# Summary of the Poisoning Reports in the NAMA Mushroom Poisoning Case Registry: 2018 through 2020

**Michael W. Beug, PhD**

Chair, NAMA Toxicology Committee

This paper summarizes all reports in the NAMA database where the mushroom could be reasonably well identified. I cover the 3-year period from January 1, 2018 through December 2020. Due to lack of information, I usually am unable to delve into treatments or why the person may have consumed the mushroom (e.g. for food, for recreation, mistaken identification, *etc*.). General age ranges are given because symptoms can be most severe in individuals whose health is previously compromised (due to age, alcohol, or chronic disease) and in children whose digestive and immune systems are not yet fully developed.

In 1973, NAMA established a standing Toxicology Committee initially chaired by Dr. Duane H. (Sam) Mitchel, a Denver, Colorado MD who founded the Colorado Mycological Society. Sam worked with Dr. Barry Rumack, then director of the Rocky Mountain Poison Center (RMPC) to establish a protocol for handling information on mushroom poisonings. The NAMA trustees, encouraged by Dr Orson Miller and acting on a motion by Kit Scates (Kit Scates Barnhart), then created the Mushroom Poisoning Case Registry in 1982. Dr. Kenneth Cochran laid the groundwork for maintaining the Registry at the University of Michigan. Individuals and the mushroom identification experts who volunteer to assist in actual and suspected mushroom poisoning cases report mushroom poisonings using the NAMA website (www.namyco.org). The reporting is a volunteer effort. In addition, members of the toxicology committee work with Poison Centers to gather mushroom poisoning reports. The toxicology committee has 155 invaluable toxicology identifiers living in 36 states and 3 Canadian Provinces. Quebec, California, Oregon, and Washington each have more than a dozen volunteers. Mary Taylor provides the critical service of data entry into the NAMA database.

The first annual NAMA report of mushroom poisoning cases was published by Dr. Cochran in Mushroom: The Journal in 1985 (Cochran, 1985). All subsequent reports are

in McIlvainea. An executive summary of each report is published in the Mycophile. Historically, mushrooms account for about 0.4 to 0.5% of total toxic exposures and NAMA was receiving reports for about 1% of mushroom poisoning cases. However, with new laws protecting individual privacy, the reporting to NAMA has dropped significantly. Furthermore, many people are finding it fast and easy to go to a Facebook mushroom group in the case of a poisoning incident. Unfortunately, there is no information at all about the cases handled through Facebook. Because of the low number of reports and because I have observed that poisoning trends become clearer in aggregate, I have ceased doing annual reports and instead have resorted to periodic summaries. I will continue to send breaking news to the Mycophile.

Sometimes one can be quite certain about what mushroom was consumed, and there is DNA confirmation of the species involved. At other times, it is just an educated guess based on mushrooms gathered near where the suspect mushrooms were picked or from pictures that the victim pointed out in a book or photos sent to the author.

I have generally not attempted to use the most current name but have followed the names used in the reports. The approach has also been that of a "lumper." For example, *Armillaria mellea* and *Laetiporus sulphureus*, are now recognized as complexes of several species, but there has often been no way to figure out what the actual culprit was, though by looking at the location one can sometimes make a good guess. Within a group of easily confused species, some species are far more toxic than others. Another confounding factor is that mushrooms can be contaminated by bacteria and molds and the symptoms from bacterial and mold contamination are extremely like most mushroom poisoning symptoms. I report one notable incident where *Listeria* on packaged imported Enoki mushrooms resulted in 36 illnesses and 4 deaths in 17 states. I have had a rash of reports of contaminated mushrooms from Asia. Some other cases certainly do appear to have been a result of consumption of spoiled mushrooms that were old before consumption or had been frozen raw (which allows the bacteria to keep growing). Also, for mushrooms growing in lawns, flower beds, along roads and on golf courses there is the question of contamination by insecticides, herbicides, or heavy metals. All

mushrooms will take up toxic chemicals, most at concentrations reflective of the general environment. A few species, hyperaccumulate toxins and so pose a special risk in contaminated environments. Also, the toxicity of some species can vary significantly depending on mushroom age, part of the mushroom consumed, preparation method, specific habitat (woods versus lawns), and even elevation (examples include *Amanita muscaria, Gyromitra esculenta, Psilocybe cubensis, etc.*)

Alcohol is also implicated in some cases because there were individuals who said that they could eat the mushrooms if they did not drink alcohol. However, all the reported adverse incidents where someone ate mushrooms and consumed alcohol involved individual sensitivities, and not general toxicity. For example, in the tables below you will see where someone consumed morels without alcohol and had no problem, but when consumed with alcohol had a problem. However, this is not a general problem with morels. For the hundreds of people who have eaten morels and consumed alcohol with the meal when I have been present, there has not been a single adverse reaction.

I have tabulated all the reported dermatitis cases because that information has remained scattered. Cases of flagellate dermatitis caused by raw or undercooked *Lentinula edodes* remain common. As with all edible mushrooms, a few individuals suffered gastrointestinal distress from shiitake. For GI cases in general, I have included three tables – one for cooked mushrooms, a separate table for raw, undercooked, spoiled mushrooms, and a third table for mixed collections. Several incidents involved purchased dried mushroom assortments.

While I still sometimes see 50% quoted as a death rate for consumption of mushrooms containing amatoxins, and the death rate remains in that range throughout the poorer countries of the world, I calculated an 11% death rate for reported cases of people who became ill during the first thirty plus years of maintaining the NAMA database covering the period 1975 though 2005 plus scattered earlier reports (Beug *et al.* 2006). Furthermore, there were five liver transplants for a transplant rate of 3.5% in amatoxin cases from 1975 through 2005. In the period from 2006 through 2017, the death and

transplant rates appear to have decreased, but the data is too fragmentary to be certain. Since 2017, my information about amatoxin cases has become even more spotty, though from 2018 through 2020, NAMA received 9 reports involving 6 different amatoxin containing species, including the first confirmed case from *Lepiota lilacina.*

I believe that if all doctors were on board with what Dr. Denis Benjamin and I call "best practices" (Beug, 2016), a death rate below 10%, indeed around 5% is possible. However, I am still seeing publications where the authors will publish a successful treatment credited to use of a procedure that has long been shown to be ineffective, thus keeping some discredited treatment protocols alive. These include activated charcoal (ineffective for all mushrooms if administered more than about 1 hour after mushroom ingestion), and for amatoxin cases use of Penicillin G and alpha-lipoic acid. The situation with N-acetylcysteine and milk thistle is unclear. Oral silibinin (milk thistle extract) is poorly absorbed, the IV silibinin experimental use trial has ended with no published results. Siliphos [silibinin complexed with soy lecithin (phosphatidyl serine) to make it highly absorbable] remains untested for amatoxin cases but has shown great promise in dealing with liver disease in general and siliphos is a strong competitive inhibitor of RNA Polymerase, blocking binding of amatoxins. IV fluids remain by far the best single intervention in amatoxin cases. Indeed, the IV fluids help prevent kidney damage in all cases involving diarrhea and vomiting.

