions.

"We anticipate that this breakthrough will open doors to a collaborative effort toward an improved understanding of grape and raisin poisoning and, potentially, better testing, treatment, and prevention," Wegenast said in 2021.

There are still some unanswered questions, especially the fact that wild canines such as coyotes and wolves have been known to forage for grapes. In fact, in some parts of the world they eat them regularly and don't seem to develop acute renal failure. Other hypotheses behind grapes' toxic effects in dogs include:⁶

- Contamination of fruits with mycotoxins
- Excess vitamin D
- Excessive ingestion of monosaccharides

- Heavy metals or pesticides
- Tannin intolerance
- Hypovolemic shock
- Renal ischemia (reduced blood flow to the kidneys)

Signs of Grape Poisoning in Dogs

Grapes, raisins, sultanas, currants, and any product containing them should not be fed to dogs. This includes grape juice, trail mix with raisins, raisin bread, and wine. Be aware that some cookies, bread, and protein bars contain raisin paste and/or raisin juice that can also be toxic. Signs and symptoms of grape poisoning include:⁷

- Vomiting
- Diarrhea
- Abdominal pain
- Anorexia
- Kidney failure

If you know or suspect your pet has ingested grapes or raisins, don't wait for symptoms before seeking help, and remember that the effects aren't necessarily dose dependent — even small amounts can be dangerous. Get your pet to an emergency veterinarian immediately and tell them your dog ate grapes.

While less common, cats and ferrets can also become sick from eating grapes. You can contact the Pet Poison Helpline 24/7 at 855-764-7661 for information regarding potential poisoning of all animal species.

Sources and References

^{1,6} [Schweighauser, A. et al. Journal of Veterinary Internal Medicine, September 7, 2020](#)

² [Wegenast, C. et al. J Vet Emerg Crit Care \(San Antonio\), 2022 Nov;32\(6\):812-816](#)

^{3,5} [AAHA April 1, 2021](#)

⁴ [Wegenast, C. et al. Letters to the Editor, Journal of the American Veterinary Medical Association, Volume 258: Issue 7, April 1, 2021](#)

⁷ [Pet Poison Helpline. Toxicity to pets](#)
