

Poisonous Mushrooms *of* Haida Gwaii

Paul Kroeger



The Poisonous Mushrooms of Haida Gwaii



Edible wild mushrooms can be delicious, interesting and nutritious additions to the diet. Mushroom hunting can also be a fun and healthy outdoor activity that puts you in touch with wild landscapes. But some mushrooms can make you sick or kill you!

There are several types or classes of mushroom poisonings. As a rule, the longer it takes for illness to occur after eating the mushroom the more serious the poisoning. Deadly mushrooms often take 6 to 36 hours, or even several days or weeks before the first symptoms appear. By this time toxins are completely absorbed and treatment is very difficult. Severe damage occurs to organs such as the liver and kidneys and death is possible.

When sickness begins just a few minutes or within a couple hours after eating mushrooms the outlook is often fairly positive, though still very unpleasant for the sufferer. Many mushrooms cause rapid-onset gastrointestinal irritation that resolves within a short time. Vomiting and diarrhea often expel unabsorbed toxins and with replacement of the lost fluids and rest, recovery is usually complete.

It is always important to identify what type of mushroom has caused a poisoning but there is a saying in mushroom toxicology:

“Treat the patient, not the mushroom”.

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Being Safe

Only eat mushrooms that are well known and popular as edibles. Experimenting can be dangerous. Stick with a couple, or half a dozen species and learn them well. There are no general rules for telling poisonous mushrooms from edible ones:

- Poisonous mushrooms do not turn silver black.
- Poisonous mushrooms don't turn rice, onions or garlic a particular colour.
- Poisonous mushrooms are all different; no particular colour, texture, odour or taste is a sure sign that mushrooms are either safe or dangerous.
- Poisonous mushrooms grow in many habitats, a mushroom on wood is not always poisonous and mushrooms in meadows are not all edible.
- Some animals are not affected by mushroom poisons. Animals may eat things and die later.
- Mushrooms that peel easily are not necessarily edible.

Mushrooms can spoil and cause food poisoning like any food. Old, partially deteriorated and poorly stored mushrooms cause problems.

Mushrooms should only be gathered from pristine habitats. Pesticides and agricultural chemicals, petroleum products, and heavy metals may be found in mushrooms growing near roadways or in urban, agricultural or industrial areas. Pet wastes can contaminate mushrooms in parks and along trails.

Mushrooms should always be thoroughly cooked; raw and undercooked mushrooms often cause problems. Some mushrooms such as true morels contain small amounts of toxins when fresh but are safe after cooking.

Eat mushrooms in moderation; eating a large amount of any food can cause problems. Eating even a good edible mushroom again and again may eventually result in development of an allergic sensitivity. Mushrooms are not easily digested by humans. *

Deadly Cyclopeptides

also known as *Amanitin* or Deadly *Amanita* poisons

The Death Cap *Amanita phalloides* and Destroying Angels *Amanita virosa* and *A. verna* are not known to occur on Haida Gwaii. These mushrooms and close relatives are responsible for most mushroom deaths around the world. The Death Cap has recently been found growing with imported trees in the Greater Vancouver area and Vancouver Island, and is expected to spread.



Conocybe filaris

Stan Czolowski photo

Several little brown mushrooms or

"LBM's grow on Haida Gwaii that contain the same deadly poisons as Death Caps. *Galerina* species and *Conocybe filaris* are found where magic mushrooms grow and could be picked by mistake.

First symptoms usually occur between 8 to 12 hours after being eaten, though it may be as short as 6 hours or as long as 36 hours. First there is sudden cramping abdominal pain, vomiting and watery diarrhea



Galerina cinnamomea

Paul Kroeger photo

sometimes with flecks of blood and mucus. Intense diarrhea often results in severe dehydration. After about 24 hours these symptoms often cease and the patient appears to be in remission.