Orellanine, the other deadly mycotoxin in mushrooms that people eat, was involved in just one incident involving *Cortinarius rubellus. C. rubellus* has caused many poisonings in Europe, though this is the first known case for North America. Orellanine, found in one other North American *Cortinarius* species, *Cortinarius orellanosus,* has resulted in one poisoning case reported a few years ago. *C. rubellus* is uncommon and is most often found in or near sphagnum bogs across the northern half of North America. *C. orellanosus* is very similar in appearance but is associated with hardwoods in eastern North America. Orellanine poisoning is characterized by a long latent period (often more than 1 week) followed by kidney failure.

There were no reported deaths from two other species of mushrooms noted for causing kidney failure, *Amanita smithiana* and *Paxillus involutus.* Though *Amanita smithiana* was at one time thought to contain orellanine, orellanine is not present. A toxin in A*manita smithiana* is allenic norleucine that is probably bound to a sugar in the mushroom. A second compound, chlorocrotylglycine, is also toxic. To date, I know of no deaths from *Amanita smithiana* and after a few months, kidney function is largely recovered. *Paxillus involutus* is distinct in not generally causing toxicity when the mushroom is initially eaten. Unknown chemicals, possibly proteins, trigger the build up of antibodies to the mushroom. The problem then arises if the mushroom is consumed again months or years later, triggering an idiopathic immune response that can be deadly. One *Paxillus involutus* case was reported. A toddler who consumed a small amount raw was rushed to the hospital and received prompt activated charcoal treatment. There were no symptoms.

In the past, cases have been reported where females (both human and animal) became ill from a mushroom ingestion and nursing infants (and nursing puppies) became ill (a puppy died) from toxins in the milk. I have no new cases of this type to report.

Though many people still eat *Gyromitra esculenta,* the large number of cases found in the past where there was liver and/or kidney damage (and many deaths in Europe) hopefully may lead individuals to cease this practice. Gyromitrin, the toxin in *Gyromitra esculenta, Gyromitra infula* and *Gyromitra ambigua* is also known to be highly carcinogenic, though highly variable in concentration in the mushrooms. *Gyromitra esculenta* usually causes many adverse events, including significant liver damage, but there were no adverse reports in this period. Hopefully mushroomers are learning not to eat *Gyromitra esculenta.*

I have long cited the severity of the poisoning symptoms from consumption of some (but not all) species in the Entolomataceae. The toxins involved are unknown and I had no recollection of any reports of people having eaten an *Entoloma* (including *Nolanea, Alboleptonia,* and *Leptonia*). In 2020, I personally dealt with one case of ingestion of a

large *Entoloma* in the *E. lividum* group and one case involving ingestion of a small amount of a *Nolanea* resembling *Nolanea sericea*. Both cases involved very serious symptoms requiring hospitalization. The *N. sericea* case involved liver damage, even though the amount believed to have been ingested was small.

The strangest case in the past three years is a very recent case where the patient made a tea from *Psilocybe cubensis* and injected the tea into his arm. It was a psilocybin micro dosing attempt gone very wrong. He survived after many days in the intensive care unit followed by three weeks in the hospital. He needs ongoing treatment. Cultures of his blood revealed bacterial growth and *Psilocybe cubensis* was cultured from his blood (from circulating spores?).

In addition to the individual reports on which the human cases are based, I have one summary report from the California Poison Control covering 2017 that gives one an overall sense of the number of cases a large Poison Center might have to deal with in a year. They had 1,038 mushroom ingestion calls. Of those 522 were treated at a health care facility. Of those treated, 16 suffered a major health issue including one liver failure leading to coma. Any of those cases that had been sent to NAMA would have shown up in my 2017 report. None are included here.

For many years now, Paul Kroeger, one the BC NAMA toxicology identifiers, has organized a team to track where *Amanita phalloides* is growing in the Vancouver B.C. area where they now have 100 known sites. They strive to locate and remove all fruitings before a dog or a human gets poisoned. Paul has developed a close working relationship with Raymond Li at the British Columbia Drug and Poison Information Centre (DPIC). They have provided a summary of the 39 symptomatic cases that they have dealt with for the period 2017-2020. Wherever possible, they have collected vouchers for symptomatic cases. When COVID dies down and life begins to return to normal, Dr. Mary Berbee will do the DNA analysis. Out of 40 vouchered asymptomatic cases, Paul noted that the most frequent asymptomatic calls to the poison center resulted from consumption of *Leucoagaricus* (6) and *Paneolina/Panaeolus* (5). Paul reports that “There were also a

tedious number of possible exposure cases where viewing photos allowed us to identify *Agrocybe praecox* or *A. pediades, Leucoagaricus leucothites, Marasmius oreades* or *Panaeolus foenisecii* (*Paneolina foenisecii*). Public awareness efforts warning of Death Cap mushrooms in urban settings resulted in many of these calls to DPIC".

For the first time ever, the winner of the award for the mushroom causing the most reported cases (9) goes to *Agaricus bisporus* in one of its many manifestations – "crimini", "baby bellas", "portobellos", or simply "button mushrooms". Second place goes to morels as a group (6). Morels are normally at or near the top of the list. There are 7 reports of adverse reactions from "chaga", usually consumed as a tea. However, the large number for "chaga" is due to intense scrutiny over multiple years. Normal reporting would have resulted in only two reports of an adverse "chaga" reaction. Do not assume much from the large number of "chaga" cases, but do observe some of the things people do to get themselves in trouble, like drinking old, moldy tea.

"Edible" mushrooms with a significant number of adverse events include *Leccinum* species (6), *Sutorius* (*Tylopilus*) *eximius* (4), *Armillaria mellea* complex (4), *Grifola frondosa* (4), *Hypomyces lactiflorum* (3); *Laetiporus sulphureus* and relatives (4); *Cantharellus* species (5). The severity of some of the adverse reactions with *Leccinum, Sutorius, Armillaria, Hypomyces,* and *Laetiporus* has resulted in my decision not to eat any of these species. I remain undecided about *Grifola.* I do not hesitate to eat chanterelles. Morels (which are poisonous raw) must be well-cooked. Indeed, many of the adverse reactions to any edible mushroom result from under cooking and I recommend thorough cooking for all mushrooms. It is also becoming clear that with *Leccinum* species, *Morchella* species and several other edible species, individuals can develop a sensitivity over time. Once sensitized, further meals lead to ever stronger adverse reactions. Thus, if you have had a bad experience with an edible mushroom, be very careful should you try the mushroom again. However, becoming sensitive to one mushroom does not mean you need to avoid all mushrooms.

