

Wild Mushrooms: A Seasonal Note for Risk Takers

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FACT – There are more than 5,000 types of mushrooms that can be found in the wild, in gardens, roadsides, woodchip and leaf mulch piles, and many other locations.

Less than 100 species are poisonous or likely to cause allergenic reactions. Fewer than a dozen are recognized as likely to be lethal if ingested in normal meal-serving portions.

FACT - There is no easy way to test or inspect for the safety or toxicity of a wild mushroom.

Many mushrooms are difficult to identify even for a trained mycologist or experienced forager. Several edible and poisonous mushrooms look very much alike, especially to the novice. Some edible mushrooms become allergenic or mildly poisonous in different habitats, due to climate, or with age. Accurate identification is an involved process and location of collection becomes critical. Even experts wouldn't accept to identify a mushroom from a description over the phone or an e-mailed digital image.

In the temperate western United States, the first substantial or prolonged series of winter rainstorms brings a flush of many types of edible and delicious mushrooms for the skilled personal forager and an increasing number of direct-marketers. Interest in diverse types of mushroom for culinary specialties among hobby and commercial wild mushroom collection has grown rapidly over the past ten years. Unfortunately, there is also the yearly flush of cases of food poisoning or intoxication from eating the wrong type of mushroom or a reasonably safe one at the wrong age or from the wrong place by the wrong person. Collecting or purchasing and eating a poisonous mushroom can be an extremely painful experience and too often can be fatal, in the recent past to almost entire families. Severe mushroom associated illness has risen to represent almost 0.7% of all poisonings in the U.S. This is more frequent in Northern and Eastern Europe but can occur anywhere. Mushroom associated fatalities are reported to have increased worldwide.

The majority of deaths resulting from eating wild mushrooms are caused by amatoxins within the mushrooms. Amatoxins (cyclic octapeptides) are heat-stable, insoluble in water, and not destroyed by cooking or drying. The Death Cap *Amanita phalloides* is the most well known for fatalities but there are several other *Amanita* species that produce amatoxins. Other highly toxic compounds are produced by several commonly collected mushrooms, particularly in densely wooded, cooler coastal areas.

In 2004, a big year for mushrooming, over 148 individuals in the western U.S. including about 40 children and adolescents plus 51 dogs became ill from consuming various types of wild mushrooms. Many were in prolonged comas and died. More than 50% of all recent cases of human poisonings by *Amanita spp.* involved Southeast Asian immigrants in several states. In many Asian countries, a type of edible pink-spored mushroom which looks very similar to the early stages of the white-spored *Amanita virosa* the "Destroying Angels". Other poisonings often involve other groups of recent immigrants from various parts of the world where wild mushroom collecting is practiced. Several very dangerous look a-likes to mushrooms that they are familiar with from their home country have been associated with frequent cases of illness. Increased poisoning from wild mushrooms has also been associated flushes associated with the increased use of woodchips, leaf mulch, and composts in domestic and public area landscaping.

Small children, older people (65+), and people with existing medical problems are most vulnerable to one or more of the various toxins produced by poisonous mushrooms. Some mushrooms are poisonous regardless of how they are cooked or prepared. Some mushrooms are poisonous only if eaten or cooked with alcoholic beverages.

Mushroom toxins can cause anything from a minor upset stomach or allergic reaction to a rather painful protracted death, depending upon the species of mushroom eaten, the amount eaten, and the person who has eaten it. Onset of symptoms may be delayed a day or more after ingestion. Often early symptoms fade for one day which complicates the possibility of treatment, when available, by allowing more time for the toxin to do damage. Symptoms include amnesia, fatigue, dizziness, severe headaches, severe abdominal stress, vomiting, and eventually loss of consciousness, liver and kidney failure. There are no specific antidotes for amatoxins, no standard treatments, especially with delayed diagnosis, and inevitable death may not come for 10-16 excruciating days.

Regulations concerning direct marketing of mushrooms foraged from the wild for sale in farmers markets or to food establishments are often relatively loose and variable. The U.S. Food and Drug Administration (FDA) has acknowledge their difficulty in determining what constitutes a "wild mushroom identification expert" and enforcing the current Food Code provisions associated with direct marketing. The FDA and various states have placed the burden on the buyer to ensure public safety. The Food Code provides that mushroom species picked in the wild shall be obtained from sources where each mushroom is individually inspected and found to be safe by an approved mushroom identification expert. Buyer's are expected to develop specifications to ensure that wild mushrooms are obtained from a safe source. An example of the guidance that is provided regarding the identification of wild mushrooms includes:

A food establishment that sells or serves mushroom species picked in the wild shall have a written buyer specification that requires identification of:

- The Latin binomial name, the author of the name and the common name of the mushroom species,
- That the mushroom was identified while in the fresh state,
- The name of the person who identified the mushroom,

- A statement as to the qualifications and training of the identifier, specifically related to mushroom identification.

Collecting and eating mushrooms that have not been identified by an expert or bought at the store is definitely for the Risk Taker. Due to the popularity, there is an equal abundance of resources and societies for mushroom foraging as there are sources of caution and warnings for consumers. Even trained mycologists and lay-experts have become victims.

The mantra remains;

“There are old mushroom hunters, and bold mushroom hunters, but there are no old, bold mushroom hunters.”

Some useful resources:

ATTRA. 2004. National Sustainable Agriculture Information Service. Mushroom Cultivation and Marketing: Horticulture Production Guide. <http://www.attra.org/attra-pub/mushroom.html> (verified 1/14/08)

CDC MMWR. 1997. *Amanita phalloides* Mushroom Poisoning — Northern California. Vol. 46: No. 22

Giannini, L., Vannacci, A., Missanelli, A., Mastroianni, R., Mannaioni, P. F., Moroni, F. and E. Masini. 2007. Amatoxin poisoning: A 15-year retrospective analysis and follow-up evaluation of 105 patients. *Clinical Toxicology*, 45: 539 – 542

The Mycological Society of San Francisco, (415) 759-0495; www.mssf.org links to the North American Mycological Societies' homepage

Wild Mushrooms On-line <http://www.wildmushroomsonline.co.uk/> (verified 1/14/08)

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