About 72 hours a second wave of vomiting, diarrhea and cramping begins and liver damage becomes apparent with jaundice and swelling of the liver with the swollen area being tender to the touch. Liver destruction is usually rapid and often ends in death. The last stages often involve gastrointestinal bleeding, delirium, convulsions and coma. The entire time from first symptoms to death takes approximately 7 to 10 days. A liver transplant may be required to prevent death. *

Coprine

Mushroom and Alcohol interaction

The Inky Cap mushroom *Coprinus atramentarius* and its relatives contain compounds that cause illness following the consumption of alcohol. These substances interrupt the metabolism of alcohol resulting in the accumulation of toxic acetaldehyde in the blood. If these mushrooms were eaten 30 minutes to 3 days before alcohol is consumed, symptoms occur within

5 to 10 minutes after drinking. This syndrome can also occur if the mushrooms are eaten when alcohol is already present in the body.



Coprinus atramentarius - Inky Caps
Bryce Kendrick photo

Symptoms include flushing and reddening of the face, neck and chest, swelling of the face and hands, feeling of warmth, numbness and tingling of the arms and legs, metallic taste in mouth, heart palpitations, severe headache, sweating, anxiety, vertigo and dizziness, confusion, weakness, nausea and vomiting. *

Gyromitrin

Monomethylhydrazine

Mushrooms known as False Morels and Elves' Saddles, a species of *Gyromitra* and *Helvella*, can contain large amounts of Gyromitrin which, breaks down into the toxin Monomethylhydrazine or MMH. MMH has both short-term or acute, and long-term consequences when consumed. MMH is also volatile, which means when it evaporates or boils it produces toxic fumes when mushrooms are cooked.

The first symptoms in acute Gyromitra poisoning usually appear 6 to 12 hours after eating. Occasionally symptoms

may come on as soon as 2 hours or as late as 24 hours. First there may be a sudden sensation of bloating with nausea and vomiting, and often diarrhea that may be watery with some blood present. Lethargy, dizziness and exhaustion occur with general abdominal pain and severe headache. There may also be fever.

After 36 to 48 hours in severe cases, liver, kidney and nervous system damage may be evident. Jaundice, fever, delirium, convulsions and coma may result. Liver and kidney failure may occur.

Monomethylhydrazine and related compounds are known carcinogens, causing liver cancer. +



Gyromitra infula - False Morel
Michael Beug photo

Orellanine Deadly *Cortinarius* Delayed Kidney Failure

Certain medium sized orange to reddish brown *Cortinarius* mushrooms cause delayed kidney failure. The first symptoms often do not appear until 3 days or longer after eating the mushrooms. In some cases first symptoms have appeared after 21 days!



Cortinarius limonius
Adolf Ceska photo

Symptoms are typically nausea, vomiting, abdominal pain, night sweats, headache, chills and shivering, frequent urination and thirst, lack of energy and appetite, generalized muscle and joint pain, and possible irreversible kidney failure.

Several species of *Cortinarius* that contain these toxins are found here.♦

Ibotenic acid/muscimol Inebriating “Magic Mushrooms”

The Fly Agaric *Amanita muscaria* is the classic red-capped toadstool with white warts familiar in illustrations of fairy tales and children’s books. It also has the reputation of being deadly poison, which it is not. The Fly Agaric and its close relative *Amanita gemmata*, and the Panther Cap *Amanita pantherina*, which has not yet been documented on Haida Gwaii, produce an inebriation and sometimes delirium. The effects begin 15 minutes to 2 hours after



Amanita Muscaria - Fly Agaric
Bryce Kendrick photo

eating the mushrooms and symptoms last 4 to 12 hours or sometimes as long as 24 hours. This results in lack of coordination and difficulty in moving, standing and walking. Lethargy may alternate with excitation and manic behavior. Dizziness, confusion, delirium, agitation and drowsiness may progress to a deep coma-like sleep lasting several hours. Nausea and vomiting may occur. In children and small pets, muscle twitching, jerking, cramping and spasms or even seizures may occur.