The “Poisonous” mushroom that normally leads the pack for all mushroom poisonings is *Chlorophyllum molybdites.* The four people who consumed this mushroom raw discovered that it can cause very violent poisoning including bloody vomit and bloody diarrhea. Even cooked, two people discovered that *C. molybdites* is trouble.

Adverse reactions from *Psilocybe* species were, as usual, very under reported. There were just 7 case reports. In the right set and setting, consumption of psilocybin and psilocin can have exceptional medical benefits. I have been present at numerous psychedelic mushroom conferences where *Psilocybe* mushrooms were consumed. While events involving alcohol can be very boisterous and sometimes turn violent, even deadly, events involving psilocybin are very quiet and peaceful. In hundreds of cases where I have observed *Psilocybe* use, I have never observed a “bad trip” (and yes, on all but one occasion, I was simply an observer). However, misuse can have significant adverse consequences. In one example, a “bemushroomed” individual consumed an assortment of small brown *Entoloma* species and was severely poisoned. In a second incident, the individual experienced temporary paralysis, but fortunately was in a safe location and so no long-term harm resulted. The information from Paul Kroeger and Raymond Li about cases handled by the B.C. Poison Center illustrates that poison centers regularly deal with “bad trips”. In two B.C. cases and one other Canadian case, two involving purchased *Psilocybe cubensis* and one involving purchased *Psilocybe cyanescens*, the symptoms do not match what I would expect from a simple “bad trip”, but lead me to suspect that the purchased mushrooms had been adulterated with additional, more dangerous, psychoactive substances.

Isoxazoles, mainly muscimol and ibotenic acid, were the toxins involved in a total of thirteen cases reported to NAMA. The mushrooms involved were *Amanita multisquamosa* (2 cases), *Amanita muscaria* (5 cases), and *Amanita pantherina* (6 cases). In the case of one adult, atropine was used in treating an *Amanita muscaria* poisoning victim. Atropine is contraindicated in isoxazole cases since it exacerbates the toxicity of ibotenic acid and muscimol. The individual had consumed a very large quantity of mushrooms and after the initial treatment wound up with respiratory failure and an 8-day

hospital stay, very severe symptoms considering that full recovery normally occurs within 24 to 48 hours. In one case, a young child consumed an entire *Amanita pantherina* cap. In a quick trip to the hospital, the child was treated with activated charcoal prior to any symptoms. Similarly, a young child who had consumed a roughly 15 cm piece of *Amanita muscaria* was rushed to the hospital, treated with activated charcoal, and did not develop any poisoning symptoms. *Amanita muscaria* and *Amanita pantherina* are both frequently consumed by individuals intent on getting high. However, consumption with the intent of getting high was only mentioned in one report. Isoxazoles are very nasty compounds to use to get high. Frequently, there is no memory of the event afterwards and the hospital bill for treatment can be significant.

This report contains the first record of a human death due to muscarine (a *Clitocybe* species). Muscarinic symptoms are perspiration, lachrymation, and salivation accompanied by pinpoint pupils and gastrointestinal distress.

In examining animal poisoning cases, I continue to be struck by how frequently dogs (rarely cats) consume either *Amanita muscaria* or *Amanita pantherina.* Neither of these species is deadly in humans, but both can be lethal to cats and sometimes to dogs as well. The main toxins are ibotenic acid and muscimol. A confounding factor in treating cases involving *Amanita pantherina* and *Amanita muscaria* (as well as several other closely related species) is that they also contain some muscarine, which produces PSL symptoms (including perspiration, salivation and lachrymation, pinpoint, versus dilated pupils). Muscarine poisoning is counteracted by careful use of another toxin, atropine. However, atropine intensifies the toxicity of ibotenic acid and muscimol and its use can then lead to death if ibotenic acid or muscimol is present. In one case involving a human, I suspect atropine made matters much worse. In dogs who have consumed *Amanita muscaria* or *Amanita pantherina,* there was at least one death where atropine use was involved.

Debbie Viess, who follows the POISONS group on Facebook, reported that in the spring of 2020, three black domestic ducks rapidly fell ill after consuming *Amanita pantherina* one morning. The symptoms were so serious that the owner had expected to have to

euthanize the ducks. However, 24 hours later, the ducks had recovered completely with just rehydration overnight. This is the first report of any kind of mushroom poisoning NAMA has received regarding birds. Debbie also reported that the POISONS group frequently deals with dogs poisoned by ingestion of *Armillaria* species. However, only one such case was reported to NAMA.

Dog deaths from consumption of mushrooms containing amatoxins remain a critical problem. Survival of a dog after consumption of amatoxins is rare, but not unknown. A ray of hope comes from a recent report, "Clinical recovery of 5 dogs from amatoxin poisoning using an adapted Santa Cruz protocol for people" (R.C. Goupil, 2021). The report from BC of a famous movie star dog surviving consumption of *Amanita phalloides* can probably also be credited to the use of the "Santa Cruz protocol". However, in the one other recent dog case involving use of a biliary drain, the puppy died.

There were deaths of dogs from *Clitocybe* and *Inocybe* species due to muscarine. In addition to the reports that NAMA received, Debbie Viess reported that the POISONS group of Facebook regularly deals with dog poisonings from both *Inocybe* and *Clitocybe.* Atropine is effective in muscarine poisoning cases if ibotenic acid and muscimol are not also present. One other case with very few details involved the death of two dogs who ingested *Amanita* (*Saproamanita*) *thiersii.* This is a first report for this species. In one of the human cases, the people thought that they were consuming *Amanita* (*Saproamanita*) *thiersii* but consumed the very toxic but not lethal *Chlorophyllum molybdites.* Dr. Britt Bunyard and coauthor Jay Justice in Amanitas of North America report that though *Amanita thiersii* is eaten in Mexico, it should be considered toxic. The odor varies from mild to like decaying meat and the taste is mild to bitter metallic.

