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Maryland Poison Center
UNIVERSITY OF MARYLAND SCHOOL OF PHARMACY

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The Maryland Poison Center's Monthly Update: News, Advances, Information

Poison Hemlock

A 60 year old female ate "wild carrots" pulled from the ground behind her home. One hour later, she began vomiting. She called 911 and the poison center complaining also of lightheadedness, dizziness and shortness of breath. EMS transported her and a sample of the plant to the emergency department (ED). In the ED, she was awake and alert, HR 120, BP 176/110, RR 22, O_2 saturation 98% on room air. All symptoms resolved within 24 hours of the ingestion and she was discharged on day 2. The ED staff identified the plant as "poison hemlock" by means of an internet search.

Conium maculatum

Poison hemlock (*Conium maculatum*) is an invasive herb in the carrot (*Apiaceae*) family. It can be found along roads, ditches, fences, streams, or anywhere with adequate moisture, throughout the U.S. Other common names for the plant are deadly hemlock, poison parsley, and winter fern. The poison hemlock plant grows to 4-10 feet tall and has a smooth, non-hairy, hollow stem with red-purple streaks. These blotches are called the "blood of Socrates" as poison hemlock was reportedly used to kill Socrates. The small white flowers grow in 4-6 inch wide "umbels" or clusters that resemble umbrellas. The leaves have a lacy, fern-like appearance. The roots are creamy-white and look like carrots or parsnips. When crushed, poison hemlock has an unpleasant, musty odor. Poison hemlock closely resembles and has been mistaken for Queen Ann's lace (wild carrot), parsley, wild celery, and fennel. There are several case reports of toxicity and death due to misidentification of the plant *(Med J Aust 1995;162:592-3; Clin Toxicol 2015;53:766; Clin Toxicol 2002;49:517-8; West J Med 1995;163:573-4).* All parts of the plant contain coniine and other piperidine alkaloids, especially the root. Coniine's structure and pharmacological properties are similar to nicotine, directly affecting nicotinic receptors (agonist and antagonist). A toxic dose is nearly impossible to predict due to variances in concentrations of the alkaloids in each plant.

Coniine is rapidly absorbed in the GI tract, producing nausea, vomiting, abdominal pain, salivation, mydriasis and confusion as soon as 20 minutes after the ingestion. The nicotinic effects are biphasic with central nervous system (CNS) stimulation, seizures, and tachycardia followed by CNS depression, bradycardia and hypotension. Muscle paralysis and rhabdomyolysis have been reported. Deaths are due to respiratory depression and respiratory muscle paralysis.

There is no antidote for poison hemlock exposures and treatment consists of supportive care (e.g. benzodiazepines for seizures, IV fluids, dopamine or norepinephrine for hypotension) and ventilatory support.

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Did you know?

Water hemlock is also known as "poison hemlock".

Water hemlock (*Cicuta maculata*) is native to the U.S. and grows in wet areas. It is also known as poison hemlock, wild parsnip, wild parsley, false parsley, and snakeroot. Its appearance is similar to *Conium maculatum,* and as such, it has also been mistaken for wild carrots and other edible plants. The principal toxin in water hemlock is cicutoxin, a noncompetitive GABA antagonist that produces CNS stimulation, most notably seizures. Water hemlock has been described as one of the most toxic plants in the United States with deaths following as little as a few bites of the root.

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