The amounts of ibotenic acid and muscimol present in *Amanita muscaria*, *Amanita pantherina* and *Amanita gemmata* mushrooms are variable, as are individual reactions to these toxins. As a result they are unpredictable recreational intoxicants. •

MUSCARINE Drool Sweat and Tears



above: Clitocybe clavipes
Bryce Kendrick photo

left: Inocybe species
Adolph Ceska photo

Many mushrooms contain the toxin muscarine, especially species of *Inocybe* and *Clitocybe*. Some *Inocybe* and *Clitocybe* mushrooms are very common on the Islands. Symptoms usually develop 15 minutes to 30 minutes after eating. The symptoms most characteristic are profuse sweating, salivation and tear production. Other symptoms include nausea, vomiting and abdominal cramps with diarrhea, slow heart beat and slow pulse, blurred vision with constricted pupils, and wheezing and difficulty in breathing, and painful urge to urinate. This type of poisoning is rarely fatal. •

Psilocybin/psilocin Hallucinogenic "Magic Mushrooms"

Mushrooms such as Liberty Caps, *Psilocybe semilanceata* which contain psilocybin and psilocin take effect 10 to 30 minutes after being consumed, and these effects last for 4 to 5 hours, or somewhat longer with large amounts. About one gram of dried mushrooms is a common recreational dose. The intensity and length of effects depend on the amount consumed.



Psilocybe semilanceata - Liberty Caps
Stan Czolowski photo

The first sign of intoxication is a brief period of yawning, rapidly followed by a sense of exhilaration, euphoria with a tendency toward being introspective and meditative, inability to concentrate, uncontrollable laughter, confusion, visual hallucinations involving colours and shapes and also the senses of sound and touch, and distortion of time and space perception. Pupils are dilated. There is often muscle weakness and difficulty in walking. Rapid heartbeat and increased blood pressure can occur especially in cases of a panic reaction.

Young children react differently to magic mushrooms than adults do, and may develop high fevers and convulsions. In at least one case this has caused death. •

Natural hallucinogens have been described in many aboriginal cultures as sacred medicine which must be honoured and used appropriately, supervised by the elders according to traditions — use outside of this is considered cultural/drug abuse.

Gastrointestinal irritants

A wide variety of mushrooms cause gastrointestinal upset. Most poisonous mushrooms as well as most mushroom poisonings fall into this category.

Symptoms may occur 5 minutes to 4 hours after eating mushrooms.

Nausea, vomiting, abdominal pain and diarrhea are the most common symptoms. There may also be headache, chills, sweating, salivation, weakness, disorientation, hallucination and dizziness. Prickling, tingling and itching of the skin or extremities may be experienced and anxiety and panic may cause hyperventilation.

Not all species will cause gastrointestinal effects in all people. Some reactions may be due to allergy, or food intolerance.

In February 2009 a report claimed that *Amanita franchetii* had caused ten deaths in Jiangxi Province, China. Symptoms



Hebeloma crustuliniforme

Bryce Kendrick photo



Amanita franchetii

Bryce Kendrick photo

were nausea, vomiting, diarrhea, general aching, abdominal distension and pain and dizziness. Death occurred about a week after mushrooms were eaten. *Amanita franchetii* is very common here and should be considered a dangerous mushroom. •