Table I: Over-all summary of Human cases

| Toxin or Poisoning Syndrome | Number of Cases | Notable observations |
|---|---|---|
| Amatoxins | 10 cases | No deaths. One person survived eating ½ *Amanita bisporigera* and survived without treatment. |
| Isoxazoles | 13 cases | Two young children escaped with no symptoms due to fast treatment. One adult consumed huge quantity and was treated with atropine and experienced respiratory failure – recovered after 8 days. |
| Psilocybin | 7 cases | One probable anaphylactic shock. Two atypically severe cases involving purchased *Psilocybe* species that were likely adulterated. One young child promptly treated had no symptoms from *P. cyanescens* which can cause death in young children. |
| Orellanine | 1 case | Second ever orellanine case reported in North America. Severe kidney damage. |
| Allenic norleucine chlorocrotylglycine | 1 case + 1 possible | Violent poisoning. No mention of typical kidney damage. Always from *Amanita smithiana* |
| Bleeding | None | |
| Alcohol syndrome | None | Cases of possible alcohol reactions due to individual sensitivity recorded under gastro-intestinal cases. |
| Gyromitrin | None | |
| Muscarine | 3 cases + 1 possible | One DEATH from a *Clitocybe* (from 2014). One gastrointestinal case where 1 *Clitocybe* may have been consumed. One severe gastrointestinal case where an *Inocybe* was consumed to get high. One young child case involving part of an *Inocybe*, prompt treatment, and no symptoms. |
| Contamination by *Listeria* | 1 shipment | 4 DEATHS, 31 hospitalized in 17 states |
| Gastrointestinal and/or shock | 130 cases | Many lessons here but the most important is that some people can become sensitive to a mushroom that they have eaten for years. Repeated ingestions of that species can lead to increasing severity of symptoms. Historically has caused deaths from anaphylactic shock. |

Table II: Over-all summary of Animal cases

| Toxin or Poisoning Syndrome | Number of Cases | Notable observations |
|---|---|---|
| Amatoxins | 15 cases 25 dogs | 20 DEATHS, 2 recovery (one from *Amanita phalloides*, one from *Lepiota subincarnata*). Rest largely unknown outcome |
| Isoxazoles | 11 cases 11 dogs + 3 ducks | 3 DEATHS (all dogs). First mushroom poisoning report of any kind involving ducks. Duck symptoms typical for isoxazole poisoning, 24 hour recovery. |
| Muscarine | 12 cases 15 dogs | 2 DEATHS. |
| Psilocybin | none | Dogs are known to seek out and consume *Psilocybe* mushrooms. |
| Gyromitrin | 2 cases | 1 DEATH |
| Gastrointestinal` | 18 cases 19 dogs | 3 DEATHS. Two deaths from unknown toxins in *Saproamanita thiersii.* One death from probable *Panaeolus foenisecii.* |

Table III:
Amatoxin Syndrome: Human Poisoning by the Amanitins

| Species, Date and Location | Number poisoned, sex, age & onset[1] | Symptoms, Treatment and Outcome |
|---|---|---|
| *Amanita bisporigera* (confirmed) 9-27-20 NY | 1F, A, 24 hrs. | Consumed ½ of a raw cap. Diarrhea, intestinal cramps, headache. Survived without treatment. |
| *Amanita bisporigera* group 9-29-18 NY | 1F, A, 8 hrs. | Lightly cooked and ate 2 whole mushrooms. Diarrhea, intestinal cramps, vomiting, nausea, weakness. Hospitalized 5 days, liver condition & treatment unknown. Recovered. |
| *Amanita phalloides* 2-28-19 BC | 1?, ?, ? | Date of actual incident unknown. No treatment details or symptoms. Survived. |
| *Amanita phalloides* 2-28-19 BC | 1F, A, ? | Incident date unknown. No treatment details or symptoms. Apparent suicide attempt by woman with a psychiatric history. Survived. |
| *Amanita phalloides* 10-4-20 BC Consumed? | 1?, YC, 4-5 hrs. | Child vomited but no mushroom material in vomit. Remained well under observation. Mushrooms found in yard, but consumption not observed. |
| *Amanita phalloides*? 6-18-20 BC Awaiting DNA | 1M, A, 6 hrs. | Mushroom bases (marginate bulb, red staining flesh) retrieved from near hazelnut tree. Man had severe vomiting and nausea. Liver enzymes remained normal. Elevated bilirubin. Doing well by day 4. Treatment unknown. |
| *Amanita muscaria* & other species. An amatoxin species also probably present 10-12-18, NH | 1M, A, delayed onset | Consumed multiple fruitbodies of multiple species from yard (intent on getting high). Found unresponsive next day. At day 2, acute kidney failure and seizures. Recovered with IV fluids (highly effective) plus assorted proven ineffective procedures (oral milk thistle, vitamin C). |
| *Conocybe* cf. *filaris* 9-10-19 BC | 1?, YC, no symptoms | Consumed 1 cap. Hospitalized and given activated charcoal. Labs normal. Observed for 72 hrs. and released. |
| *Lepiota lilacina* 8-21-18, UT DNA confirmed | 1M, YC, 12 hrs. | Vomiting, severe stomach cramping after consuming one whole mushroom. Liver enzymes remained normal, released after 48 hours. |
| *Lepiota subincarnata* 10-22-20 NY DNA confirmed | 1M, A, 12 hrs. 1F, A, 12 hrs. | Consumed unknown quantity 2 meals same day. Both developed vomiting, diarrhea, abdominal pain. Both had elevated ALT and AST. F initially developed elevated creatinine and lipase. Treated with IV fluids, N-acetyl cysteine, and charcoal. Both were released after 3 days. |

[1]S = Senior (65+), A = adult (25-64), YA = young adult (13-24), C = child (5-12), YC = child <5

Table IV:
Human Inebriation and Poisoning by Isoxazole Compounds (Muscimol & Ibotenic Acid)

