

The below list includes most known mushroom poisons, their effects and a list of poisonous mushrooms.

Poisons included in this list are:

- **Cyclopeptide Poisoning**
- **Monomethylhydrazine Poisoning**
- **Coprine Poisoning**
- **Muscarine Poisoning**
- **Ibotenic Acid - Muscimol Poisoning**
- **Psilocybin - Psilocin Poisoning (Hallucinogenic)**
- **Gastrointestinal Irritants**

Cyclopeptide Poisoning

The mushrooms in this group include:

Amanita

Amanita verna

Amanita phalloides (the Death Cap)

Amanita virosa

Amanita bisporigera

Amanita ocreata

Galerina

Galerina autumnalis

Galerina marginata

Galerina venenata

In addition, the following have possibly toxic concentrations of the primary poisons, but no poisonings have been officially noted:

Amanita

Amanita suballiacea

Amanita tenuifolia

Conocybe

Conocybe filaris

Amanita ocreata (in fact, the last Portland Mycological meeting had several specimens that had been found in nearby Washington), Amanita phalloides, and the Galerina species are known to grow in the Pacific Northwest.

There are four stages to this poisoning:

- the long (6-24, but usually 10-hour) latent period between the ingestion of the mushrooms to the first symptoms
- the first symptoms themselves which last for a period of around a day and includes diarrhea, abdominal cramps, nausea and vomiting
- a day long period of apparent remission of the stage two symptoms
- during this state liver and kidney failure can occur, and death can follow

The fingerprint which is a almost sure sign of this poisoning is the first stage; the long latent period.

Some of the listed confirmed cases of this poisoning include: 1931: in Poznan, Poland, 31 children were reported to have died from a school lunch consisting of Amanita phalloides. 1953-1962: also in Poznan, Poland 126 cases of Amanita phalloides poisoning with 40 fatalities. 1970: three adults and four children shared a stew with mushrooms found in pine woods (identification of the mushrooms is unknown, but they were probably either Amanita verna or A. phalloides). One adult and one child died.

One of the most sensational cases was the local Oregon poisoning of Amanita phalloides that occurred October 22, 1988 (see Readers Digest, July 1989, pp. 43-48). A Korean woman had picked mushrooms that looked similar to ones that she used to pick as a child in Korea. Isun Pak had mistaken the deadly Amanita phalloides with what she thought were edible Paddy Straw mushrooms (*Volvariella volvacea*). Out of five people that had eaten these mushrooms one evening, four received liver transplants and will take medication for the rest of their lives, and one was seriously ill, but recovered fully and didn't have to receive a transplant.

Monomethylhydrazine Poisoning

The mushrooms in this group include:

Gyromitra

- Gyromitra ambigua
- Gyromitra brunnea
- Gyromitra californica
- Gyromitra caroliniana
- Gyromitra esculenta
- Gyromitra fastigiata
- Gyromitra gigas
- Gyromitra infula

Symptoms for this poisoning typically appear six to eight hours after eating, but it can be as soon as two, and as late and twelve hours afterwards.

The symptoms include:

- bloated feeling
- nausea and vomiting
- watery (or bloody) diarrhea
- muscle cramps
- abdominal pain

Severe cases can include:

- liver damage
- high fever
- convulsions
- coma
- death (usually two to four days after ingestion)

It has been stated that in Europe somewhere between 2-4% of all mushroom induced fatalities are caused by *Gyromitra esculenta*, while in North America, only about 20 cases of *Gyromitra* poisonings have been reported since 1900. In a recent 10-year study of mushroom poisonings in Poland (1953-1962), 138 cases of poisonings were attributed to *Gyromitra esculenta*. 100 of these people were hospitalized, and six of them died.

This mushroom is still eaten in the northwest quite frequently, even by expert mycologists. Orson K. Miller, in his *Mushrooms of North America* states of *Gyromitra esculenta* "I will eat this only in the PNW (Pacific Northwest, editor) and RM (Rocky Mountains, editor). It is easily confused with an eastern species and individuals react differently to it. Perhaps different populations of it contain different amounts of the MMH toxin."

Coprine Poisoning

The mushrooms in this group include:

Coprinus
Coprinus atramentarius

In addition some possibly suspect mushrooms are:

Coprinus
Coprinus micaceus
Coprinus fuscescens
Coprinus insignis
Coprinus sp. (some African species)
Clitocybe
Clitocybe clavipes

Chemically this compound is very similar to Antabuse (used for the treatment of alcoholics). Symptoms for this poisoning occur usually within 5 to 10 (up to 30) minutes after eating this mushroom, if alcohol has been ingested within the past 24 hours.

