

FOOD for THOUGHT

Grape and Raisin Toxicity in Dogs

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Grapes and raisins have in some places been recommended as treats and training aids because fruit is tasty and relatively low in calories. Other dogs may eat the fruit right off the vine, steal from the counter, table, plate, or low-level kids, they even eat wine pressings. Unfortunately, dogs can have dangerous and potentially fatal reactions to these small little ‘treats’. Over 200 calls were made to the ASPCA between 2001 and 2004 involving potential exposure to toxic levels of grapes and raisins.

How does toxicity occur?

Currently, the exact mechanism of how these foods cause the gastrointestinal and renal (kidney) toxicity is unknown. Ingestions studied included grapes from grocery stores and those found in the backyard, grape pressings from wineries, seedless and seeded varieties. Grapes tested for pesticides, heavy metals, and mycotoxins (fungal) were negative. It is not known if the skin must be ingested for the effects to occur, and so far grape-seed extract is not considered a threat, just the fruit itself. No other species are known to be adversely affected at this time.

What are the signs?

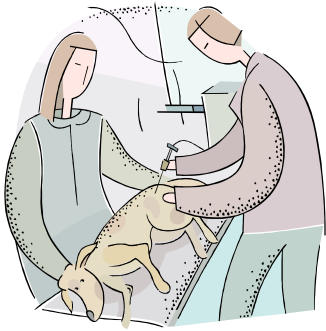
Dogs show signs related to the gastrointestinal tract and the kidneys. Vomiting is one of the initial signs of poisoning, usually within the first 2 hours of ingestion. Within the first 5-6 hours of exposure you may see diarrhea, lethargy, and polydipsia (increased urination). Acute renal failure signs may manifest within 24 hours or several days, depending on the dose related to the size of the dog. These include anorexia, lethargy, depression, vomiting, diarrhea, abdominal pain, tremors, and hypovolemia (not enough fluid volume in the vessels seen as poor capillary refill, dry pale mucous membranes).

What will blood tests reveal?

Most changes in blood tests reflect the effects of renal failure and intestinal fluid losses. These include elevations in calcium, blood urea nitrogen, creatinine, and phosphate. Blood elevations of these parameters indicate that the kidney is not doing its job in regulating the elimination of these potentially fatal products. Tissue studies on the kidneys reveal necrosis (cell death) and mineralization of the renal tissues.

How many grapes and raisins will make a dog sick?

The lowest documented amount of toxic grape or raisin is 0.32 to 0.65 ounces per kilogram (1 kilogram = 2.2 pounds). A rough quick estimate of this would be a 50-pound dog eating from 8-16 ounces, or ½ to 1 pound, of the grapes or raisins. But any ingestion should be considered potentially harmful, especially since without knowing the exact mechanism, there may be factors that are unaccounted for, like individual sensitivity, or breed-related sensitivity. Also, since signs may not show for one to several days, by the time they do show it may be too late.



Diagnosis

There are no specific grape/raisin poisoning tests, and the signs and symptoms listed above may have other causes, like ethylene glycol ingestion (anti-freeze), trauma, other toxins, etc. Diagnosis of grape or raisin toxicity is based on history of exposure.

Treatment

Veterinary management depends on the initial presentation of the animal, both time-wise, their clinical signs, physical examination, and blood tests. If within 2 hours of ingestion, emesis (vomiting) can be induced (see notes below on inducing vomiting). After 2 hours, the effectiveness decreases with time. This is followed by activated charcoal administration, which will absorb some of the toxin and coat the intestinal tract to reduce further absorption of toxin. Fluid administration intravenously for the first 48 hours may help prevent renal failure. Blood chemistries, urine output, blood pressure, and urinalysis should be monitored and treated accordingly. Veterinarians may use furosemide, dopamine, or mannitol in an effort to make the kidneys function. With extreme renal damage, dialysis may be beneficial.

Prognosis

The outcome depends on several factors: how much ingestion with respect to the size of the dog, time passed from ingestion to initial treatment, proper treatment (decontamination) and monitoring, as well as progression of signs (fast, slow). Dogs that respond favorably to the treatments have a good prognosis for recovery. Complete loss of urine production is a poor indicator for survival.

Prevention

Education of dog owners and the incredible task of keeping dogs away from inappropriate foods are the best ways to prevent accidental as well as purposeful (due to ignorance) feeding of grapes and raisins to dogs.

Inducing Vomiting

Do not induce vomiting if:

- More than 2 hours pass from ingestion
- Substance will cause as much damage coming up as going down (acid, alkali, solvent, petroleum product)
- Dog is comatose or very depressed, has lost swallow reflex, cannot stand

Ways to induce vomiting:

- 1 teaspoon hydrogen peroxide per 30 pounds body weight once orally, repeat after 10 minutes. Do not give more than 3 times. Dogs may drool and look utterly miserable before vomiting
- 1 teaspoon syrup of Ipecac per 10 pounds body weight, works quickly
- ½ to 1 teaspoon salt placed far back on the tongue or dissolved in 1 ounce of water. **DO NOT REPEAT.** Dry mustard powder may be substituted, same instructions



References:

1. McKnight, Katrina: Grape and Raisin Toxicity in Dogs, Toxicology Brief, Veterinary Technician, February 2005, www.VeTechJournal.com
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3. Pets and Poisons, copyright 1992, 1993 by Cindy Title Moore, www.adoptagolden.com/k9stuff/vetcorner/poisons/htm