| Species, Date and Location | Number poisoned, sex, age & onset[1] | Symptoms, Treatment and Outcome |
|---|---|---|
| *Amanita multisquamosa* 8-8-18 NY | 1F, A, 2-3 hrs. | Unknown amount consumed. Increasingly drowsy, altered mental state, vomited after 5 hours, then somnolent and responsive only to sternal rub. Admitted to ICU due to abnormal heart rhythm (Mobitz type II heart block that resolved in a few hours). Due to fear of amatoxin poisoning, treated with N-acetylcysteine, oral milk thistle extract, and NG activated charcoal. Mental recovery at about 14 hours, hospital discharge after 2 days. |
| *Amanita multisquamosa* 8-12-18 NY | 1M, A, several hours | Consumed pea-sized piece, then spoonful and then half of a mushroom over a few hours. Ataxia on night of ingestion, balance off. No nausea, but deep sleep (12 hours) with vivid dreams that night. Loquacious next day. No treatment. |
| *Amanita muscaria* 8-22-19, CO | 1F, A, 6 hours | Consumed gills only (for edibles). Vomiting, nausea, headache. |
| *Amanita muscaria* var. *guessowii* 10-5-18, MN (Mistaken for *Amanita hemibapha* var. *ochracea* from native Burma) | 1M, A, 2 hrs.<br>1F, A?, 2 hrs. | Male ate large amount, daughter small amount, lightly cooked. Daughter mild sweating and nausea hospitalized over-night. Father diarrhea, hallucinations, dizziness, sweating, disorientation, vomiting, nausea, swelling of lip and tongue, excessive salivation. Treatment included atropine. Acute respiratory failure and hypoxia for four days, discharged day 8. |
| *Amanita muscaria* 7-22-19 BC | 1?, S, 3.5 hrs. | Unknown quantity consumed raw. Vomiting, diarrhea, twitchy movements. At hospital became drowsy and twitchy. Recovered with antiemetics and supportive care. |
| *Amanita muscaria* 8-3-19 BC | 1?, YC, no symptoms | Consumed approximately 15 cm piece. Treated with activated charcoal, released after observation. |
| *Amanita muscaria* & other species 10-12-18, NH | 1M, A, delayed onset. (Case also reported under amatoxins & due to unknown species) | Consumed multiple fruitbodies of multiple species from yard (intent on getting high). Found unresponsive next day. At day 2, acute kidney failure and seizures. Recovered with IV fluids plus assorted proven ineffective procedures (oral milk thistle, vitamin C) |
| *Amanita pantherina*[2] 4-1-18, WA | 1?, YC or C?, ? | Incoherent, unresponsive to stimulation, restless, warm to the touch, increased salivation, rapid involuntary eye movement, bradycardia, and arrhythmia |
| *Amanita pantherina* 5-22-18, W | 1C, ? | Sick but no details |
| *Amanita pantherina* 4-29-20 WA | No Details | Admitted with altered mental status and myoclonic jerking. Treatment unknown. Resolved overnight. |
| *Amanita pantherina* 9-26-20 NY | 1M, A, 1-2 hrs. | Victim found unconscious in yard with respiratory failure. Given activated charcoal and vitamin B6. Hospitalized with a temp of 100.3 F at last report. No memory of event. |
| *Amanita pantherina* 6-6-17 BC | 1M, A, 3 hrs.<br>1F,A, 3 hrs. | Amount and preparation unknown. One adult unresponsive with some muscle twitching. Second adult brought in later weak and dizzy. Labs normal. |
| *Amanita pantherina* 9-5-17 BC | 1M, YC, no symptoms | Consumed 1 cap raw. Given activated charcoal at hospital. |

[1]S = Senior (65+), A = adult (25-64), YA = young adult (13-24), C = child (5-12), YC = child <5
[2]Presume all *A. pantherina* cases are due to *Amanita pantherinoides.*

Table V:
Human Hallucinogenic Syndrome: Effects of Psilocybin and Psilocin

| Species, Date and Location | Number poisoned, sex, age & onset[1] | Symptoms, Treatment and Outcome |
|---|---|---|
| *Psilocybe cubensis* 2018 Canada | 1M, YA, ? | Hypertension, nausea, abdominal pain, creatinine of 450 mmol/L. Discharged after 5 days, full renal recovery |
| *Psilocybe cubensis* 10-5-19 CA | 1F, A, 5-6 hrs. | Consumed three full specimens dried, raw. Fever, hallucinations, disorientation, drowsiness, weakness, severe epigastric pain, heavy chest, breathing trouble, bradycardia, cardiac arrhythmias, unconscious (low blood pressure). |
| *Psilocybe cubensis* 4-22-18 BC Note: psilocybin and psilocin effects should last about 6 hrs. | 1M, A, ? | Purchased cultivated dried mushrooms. Hallucinating (thought pulse oximeter was frog on his finger), dilated pupils, sort of vomiting mucous. Heavily sedated but became agitated and very violent 12 hrs. post ingestion. Mildly elevated kinase, possibly due to exertion. |
| *Psilocybe cyanescens* 10-31-19 OR | 1M, A, ? 3 others consumed less, no paralysis | Consumed about 14 grams (1/2 ounce). Weakness, paralysis, no muscle strength. No problems previous 19 years. |
| *Psilocybe cyanescens* 10-29-18 BC From yard | 1A, M, 2 hrs. | Consumed soup for breakfast. Seeing blue and room spinning. Pupils dilated, heart rate elevated, hyperventilating. Metabolic acidosis. Discharged afternoon. |
| *Psilocybe cyanescens* 11-13-18 BC purchased | 1M, A, ? | Found confused and acting paranoid. Heartrate slightly elevated. No GI symptoms. Baseline labs OK. Calming medications, temperature became slightly elevated, creatinine kinase quite elevated. Psychosis resolved day 4, creatine kinase levels improving. |
| *Psilocybe cyanescens* 3-11-17 BC | 1M, YC, no symptoms | Consumed about 40% of one cap. Brought to hospital for activated charcoal and observation. Note: in very young children, known to cause high fever, even death. |

[1]S = Senior (65+), A = adult (25-64), YA = young adult (13-24), C = child (5-12), YC = child <5

Table VI:
Long Delayed-Onset Renal Failure in Humans: Orellanine or Cortinarin Poisoning

| Species, Date and Location | Number poisoned, sex, age & onset[1] | Symptoms, Treatment and Outcome |
|---|---|---|
| *Cortinarius rubellus* & lobster mushrooms ±8-7-20 QC | 1M, A, 12+ hrs. | Consumed 5 mature *C. rubellus* + lobster mushrooms, well cooked. Diarrhea, intestinal cramps, vomiting, nausea, weakness, headache. Initial "mild abdominal troubles", sulfur taste to food. Reported to hospital after 18 days of worsening gastrointestinal symptoms. Presented dehydrated and in acute kidney failure, then developed high blood pressure. Six weeks later, kidney function has improved but long-term outcome uncertain. Headaches, abdominal discomfort, fatigue persists. Avoided hospital due to COVID. |

[1]S = Senior (65+), A = adult (25-64), YA = young adult (13-24), C = child (5-12), YC = child <5

Table VII:
Mushrooms prompt Kidney Failure, but Recovery in Humans

| Species, Date and Location | Number poisoned, sex, age & onset[1] | Symptoms, Treatment and Outcome |
|---|---|---|
| *Amanita smithiana* 10-31-18, BC | 1F, A, ? hrs. | Violently ill, abdominal pain, vomiting, diarrhea. Mistaken for "matsutake". No other details. |
| *Amanita smithiana* Possible. 10-1-19 BC | 4?, A, 1-2 hrs. | Three of 4 developed vomiting and diarrhea after 1-2 hrs., fourth after 6 hrs. Treated with activated charcoal and labs done. Improving 12 hrs. post ingestion. Consumed old *Tricholoma murillianum* ("matsutake") plus an unknown species, not available for examination. |

[1]S = Senior (65+), A = adult (25-64), YA = young adult (13-24), C = child (5-12), YC = child <5