The symptoms include (these usually last for only a few hours):

hot and sweaty face, becoming flushed
flushing spreading to the neck and chest
rapid, difficult breathing
rapid heart rate
violent headache
nausea and vomiting

Many cases have been noted; this does not appear to be a dangerous reaction and no deaths have been noted.

Muscarine Poisoning

The mushrooms in this group include:

Clitocybe

Clitocybe dealbata
Clitocybe cerussata
Clitocybe rivulosa
Clitocybe truncicola
Inocybe
at least 30 species

Amanita muscaria and Amanita pantherina were previously mistakenly thought to have contained primarily muscarine as its poison, but it is now known to contain physiologically insignificant amounts.

The symptoms for this poisoning are:

profuse, prolonged sweating
tearing
salivating
severe cases may have the pulse slow, and blood pressure fall to dangerously low levels

Many cases of this poisoning that require hospitalization seem to be caused by Inocybe species, while the Clitocybe species seem to primarily just cause sweating.

Pure muscarine has been shown to cause the hearts of laboratory animals to stop. However, only one species, Inocybe patouillardii has been reported to have caused death in humans. In a two-year study of mushroom poisonings in Switzerland, at least 19 cases were reported to have been from muscarine poisoning. Two from Clitocybe rivulosa, eleven from Clitocybe nebularis, six from Inocybe patouillardii, including two deaths. In Poland, 15 cases of Inocybe patouillardii were reported, with no deaths.

Ibotenic Acid - Muscimol Poisoning

The primary mushrooms in this group are:

Amanita
Amanita cothurnata
Amanita gemmata
Amanita muscaria
Amanita pantherina
Amanita smithiana
Amanita strobiliformis
Tricholoma

Tricholoma muscarium (from Japan)

The primary symptoms are:

- inebriation
- hallucinations
- manic behavior
- delirium
- deep sleep

Most of the poisonings reported in the Pacific Northwest are from the Panther Cap (*Amanita pantherina*).

Many reported cases of poisoning in this group of mushrooms is known, but only a very few deaths have been reported. In one case a man had mistakenly eaten two dozen *Amanita muscaria* (he thought they were *Amanita caesarea*). He collapsed within a half hour, went into heavy convulsions, lost consciousness, and died a day later. Another death was attributed to *Amanita pantherina* when they were ingested by a man with a weak heart. In another case a two year old girl, who had shared a meal of *Amanita gemmata* with her parents became irritable, listless, suffered a convulsive seizure, and then died.

Psilocybin - Psilocin Poisoning (Hallucinogenic)

Mushrooms in this group include:

- Psilocybe
- Psilocybe baeocystis
- Psilocybe caerulescens
- Psilocybe caerulipes
- Psilocybe cyanescens
- Psilocybe cubensis
- Psilocybe pelliculosa
- Psilocybe semilanceata
- Psilocybe strictipes
- Psilocybe stuntzii
- Panaeolus
- Panaeolus castaneifolius
- Panaeolus cyanescens
- Panaeolus fimicola
- Panaeolus foenisecii
- Panaeolus sphinctrinus

Panaeolus subbalteatus
Conocybe
Conocybe cyanopus
Conocybe smithii
Gymnopilus
Gymnopilus aeruginosus
Gymnopilus validipes

Primary symptom:

hallucinations (a well-known and expected effect in most cases)

Other possible symptoms:

severe dysphoria
vomiting
prostration
temporary paralysis

One of the mushrooms in this group, *Psilocybe baeocystis* is believed to have been responsible for the death of a child. Two sets of parents and four children had eaten this species and become ill. The parents displayed the standard hallucinogenic symptoms, while the children developed fevers ranging from 102-106 degrees F, with intermittent convulsions. The child with the highest temperature is the one that died. Also, Charles McIlvaine reported that M. C. Cooke (a 19th Century British mycologist) warned of *Psilocybe semilanceata* (the Liberty Cap): "It is said to have proved fatal to children when eaten raw."

