

Abrin

The Maryland Poison Center was recently consulted on a case involving a suicidal adult who by history ingested 400-500 "abrin" seeds that were bought on the internet. The patient arrived at the emergency department approximately 5 hours later with hematemesis, abdominal pain and bloody diarrhea. Laboratory findings, including renal and liver function tests, were normal except for an elevated white blood cell count. Treatment included intravenous fluids, anti-emetics, and gastrointestinal (GI) protectants. The patient remained symptomatic with primarily (GI) effects for two weeks, and was medically cleared after 16 days.



Abrin is a natural plant toxin found in all parts of *Abrus precatorius*, a tropical plant also known as rosary pea, jequirity, jequirity bean, crab's eye, John Crow bead, precatory bean and Indian licorice. Abrin is a toxalbumin similar to ricin, a toxin in *Ricinus communis* (aka castor bean). Abrin consists of A and B protein subunits. The B chain facilitates abrin's transport into the cell, while the A chain prevents protein synthesis inside the cell. *Abrus precatorius* seeds are red with a black spot and are less than one inch long. They have a hard outer shell which when ingested may pass through the GI tract without causing toxicity. However, crushing, chewing or puncturing the seeds releases the toxin, leading to toxicity.

Abrin is absorbed slowly from the GI tract resulting in a delay in toxicity and perhaps allowing time for treatment. Clinical effects include nausea, vomiting, diarrhea and abdominal pain. Emesis and diarrhea may be bloody. GI effects may lead to dehydration and hypotension. More severe clinical effects due to cytotoxicity include coma, seizures and increased intracranial pressure, as well as hepatic and renal damage. Some sources state that one crushed seed is potentially lethal.

Given limited data on toxalbumin related plants, researchers at the Maryland Poison Center analyzed 1,164 toxalbumin plant exposures reported to U.S. poison centers over a 10.5 year period. (*Toxicon* 2015;9:125-9). Most commonly reported exposures were to *Ricinus communis* (393; 33.8%) which caused primarily GI effects and *Robinia pseudoacacia* (383; 32.9%) which caused dermal toxicity. Of the 94 *Abrus precatorius* cases, 70 remained asymptomatic, 20 had minor effects, four experienced moderate effects and there were no major effects or deaths. In the 24 symptomatic patients, 10 vomited, while fewer developed nausea (4), abdominal pain (2), tachycardia (2), dermal irritation/pain (2), and one case each of diarrhea, edema and erythema/flushed. Seeds swallowed whole and early treatment were proposed reasons for good outcomes

Symptomatic and supportive care are the mainstays of therapy for toxalbumin exposures, including *Abrus precatorius*. For recent ingestions, consider administering activated charcoal. There is no antidote.

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Did you know?

***Abrus precatorius* (rosary pea) seeds have been used as beads in necklaces and bracelets.**

The bright, colorful seeds have been used to make native jewelry and rosaries. There are warnings that workers who pierce the seeds to thread them could develop toxicity, but evidence is lacking. Although the seeds used in ornamental items are usually red, there are uncommon varieties that are black, white and green. *Abrus precatorius* seeds have also been used in percussion instruments and as an herbal remedy.



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