Table VIII:
Human Cases Involving Dermatitis, Spore Inhalation, or Contact Effects

| Species, Date and Location | Number poisoned, sex, age & onset[1] | Symptoms, Cause, Treatment and Outcome |
|---|---|---|
| *Agaricus bisporus* "baby bella" 11-28-19 TX | 1F, A, 2 hrs. | Consumed 1 well-cooked mushroom in omelet. Flushing, diarrhea, intestinal cramps, sweating, disorientation, vomiting, rash. Given Benadryl for rash, resolved in 1 hr. |
| *Laetiporus cf sulphureus* 9-13-20 NY | 1F, S, 2 hrs. 1 other also affected | Consumed ¾ cup well-cooked mushrooms. Chills, salivation, dizziness, intestinal cramps, muscle spasms, vomiting, nausea, weakness, rash. Previously just suffered slight indigestion. No treatment given. |
| *Laetiporus sulphureus* 6-1-19 GA | 1F, A, ? Others unaffected | Consumed large amount of boiled, then thoroughly sauteed mushroom. Broke out in hives that lasted a couple of weeks. |
| *Lentinula edodes* "shiitake" 4-17-18, HI | 1F, A, 48 hrs.; 1M, A, unaffected | Consumed 3-4 lightly cooked mushrooms. Severe diarrhea, severe itching rash with raised bumps and red streaks, chills. Received steroid shot, RX for oral steroids, Benadryl, and Zantac. Better after 1 day. |
| *Lentinula edodes* "shiitake" 8-19-18, CA | 1F, A, 48 hrs. | Consumed 1 lightly cooked mushroom. Eczema flare-up, then rash after 48 hrs. – long red parallel lines on nape of neck, then trunk and perimeter of face, then arms and fingers. Cortisone cream and antihistamine. |
| *Lentinula edodes* "shiitake 12-7-18, MT | 1F, A, 24 hrs. | Consumed about ½ pound both raw and cooked. Fever, headache, rash, itching everywhere. Prednisone and Fexofendine did not bring relief. |
| *Lentinula edodes* "shiitake" 10-19-19 MO | 1F, A, 48 hrs. | Consumed 3-4 slices, lightly cooked (in restaurant). Rash developed, treated with methylprednisone, 4 mg dose pack and 0.5% triamcinolone cream |

[1]S = Senior (65+), A = adult (25-64), YA = young adult (13-24), C = child (5-12), YC = child <5

Table IX: Human Gastrointestinal Syndromes from Cooked Mushrooms

| Species, Date and Location | Number poisoned, sex, age & onset[1] | Symptoms, Treatment and Outcome |
|---|---|---|
| *Agaricus bisporus* 11-3-18 OR | 1F, A, 3-4 hrs. | Two cups purchased mushrooms were then well cooked. Diarrhea, intestinal cramps, vomiting, headache. |
| *Agaricus bisporus* 1-18-19, NJ | 1F, A, 4-5hrs. | Unknown amount, lightly cooked. Chills, fever, diarrhea, dizziness, intestinal cramps, sweating, vomiting, drowsiness, nausea, weakness, flu-like symptoms. Treatment IV fluids, anti-diarrhea meds. |
| *Agaricus bisporus* "baby bella" 11-28-19 TX | 1F, A, 2 hrs. | Consumed 1 well-cooked mushroom in omelet. Flushing, diarrhea, intestinal cramps, sweating, disorientation, vomiting, rash. Given Benadryl for rash, resolved in 1 hr. |
| Agaricus bisporus "Portobello" 6-12-18, NC | 1F, A, 1 hr. 1M unaffected | After consuming a 'lot" of well-cooked mushrooms, suffered chills, flushing, diarrhea, intestinal cramps, vomiting, nausea, weakness, heart palpitations. One previous event not as serious. |
| *Agaricus bisporus* "Portobello" cap 9-29-18 OR | 1F, A, 3.5 hrs. 1M, A, 12 hrs. | Consumed 1 large lightly cooked cap. Wife suffered salivation, dizziness, vomiting, nausea, weakness. Husband suffered a short bout of diarrhea. |
| *Agaricus moelleri* 10-9-18 BC | 1M, S, 12 hrs? | Consumed cooked mushrooms that "tasted off" (these would even if fresh). Presented at hospital dizzy, woozy, some nausea. Thought they were "woodland *Agaricus*". |
| *Armillaria* cf. *solidipes* 11-4-18, OR | 4 Adults, ? hrs. | Cooked "honey mushrooms" caused GI problems. No other details. |
| *Armillaria mellea* group 10-2-18, MI | 1M, S, 9 hrs. | Consumed handful of well-cooked mushrooms had eaten for years. Diarrhea, intestinal cramps, nausea, weakness. |
| *Armillaria mellea* group 12-8-19 CA | 1F, A, 8 hrs. 1 other unaffected | Consumed one cup well-cooked. Chills, flushing, diarrhea, intestinal cramps, vomiting, nausea, weakness. |
| *Armillaria tabescens* 11-1-20 GA | 1F, S, 20 hrs. 1 unaffected | Consumed <10 well-cooked caps. Diarrhea, intestinal cramps. No treatment sought. |
| *Boletus huronensis* 8-2-18, ME | 1M, A, 2 hrs. | Consumed ½ of large fruitbody, lightly cooked. Diarrhea, intestinal cramps, vomiting, nausea, weakness. Given IV fluids and Ondansetron (Zofran). Released from ED after several hours. ID from photo. |
| *Boletus huronensis* 9-5-18 ME | 1F, A, 1.5 hrs. 1M, A, 1.5 hrs. | Flushing, intestinal cramps, muscle spasms, vomiting, nausea, weakness, diarrhea, dehydration. Treatment IV fluids, Zofran. Male recovered in 10 hours, female in 12. |
| Porcini (purchased) 2-2-18, NY | 1F, A, 4 hrs. | Vomiting and nausea after 1 ounce reconstituted and cooked 10 minutes on pizza. Alcohol with meal. |
| *Calvatia cyathiformis* or *C. craniformis* ? CT | 1M, A, 4-5 hours | Consumed grilled slices of over-mature puffballs for dinner. Developed nausea and cramps that persisted until the next day. |
| *Calvatia gigantea* 1-19-20 ? | 1 person, no details | Allergic reaction to a meal of cooked mushrooms. Same species had been no problem years earlier. |
| *Cantharellus californicus* 1-12-18, CA | 1F, S, 3 hrs. | Dizziness, intestinal cramps, vomiting, nausea, headache after one well-cooked mushroom. Had been eating this species for 30 years without previous problems. |
| *Cantharellus* sp. 6-1-18, ? | 1M, A, 5.5 hrs. 4 unaffected | Consumed about 10 medium well-cooked fried mushrooms. Chills, flushing, diarrhea, salivation, intestinal cramps, vomiting, nausea. Slight discomfort after 2 previous meals. |

[1]S = Senior (65+), A = adult (25-64), YA = young adult (13-24), C = child (5-12), YC = child <5

