

Factsheet

Ricin / Abrin

Ricin and abrin are extremely toxic natural poisons. Ricin is a poison found in whole castor beans and Abrin is found in the seeds of the rosary pea or jequirity pea. Ricin and abrin poisoning are not contagious.

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What is ricin?

Ricin is a poison that occurs naturally in the castor bean plant which is used to make castor oil. Castor oil is produced by pressing ripe seeds that have had their outer covering (hull) removed. Heating during the oil extraction process inactivates ricin.

What is abrin

Abrin is a highly toxic natural poison that is found in the seeds of a plant called the rosary pea or jequirity pea (*Abrus precatorius*). These seeds are red with a black spot covering one end.

How do they cause illness?

Ricin and abrin both cause illness by preventing the body's cells from making the proteins they need. Without these proteins, cells die and damage vital structures in the body.

What are the symptoms?

The onset of symptoms and the severity of the illness caused by ricin or abrin poisoning depend on the route of exposure and the dose received. Small doses may take 1-2 days to cause symptoms, while large doses can cause severe symptoms within hours.

How could I be exposed?

Accidental ingestion

Ricin poisoning can also occur following accidental ingestion of whole castor beans. Abrin poisoning can also occur following ingestion of rosary peas; however, symptoms are generally mild if the seeds are swallowed whole.

The majority of patients who accidentally ingest damaged castor bean seeds or rosary peas recover with supportive care.

Deliberate exposure

If ricin or abrin was prepared for deliberate release it might be produced in the form of a powder, a mist or liquid for spraying, or as a pellet, and be concentrated into a high dose.

Inhalation

Inhalation exposure with either toxin is generally mild and symptoms are usually restricted to the respiratory system.

Symptoms usually develop within 8 hours and are likely to include cough, respiratory distress (difficulty breathing) and tightness in the chest, and may also include fever, nausea and profuse sweating

When a high dose of ricin or abrin is inhaled it can cause severe lung damage leading to respiratory failure and possibly to death.

Ingestion

When ricin is swallowed, symptoms usually develop in less than 6 hours, typically vomiting and diarrhoea which may become bloody. Severe dehydration and hypotension may result.

Other symptoms may include hallucinations, seizures, and blood in the urine.

Skin and eye exposure

Ricin and abrin are unlikely to be absorbed through intact skin but contact with contaminated powders or products may cause local redness and pain of the skin and irritated eyes.

Injection

There is at least one report of a person being deliberately injected with a ricin pellet, resulting in their death.

How is it prevented?

Accidental exposure to ricin can be avoided by careful handling of castor bean plants and avoiding ingestion. Abrin poisoning can be prevented by not ingesting rosary pea seeds. There is currently no vaccine or antitoxin that protects against ricin or abrin.

Ricin and abrin are poisons that are not spread from person to person.

People who have been deliberately exposed to ricin or abrin may need to go through a decontamination process.

All response personnel entering a potentially exposed environment or managing exposed patients prior to or during their decontamination need to wear appropriate personal protective equipment (PPE).

Ricin can be inactivated by heating above 80 degrees centigrade. Potentially contaminated surfaces can be cleaned with a 0.1% solution of sodium hypochlorite solution for 30 minutes (this will inactivate more than 99% of abrin or ricin).

How is it diagnosed?

In cases of known exposure to ricin, people having respiratory symptoms that started within 12 hours of inhaling ricin should seek medical care.

How is it treated?

There is no specific antidote for ricin poisoning. Treatment is supportive and varies with the route of ingestion. Artificial ventilation and treatment of pulmonary oedema may be required following inhalation. Gastric decontamination may be appropriate following ingestion.

What is the public health response?

NSW Fire and Rescue would coordinate the decontamination of people who have been exposed to ricin or abrin.

NSW Police would be responsible for any investigation into the possible deliberate release of ricin or abrin.

Public health officials may be asked to assist in the investigation and in the monitoring of individuals potentially exposed to ricin or abrin.

Additional resources

Australian Institute for Disaster Resilience - Emergency Management Australia (EMA) Manual Series: Manual 13 - Health Aspects of Chemical, Biological and Radiological Hazards (Ricin: pages 255-256) - <https://www.aidr.org.au/media/1442/manual-13-health-aspects-of-chemical-biological-and-radiological-hazards.pdf>

For further information please call your local Public Health Unit on **1300 066 055**.