



The Blue Ridge Poison Center

Tox Talks

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HOLIDAY DECORATIVE PLANTS: TOXIC RISKS

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THE UVA CENTER OF CLINICAL TOXICOLOGY associated with the Blue Ridge Poison Center manages over 500 patients each year on site in the University of Virginia Health System - from outpatient clinic visits to critically ill inpatients managed in our pediatric and adult intensive care units. In addition, over 2,000 requests are made each year for consultation with our Boarded Medical Toxicologists from other healthcare facilities by phone or telemedicine. Call 1-800-222-1222 24 hours a day, every day. [Cell users: 1-800-451-1428]

IN CHARLOTTESVILLE

Reminder: At University of Virginia Hospital, the first Wednesday of every month features toxicology Grand Rounds. For more information, contact Heather Collier: 434-924-5185 or HLC8E@virginia.edu

Register to receive this newsletter via email: Kristin Wenger: klw2s@virginia.edu

We have all heard that “mistletoe can be deadly if you eat it” but just how toxic is mistletoe and other holiday favorites like holly and poinsettia? As these plants once again add festive seasonal decoration to the home, the possibility of ingestion by children, adults or pets increases. This article will focus on the nature of the toxins found in these plants, the clinical effects that can be expected, and what interventions may be considered should a holiday misadventure include consumption of one of these decorative agents.

MISTLETOE

American Mistletoe (*Phoradendron Loranthaceae*) is a plant with smooth, green oval shaped leaves and clusters of waxy white berries. The plant contains phoratoxin and ligatoxin, which have been linked primarily with severe gastrointestinal distress. Generally, symptoms related to ingestion of berries are relatively mild but more severe poisonings have been associated with consumption of concentrated teas or extracts. While symptoms of gastrointestinal distress (nausea, vomiting and diarrhea) are well documented, data regarding other types of toxicity such as seizure, ataxia, hepatotoxicity, and death is limited. A retrospective review of poison center data performed by Hall, et al. reviewed 318 cases of mistletoe ingestion. The authors found the majority of cases did not develop significant toxicity, and when symptoms did occur they were primarily gastrointestinal in nature. They concluded that ingestion of 2-3 berries or 1-2 leaves was unlikely to produce significant toxicity. However, in a separate retrospective review of poison center data, Spiller et al examined 92 cases over a four year period and reported six cases of GI upset, one case of eye irritation, one of ataxia and one of seizure. Based upon this data the authors concluded that significant toxicity is rare (even at doses of 5-20 berries or 1-5 leaves) and that the majority of cases require no intervention, but the possibility of more severe toxicity including seizures exists in large ingestions. Therefore, mistletoe exposures are generally considered to

be low risk, most commonly associated with GI irritation and can be managed with home observation, however medical attention may be indicated particularly with symptomatic exposures in at risk populations including infants.

HOLLY

Holly (*Ilex Aquifoliaceae*) is an ornamental shrub with dark green leaves with serrated protrusions and red berries. The *Ilex* genus contains many different species and depending on the specific species, some variation in the appearance of the plant can be expected. The berries have been known to contain a mixture of alkaloids, polyphenols, saponins, steroids, and triterpenoids and a dose of 20-30 berries is considered toxic although nausea has been known to occur with as few as 2 berries. Leaves are not known to contain any specific toxin although the spiny protrusions from the leaf may cause mechanical irritation. The saponin glycosides cause the GI toxicity that can occur following ingestion of holly berries. Experimental data in animal has also reported cardiotoxic effects similar to that of digoxin, but these effects have never been documented in humans. Older literature provides case reports of deaths following ingestion of holly berries, however the precise nature of why these deaths occurred is unclear. More recent literature based on poison center data has not identified deaths, cardiovascular toxicity, or other significant toxicity aside from gastrointestinal irritation. Overall, data is limited regarding the toxicity of holly berries, but serious toxicity appears to be very rare and most cases can be managed with home observation unless prolonged vomiting develops which may require more advanced supportive care to avoid significant dehydration or electrolyte disturbances.

POINSETTIA

Poinsettia (*Euphorbia Pulcherrima*) is a decorative plant also known as the “christmas flower” and “christmas star.” It was introduced to the United States from Mexico by ambassador Piontsett in 1828 and became very popular shortly after it’s introduction. The poinsettia is has dark green leaves with the topmost leaves taking on a red, white or pink coloration. The plant is known to produce a sap containing phorbol esters which can produce local irritation and dermatitis on contact with skin. However, poinsettia has developed a reputation for more serious toxicology due to an isolated case report in 1919 of a fatality in a 2 year old Hawaiian child. However, many have commented that this case report had inadequate documentation to draw solid conclusions. In a later case, an 8-mo old child was noted to develop oral and mucosal burns from chewing on the plant. This is more consistent with the known toxicity of poinsettia however, until more recently, the toxicity of this plant has not been well defined or examined in a larger population sample. Krenzelok et al published a retrospective case review of poison center data pertaining to exposure to poinsettia plants. Of 849,575 plant exposures reviewed, 22,793 were poinsettia exposure 93.3% of which were exposures to children. There were no fatalities and the majority of patients (92.4%) did not develop any toxicity. Therefore, Poinsettia is a plant that produces a substance that can be irritating to the skin, however exposure is unlikely to produce significant toxicity and the majority of cases can be managed at home without a visit to there health care provider.

SUMMARY

The plants commonly known as mistletoe, holly, and poinsettia are popular, seasonal decorative additions to the home. They have been associated with toxicity when ingested. Although data is limited in regards to the nature and severity of these exposures, generally these plants are well tolerated. Gastrointestinal distress is the most common and well documented complication of ingestion. As in any potential poisoning, caution should be exercised in at risk populations including the very young (infants and neonates). However, most of these cases may be managed effectively at home without the need for emergent medical evaluation.

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