Table IX (cont.): Human Gastrointestinal Syndromes from Cooked Mushrooms

| Species, Date and Location | Number poisoned, sex, age & onset[1] | Symptoms, Treatment and Outcome |
|---|---|---|
| *Cantharellus formosus* 11-05-19 OR | 1M, A, 1 hour 2nd unaffected | Consumed 4-5 well-cooked mushrooms. Intestinal cramps, nausea. Activated charcoal at 24 hours (too late to provide relief). No other treatment mentioned. |
| *Chlorophyllum brunneum* 12-31-18 CA | 1M, A, 6 hrs. | Consumed 4-6 ounces well-cooked. Diarrhea, intestinal cramps, nausea, weakness, gas, bloating. |
| *Chlorophyllum molybdites* 10-2-18 VA | 1F, A, 1 hour 1?, A, 1 hour | Two people shared one well-cooked cap. Chills, diarrhea, dizziness, intestinal cramps, vomiting, nausea, weakness, blood in vomit & diarrhea. Identified as "Shaggy Manes". |
| *Chlorophyllum molybdites* 9-4-18 | 1M, A, 4.5 hrs. | Consumed unknown quantity. Vomited 4.5 hrs. later, then diarrhea and cramps. Felt better about 13.5 hours post ingestion. No treatment sought. |
| *Clitocybe* sp. 2014, East Coast | 1F, S, 0.5 hr. | Sweating, vomiting, diarrhea, abdominal pain, respiratory distress. Muscarinic symptoms. Treatment unknown. ID from stomach contents. DEATH |
| *Crepidotus* species 9-3-20 WI | 1F, A, 1 hour | Consumed ½ cup well-cooked. Diarrhea & disorientation. Recovery in a few hours. Expected "angel wings". |
| *Entoloma* (*lividum* complex) 9-22-20 MI | 1F, A, ? One other affected | Consumed a handful of well-cooked mushrooms. Chills, flushing, diarrhea, dizziness, intestinal cramps, sweating, disorientation, muscle spasms, vomiting. Treatment IV fluids, nausea meds, activated charcoal. Identified as "fawn mushrooms" from pink spore print. |
| *Grifola frondosa* "Maitake" 11-22-20 CA | 1F, A, ? | Consumed about 1 ounce of lightly cooked commercially grown maitake. Chills, intestinal cramps, muscle spasms, nausea, weakness, headache, slightly elevated temperature, muscle ache, loose stool. COVID-19 test negative. |
| Maitake 11-09-18, MD | 1F, A, 2.5 hrs. 1M?, A? Fine | Consumed an ounce well-cooked mushrooms. Diarrhea and vomiting. Second person not affected. |
| *Grifola frondosa*, "hen of the woods" 9-18-19 WI | 1F, A, 1 hour 1 other unaffected | Consumed three bites of a well-cooked mushroom. Flushing, salivation, dizziness, vomiting, nausea. |
| *Grifola frondosa* 9-27-19 MI | 1F, A, 2-3 hrs. | Consumed 3-4 ounces fresh weight, well cooked. Intestinal cramps, vomiting. Consumed twice fine, then once with minor stomachache, then this stronger reaction. |
| *Gyroporus castaneus* 8-16-20 TX | 1M, A, 0.12 hrs. | Consumed 1 cap the size of a nickel, cooked and consumed with alcohol. Flushing, tachycardia, facial numbness and swelling, heaviness swallowing. Treatment Benadryl 50 mgs. Rapid recovery. |
| *Hericium erinaceus* 11-6-18 OR | 1M, A, ? hrs. | Cooked "moderate amount". Soft stool, vomit, gastric upset. Tried again, same result. |
| *Hygrocybe punicea* 2-24-19 CA | 1M, A, 3 hrs. | 25 grams (about 1 ounce) fresh was well-cooked. Diarrhea, vomiting, nausea. Previously no problems. |
| *Hypholoma sublateritium* 10-7-18, WA | 1F, S, 7 hrs. | Consumed ½ pint of well-cooked commercially grown mushrooms. Diarrhea, intestinal cramps, sweating, vomiting, nausea. No treatment. |
| *Hypomyces lactiflorum* 8-18-18 NC | ?, ?, ? | Vomiting, diarrhea. Had eaten this species for years. This is first adverse effect for this individual. |
| *Hypomyces lactiflorum* 8-23-18, AZ | 1F, A, 2 hrs. 1M, A, no effect | Consumed 2 small, well-cooked pieces. Intestinal cramps, vomiting, nausea. Possibly second adverse effect after many previous problem-free meals of this species. |

[1]S = Senior (65+), A = adult (25-64), YA = young adult (13-24), C = child (5-12), YC = child <5

Table IX (cont.): Human Gastrointestinal Syndromes from Cooked Mushrooms

| Species, Date and Location | Number poisoned, sex, age & onset[1] | Symptoms, Treatment and Outcome |
|---|---|---|
| *Hypomyces lactiflorum* 9-27-19 OR | 1M, A, 5 hrs. | Consumed ½ of a well-cooked mushroom. Chills, intestinal cramps, sweating, vomiting, nausea, weakness, headache. Given IV fluids. |
| *Laccaria laccata* 11-11-18 WA | 1M, A, 0.3 hrs. | After a meal of well-cooked mushrooms felt unusual and lingering symptoms including weakness, feeling slightly high, shortness of breath, stronger heartbeat, coldness, slight upset, general sense of vulnerability. |
| *Lactarius indigo* & tan *Lactarius*, possible other substances 8-27-18, VT | 1F, A, 8 hrs. | Unknown quantity, well-cooked. Salivation, sweating, disorientation, nausea, headache, dilated pupils, increased heart rate, confusion, psychotic history, other substances? IV fluids, anti-nausea meds. Ill for 36 hours. |
| *Laetiporus* cf. *sulphureus* 9-13-20 NY | 1F, S, 2 hrs. 1 other also affected | Consumed ¾ cup well-cooked mushrooms. Chills, salivation, dizziness, intestinal cramps, muscle spasms, vomiting, nausea, weakness, rash. Previously just suffered slight indigestion. No treatment given. |
| *Laetiporus sulphureus* 9-12-20 MA | 1F, A, 0.5 hrs. 1M, A, 0.5 hrs. | Consumed well-cooked mushrooms. No gastrointestinal issues. F reported 15-20 minutes of throat tightening, then 1-2 hrs. light-headedness. M described mild brain fog and lightheadedness plus relaxation for about 6-7 hrs. |
| *Laetiporus conifericola* or *L. gilbertsonii*, 12-31-18, CA | 1M, A, 1 hour | Consumed a couple of bites of well-cooked mushroom. Flushing, dizziness, intestinal cramps, sweating, disorientation. No treatment. |
| *Laetiporus species* (sulfur shelf) 3-21-20 MD | 1M, A, 3 hrs. 1 other unaffected | Consumed small amount lightly cooked, no negative effects. After freezing and then reheating, a second meal produced vomiting. |
| *Leccinum "aurantiacum"* 11-13-20 AK | 1M, A, 1 hour 1 other unaffected | Consumed one lightly cooked slice on a pizza. Diarrhea, intestinal cramps, vomiting, drowsiness, nausea, weakness, headache. |
| *Leccinum manzanitae* 12-20-18, CA | 1M, A, 16-18 hrs. | Victim consumed a quarter sized piece of well-cooked mushroom and had chills, fever, diarrhea, intestinal cramps, sweating, vomiting (friend ate 3 pounds over 2 days with no adverse effect) |
| *Leccinum versipele* 9-15-20 CA | 1M, A, 5 hrs. | Consumed one well-cooked medium sized cap. Chills, diarrhea, intestinal cramps, vomiting, nausea, weakness, headache. No treatment sought. |
| *Lentinula edodes* "shiitake" 8-28-19, ? | 1M, A, 3.5 hrs. 5 others unaffected | Consumed about ½ cup lightly fried (previously freeze-dried, commercial). Diarrhea, sweating, vomiting, nausea, abdominal cramps. |
| *Lentinula edodes* (commercial shiitake), 4-16-18, AR | 1F, SA, 0.75 hr. | Consumed ½ cup well-cooked no problem, next night consumed reheated leftovers. Chills, flushing, diarrhea, salivation, intestinal cramps, vomiting, drowsiness, nausea, headache. No rash but itchy skin. |
| *Morchella americana*, 5-18-18, ID | 1F, A, 11.5 hrs. One unaffected | Consumed 10-12 lightly cooked caps. Chills, diarrhea, intestinal cramps, weakness. No prior morel problems. |
| *Morchella americana* 2-1-18 OR | 1F, A, 1 hour (No previous problems) | Consumed ½ cup diced and well cooked. Dizziness, intestinal cramps, disorientation, muscle spasms, heart rate 150 for 1 hour. EKG and blood work normal. |

