

# Treacherous Treats— MACADAMIA NUTS

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**M**acadamia nuts<sup>1,2</sup> are considered a delicacy not only by people but by our canine friends as well.<sup>1</sup> Within 12 hours of ingestion, however, these little morsels can cause big problems in dogs.

## TOXICITY

No cases have been reported to the ASPCA Animal Poison Control Center (APCC) in which species other than dogs were exposed to macadamia nuts.<sup>4</sup> Based on data collected by the APCC, dogs that ingested 2 g/kg body weight or more showed adverse effects.<sup>2</sup> However, the toxic mechanism is unknown.<sup>1</sup>

Signs typically develop within 12 hours of ingestion, depending on the amount of nuts ingested. Lethargy, vomiting, and hyperthermia are usually the first to be seen, starting 3 to 6 hours after ingestion. Signs can progress to weakness (mainly in the hindlimbs), ataxia, tremors, and even recumbency. Other signs that have been reported include abdominal pain, lameness, joint stiffness, and pale mucous membranes.<sup>1</sup>

## RESEARCH DATA

The weakness syndrome associated with macadamia nut ingestion in dogs was successfully reproduced in a laboratory study.<sup>1</sup> Before being given

macadamia nuts, four dogs of the same approximate age (2 years) and weight (13.4 to 17 kg) were examined and found not to have any preexisting conditions. The dogs were each administered 20 g/kg body weight of commercially prepared macadamia nuts.<sup>1</sup> Within 6 hours, three dogs showed signs of depression, weakness, and stiffness.<sup>1</sup> The fourth dog vomited. After 12 hours, another dog vomited, and all dogs were weak and had difficulty standing or walking without assistance.<sup>1</sup> All four dogs developed weakness that affected the hindlimbs more dramatically than the forelimbs.<sup>1</sup> The animals also developed nervous system depression. Temperatures of up

Macadamia nuts are the fruit of the trees of *Macadamia integrifolia* and *Macadamia tetraphylla*. Both trees are from the Proteacea family.<sup>1</sup> Although macadamia trees are indigenous to Madagascar and Australia,<sup>2</sup> they were introduced into Hawaii around 1892<sup>1</sup> and into California shortly thereafter. The nut itself is a creamy white kernel that can contain up to 80% oil and 4% sugar, depending on the variety.<sup>3</sup> The nuts are considered popular party snacks and are often added to salads, candies, and various baked goods (e.g., cookies, cakes). The oil that is extracted from the nut is often used in natural hand lotions and shampoos.



to 104.9°F were recorded. Twenty-four hours after ingestion of the macadamia nuts, all dogs could stand on their own and were greatly improved.<sup>1</sup> Within 48 hours, they had completely recovered.

The data obtained from this study<sup>1</sup> did not identify the mechanism of action causing the syndrome seen in macadamia nut ingestion. The study suggested a few potential causes of the weakness syndrome. The dogs' ability to walk after being assisted into the standing position as well as the proprioception deficits suggested peripheral effects (e.g., neurotransmitters or nerve or muscle membranes) as a possible cause.<sup>1</sup> An upper motor neuron abnormality was suggested by the lack of reduced reflexes. Central nervous system depression and weakness could also be the result of central effects. Further research is needed to determine a definitive cause.

## TREATMENT

Most dogs recover from macadamia nut toxicosis within 24 hours of ingestion regardless of treatment. For dogs that have consumed large quantities of nuts, inducing emesis can be helpful in reducing the severity of signs if exposure is recent (within 1 hour). Once

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Toxicology Brief is contributed by veterinary technicians at the American Society for the Prevention of Cruelty to Animals—Animal Poison Control Center, 1717 S. Philo Rd., Suite 36, Urbana, IL 61802; hotline: 888-4ANI-HELP (888-426-4435) or 900-680-0000 (a \$45 consultation fee is charged to the caller's telephone bill); email: callen@napcc.aspc.org (for nonemergency information only); web site: www.apcc.aspc.org.



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the animal becomes symptomatic, monitoring hydration status and vital function is recommended. A veterinarian should be contacted if other chemicals have also been ingested or if the dog has concurrent disease.<sup>1</sup> For dogs that consume macadamia nuts covered in chocolate, decontamination via emesis and/or a slurry of activated charcoal and a cathartic is recommended to reduce the risk of signs caused by methylxanthine (chocolate) toxicosis.<sup>2</sup>

<sup>1</sup>Farbman DB: Death by chocolate? Methylxanthine toxicosis. *Vet Tech* 22(3):146-147, 2001.

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**About the Author**

Mrs. Allen, a 1999 graduate of the veterinary technology program at Parkland College, Champaign, Illinois, is a research associate at the ASPCA Animal Poison Control Center. She also worked as a radiology technician in the Veterinary Teaching Hospital, University of Illinois. She enjoys spending her spare time with her husband Jamison, her daughter Abigail, and her rat terrier, Peaches.