Symptoms of Mushroom Poisoning

Mushroom	Time of Onset	Symptoms
Deadly Cyclopeptides Amanita species in subgenus Lepidella, Conocybe in subgenus Pholiotina, some Galerina and Lepiota species	6 to 12 hrs (up to 36 hrs)	Colicky abdominal pain, vomiting, watery diarrhea, symptoms subside after about one day: then about 72 hrs post ingestion gastrointestinal symptoms recur along with signs of impending liver failure.
Orellanine Cortinarius species in subgenus Leprocyste	36 hrs to 21 days	Nausea, vomiting, abdominal pain; night sweats, rigors, chills, headache; delayed oliguria, polyuria, kidney failure.
Gyromitrin Gyromitra species; Helvella, Morchella and Verpa species are suspect.	5 to 12 hrs	Bloating, nausea, vomiting, diarrhea, abdominal pain; headache, dizziness, fatigue, fever; jaundice; rarely hemolysis.
Coprine Coprinus atramentarius, some other Coprinus species suspect.	5 to 10 min after drinking alcohol: mushrooms eaten in preceding 3 to 5 days	Flushing of face and neck, metallic taste, paresthesia of hands and feet, tachycardia, chest pain, hypotension, nausea and vomiting may occur.
Muscarine Clitocybe and Inocybe species, and Mycena pura.	15 min to 2 hrs	Perspiration, salivation, lacrimation; blurred vision, miosis; bradycardia, hypotension; abdominal cramps, diarrhea, bronchorrhea, wheezing, dyspnea.

Symptoms of Mushroom Poisoning

Mushroom	Time of Onset	Symptoms
<i>Ibotenic acid/muscimol</i> Amanita muscaria, Amanita pantherina and Amanita gemmata	15 min to 2 hrs	Drowsiness, confusion, dizziness, ataxia, delirium, illusions, muscle twitching, deep sleep.
<i>Psilocybin/psilocin</i> Some Psilocybe species, also Conocybe, Gymnopilus and Panaeolus species	10 to 30 min	Euphoria, drowsiness, mood changes, laughter, anxiety, hallucinations, ataxia, muscle weakness.
<i>Gastrointestinal irritants</i> Gomphus, Gymnopus (Collybia), Hebeloma, Hypholoma, Lactarius, Laetiporus, Leucoagaricus, Russula, Tricholoma and Tylopilus species. Diverse species, esp. if under-cooked	15 mins to several hrs, usually less than 4 hrs	Nausea, vomiting, abdominal cramps, diarrhea.

Books on Poisonous Mushrooms

Ammirati, Joseph F. 1985. Poisonous Mushrooms of the Northern United States and Canada. University of Minnesota Press

Benjamin, Denis R. 1995. Mushrooms: Poisons and Panaceas. A Handbook for Naturalists, Mycologists and Physicians. W.H. Freeman and Company

Davis, Betty L. 1981. Magic Mushrooms. Technical Report Series A-81-2 Province of British Columbia Ministry of Health Alcohol and Drug Programs

Haard, Richard and Karen Haard 1980 Poisonous and Hallucinogenic Mushrooms. Homestead Book Co.

Kent, Debra R. and Gillian Willis eds. 1997. Poison Management Manual. The BC Drug and Poison Information Centre

Lincoff, Gary and D.H. Mitchel. 1977. Toxic and Hallucinogenic Mushroom Poisoning: A Handbook for Physicians and Mushroom Hunters. Van Nostrand Reinhold Co.

Mushroom Websites

Mushrooms of Haida Gwaii/Gwaii Haanas webpage:
<http://www.geog.ubc.ca/biodiversity/eflora/FungiofHaidaGwaii.html>

North American Mycological Association toxicology webpage:
<http://www.namyco.org/toxicology/index.html>

Slide show of poisonous mushrooms by Michael Beug:
<http://academic.evergreen.edu/projects/mushrooms/phm/>

The Poisonous Mushrooms of Haida Gwaii



Poisonous Mushrooms *of Haida Gwaii*

Paul Kroeger

Poisonous Mushrooms of Haida Gwaii, is a reference guide to help make the harvesting of mushrooms safer.

Edible wild mushrooms can be delicious, interesting and a nutritious addition to any diet. Mushroom hunting can also be a fun and healthy outdoor activity that puts you in touch with wild landscapes. But remember some mushrooms can make you sick or kill you!

Please use this guide to identify mushrooms that you may not be familiar with and if you are not sure of a species consult more detailed books and websites. Safe picking!

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