

NOTES:

Giant Marine Toad, Bufo marinus L., Poisoning in Hawaii: Symptoms and Treatment

Julie Ann Luiz, College of Agriculture, Forestry and Natural Resource Management, University of Hawai'i at Hilo, 200 W. Kawili St., Hilo, Hawaii 96720-4091

INTRODUCTION

Toad poisonings are very common in tropical and subtropical regions of the United States, such as Hawaii, Florida and Texas. There are various forms of toad poisonings, but one of particular concern in Hawaii is called Bufo Toxicosis. Bufo marinus L. is a species of toad introduced to the southern states and Hawaii approximately 50 years ago for insect control (Beasley *et al.*, 1999). The common names associated with Bufo marinus L. are Cane toad, Giant toad, Marine toad, Giant Marine toad, South American Cane toad and Dominican toad. During evening hours, many dogs and some cats mouth the toads and become poisoned. The toxicity can be serious and life-threatening if not addressed and treated properly.

TOXIC PRINCIPLE

B. marinus produces a toxin containing bufagins, bufotoxins, bufotenins as well as other compounds (Beasley *et al.*, 1999). These toxic agents are digitalis-like and are similar to heart medications such as digoxin, which can often cause severe cardiac abnormalities such as ventricular fibrillation. The toxin is produced within the parotid glands, or self-defense glands of the toad, located behind the neck extending over the shoulders. The toxin can be manually expressed during a threat from a predator through numerous dermal pin hole

openings (Brubacher *et al.*, 1996). People or animals unaware of a toad in the area may be exposed through open wounds, although the threat is commonly toward animals mouthing the toads. Interestingly enough, the species of toad in Florida produces a more potent toxin. Statistics show that mortality ratings in Hawaii and Texas of exposed and untreated dogs are 5%, whereas Florida case mortality is close to 100% (Beasley *et al.*, 1999).

CLINICAL SIGNS

Clinical signs are dependent upon the amount of toxin that is absorbed by the animal and the length of time since exposure to the toad. In general, toxicosis can cause cardiac arrhythmias, increases in blood pressure and hallucinations. Soon after exposure, the owner may notice their pet experiencing severe head shaking, pawing at its mouth as if irritated, a foul odor and hypersalivation. If untreated, the toxicosis may progress with clinical symptoms of incoordination, vomiting, diarrhea and an increase in respiration rate. Severe cases may lead to blindness and convulsions (Beasley *et al.*, 1999). Death results from a critical form of a cardiac arrhythmia called ventricular fibrillation that has been reported to occur quickly within 15 minutes from the time of exposure (Balarz *et al.*, 1986). The clinical signs mentioned above were evident in 33 canine cases and 2 feline cases seen in a practice located in Hawaii.

TREATMENT

Owners of pets exposed to *B. marinus* secretions can prevent absorption of the toxin into mucous membranes by first rinsing out the mouth of the animal with copious amounts of water. Usually, a garden hose is recommended to

accomplish this. It is important to direct the nose of the animal downwards to allow the water along with the toxin to flow out of the mouth. Do not allow the animal to drink or swallow the flushing water; hence the water is contaminated with the toxin and can be absorbed at the lower mucous membranes of the gastrointestinal tract. At this time, the owner should seek veterinary advice. At the veterinarian's discretion, the animal may need further professional treatment. Usually, activated charcoal and a saline cathartic is given orally and repeated after 2 hours to bind the toxin within the gastrointestinal tract (Sakate *et al.*, 2000). The veterinarian may elect to hospitalize the patient while monitoring the heart via electrocardiography (ECG or EKG). During the hospitalization, the treatment may consist of supportive intravenous fluid therapy to maintain hydration. Medical therapy may be necessary to control cardiac arrhythmias and to control convulsions. Unfortunately, there is no specific antidote for *Bufo* toxicosis. Prevention measures to reduce the risk of exposure can be undertaken by simply removing the toads from a fenced yard with the use of proper equipment and protection.

PROGNOSIS

For most pets, especially those in Hawaii, the prognosis is good with treatment. However, *Bufo marinus* can be fatal.

LITERATURE CITED

1. Beasley V, Dorman D, Fikes J, et al. Bufo toxicosis – toad poisoning. In: Beasley V, ed. *A systems affected approach to veterinary toxicology*. St. Louis, MO: Mosby, 1999; 776-777.
2. Brubacher J, et al. Treatment of toad venom poisoning with digoxin specific fragment. In: *Chest* 1996; 110:1282-1288.

3. Balarz T, Hanig JP, Herman EH. Toxic responses of the cardiovascular system. In: Casarett LJ, Doull J. Toxicology: the basic science of poisons. 3rd ed. New York: MacMillan, 1986; 387-411.

4. Sakate M, Lucas de Oliveira PC. Toad envenoming in dogs: effects and treatment. In: *J. Venom. Anim. Toxins* 2000; 6:1590-1599.