Gastrointestinal Irritants

Some of the mushrooms that fit into this category would be (the mushrooms in the boldface type are ones in this grouping that are known to have caused death):

Agaricus
Agaricus albolutescens
Agaricus hondensis
Agaricus placomyces
Agaricus silvicola
Agaricus xanthodermus

Amanita
Amanita brunnescens
Amanita chlorinosma
Amanita flavoconia
Amanita flavorubescens
Amanita frostiana
Amanita parcivolvata
Boletus
Boletus luridus
Boletus pulcherrimus
Boletus satanus
Boletus sensibilis
Chlorophyllum
Chlorophyllum molybdites
Entoloma
Entoloma lividum
Entoloma mammosum
Entoloma nidorosum
Entoloma pasuum
Entoloma rhodopolium
Entoloma salmoneum
Entoloma strictius
Entoloma verum
Gomphus
Gomphus bonari
Gomphus floccosus
Gomphus kauffmanii
Hebeloma
Hebeloma crustuliniforme
Hebeloma fastibile
Hebeloma mesophaeum
Hebeloma sinapizans
Lactarius
Lactarius chrysorheus
Lactarius glaucescens
Lactarius helvus
Lactarius representatus
Lactarius rufus
Lactarius scrobiculatus
Lactarius torminosus
Lactarius uvidus
Lepiota
Lepiota clypeolaria
Lepiota cristata
Lepiota lutea
Lepiota naucina

Lycoperdon
Lycoperdon marginatum
Lycoperdon subincarnatum
Naematoloma
Naematoloma fasciculare
Paxillus
Paxillus involutus
Pholiota
Pholiota aurea
Pholiota squarrosa
Polyprous
Polyprous berkeleyi
Polyporus cristatus
Polyporus giganteus
Polyporus schweinitzii
Polyporus sulphureus
Ramaria
Ramaria formosa
Ramaria gelatinosa
Russula
Russula emetica
Scleroderma
Scleroderma aurantium
Scleroderma cepa
Tricholoma
Tricholoma album
Tricholoma muscarium
Tricholoma nudum
Tricholoma pardinum
Tricholoma pessundatum
Tricholoma saponaceum
Tricholoma sejunctum
Tricholoma sulphureum
Tricholoma venenata
Verpa
Verpa bohemica

Primary symptoms include:

vomiting
diarrhea
both

This is perhaps the largest group of mushrooms to cause poisonings. These symptoms usually

appear within 15 minutes to 4 hours. A few of them have been reported to have caused death. According to a Swiss study conducted over a two-year period, 39 people out of a total of 356 cases of mushroom poisoning were poisoned by *Entoloma lividum*.

One report in Maryland suggested that a child with a heart defect ate a small piece of *Lactarius glaucescens*, and that the mushroom contributed to its death.

Another of the mushrooms in this group that has been recorded as having caused deaths is *Naematoloma fasciculare*. It was stated by W. S. Chilton that records kept for 20 years in Europe, Russia, and Japan attributed six deaths and many more illnesses to this mushroom. It is possible from some of the data that *Naematoloma fasciculare* belongs to the cyclopeptide poisonings group, but no official report has been done on it yet.

Paxillus involutus is also known to have caused deaths, at least in Europe. In the ten year Poland study, 109 cases of poisonings by *Paxillus involutus* were reported, with 93 hospitalizations, and one death. Another report listed four poisonings, with three fatalities. The symptoms of this mushroom differ somewhat from others in this group. They include icy extremities, stomach cramps, sweat, weakness, and loss of consciousness, with severe circulatory collapse and fatty degeneration of some of the vital organs occurring.

Some of the mushrooms in this grouping can be eaten over a long period of time with no ill effects at all, yet others can eat a meal of these and experience fleeting gastrointestinal problems. These mushrooms would fall into the categories of individual sensitivities to mushrooms. This would include most of the Morels (*Morchella* sp.), the Sulphur Shelf mushroom (*Polyporus sulphureus*), the Blewit (*Clitocybe nudum*), and the Early Morel (*Verpa bohemica*). The Mycological Society of San Francisco printed a report in 1975 with the results of a survey on the mushrooms that have caused sickness to the society members. Seven people had report poisonings from the Sulphur Shelf (*Polyporus sulphureus*) in this survey. The Blewit (*Clitocybe nudum*), has been reported as having caused poisonings to some people when eaten raw, so this mushroom should always be cooked. This would hold true for the Morels (*Morchella* sp.) also, and is not a bad idea for any wild mushrooms that will be used for the table. In some people the Early Morel (*Verpa bohemica*) will cause symptoms when it is eaten over a period of several days in a row, or if large quantities are consumed at one time. These symptoms include stomach upset, and a definite lack of muscular coordination.

The Tiger *Tricholoma* (*Tricholoma pardinum*), while not yet known to have caused any

fatalities, is violently poisonous. Poisoning from this mushroom can last as long as three to six days before all the symptoms have left. Typically they last for two-six hours though. In a two-year study of mushroom poisonings in Switzerland, 50% of all poisonings were caused by this mushroom (141 cases). This is especially important for us in the Pacific Northwest since it does grow here.