[1]S = Senior (65+), A = adult (25-64), YA = young adult (13-24), C = child (5-12), YC = child <5

Table IX (cont.): Human Gastrointestinal Syndromes from Cooked Mushrooms

| Species, Date and Location | Number poisoned, sex, age & onset[1] | Symptoms, Treatment and Outcome |
|---|---|---|
| Grey and half-free *Morchella* species 4-13-20 PA | 1F, A, 3 hrs. One unaffected | Consumed 7 well-cooked with alcohol. Chills, flushing, fever, dizziness, intestinal cramps, sweating, vomiting, drowsiness, weakness. No problems when consumed by same person without alcohol. |
| *Morchella populiphila* 4-2-20 OR | 1M, A, 2 hrs. one unaffected | Consumed <1/8 pound, well cooked. Chills, flushing, diarrhea, intestinal cramps, nausea, sensitivity to sound and smell, body numbness, anxiety. Previous meal fine. |
| *Morchella* sp. 5-15-19, MI (definite true morels) | 1F, A, 10-12 hrs. 1M, A and 1 other unaffected | One small well-cooked serving per day over three days then dizziness, disorientation, muscle spasms, nausea, severe vertigo. Given IV fluids, relaxant, anti-nausea meds. Recovery 18-24 hrs. |
| *Morchella?* or "False morel"? 5-11-18, IA | 1F, A, 12 hrs. 2C unknown effect | Fried pan of lightly cooked morels on 2 occasions. Both times chills, flushing, fever, diarrhea, hallucinations, dizziness, intestinal cramps, disorientation, vomiting. Treatment, IV fluids, Ativan, pain meds. |
| *Neolentinus lepideus* or *N. ponderosus* 6-29-20, ID | 1F, A, 12 hrs. 2M, YA less affected | Female consumed 4 slices of well-cooked mushroom and was most affected. Diarrhea, dizziness, drowsiness, headache, chest pain, flushed and tingly. One son headache, other trouble breathing. |
| *Omphalotus illudens* 9-1-18 NY | 1M, A, 8 hrs. | Consumed 7-8 mushrooms (unclear if more than one species). Nausea and vomiting after 8 hours. Photo of 2 clumps old mushrooms. Thought he had chanterelles. |
| *Panaeolus foenisecii* 6-9-19, ? | 1A, ?, 0.2 hrs. | Prepared tea from two dried mushrooms. Consumed half cup and head hurt, then stomach hurt. |
| *Pholiota adiposa* (grown from a liquid culture kit) 10-10-20 IA | 1F, A, 8.5 hrs. | Consumed ½ pound lightly cooked (previously eaten without problem). Chills, fever, diarrhea, salivation, dizziness, sweating, vomiting, drowsiness, nausea, weakness. Treatment IV fluids, activated charcoal, Ativan. |
| *Pleurotus ostreatus* 1-16-20 ? cultivated | 1F, A, 1 hour 2nd person – same 3rd no problem | Grew oysters from kit and consumed ½ to ¾ cup well cooked. For first two, first meal no alcohol, no problem. Alcohol with second meal. Dizziness, vomiting, nausea, headache. One person alcohol both meals, no problem. |
| *Sarcodon rimosus* 10-22-20 BC | 1F, A, ? | Consumed a bowl of well-cooked mushroom soup. Chills, dizziness, nausea, headache. Liver enzymes were elevated. |
| *Scleroderma* cf. *areolatum* 10-7-19 ME | 1M, S, 3-4 hrs. | Consumed ½ of medium size mushroom, well cooked. Hallucinations, disorientation, vomiting, nausea, weakness, tiredness. Treatment not reported. |
| *Scleroderma citrinum* 7-6-19, MA | 1M, A, 1.25 hrs. | Nausea, vomiting after consuming ½ of one well-cooked mushroom misidentified as *Lycoperdon pyriforme* |
| *Sutorius (Tylopilus) eximius* 8-6-18 VT | 3F, A, 2.5 hr. 1M, A, 2.5 hr. | Well-cooked mushrooms. Diarrhea, intestinal cramps, vomiting, nausea, weakness. Given IV fluids and Ondansetron (Zofran). Released from ED after 4 hours. |
| *Sutorius eximius* 7-20-19 ME | 1M, A, 4 hrs. 1?, ?, ? | Consumed about ½ cup well-cooked mushrooms. Chills, diarrhea, intestinal cramps, vomiting, nausea, weakness. Treatment IV fluids, antinausea meds. Recovery > 16 hours. Second person consumed less, less affected. |
| *Sutorius (Tylopilus) eximius* 7-15-18 VT | 1F, A 4 hrs. 1?, A?, 4 hrs. | Consumed ½ of one young mushroom, well-cooked. Fever, diarrhea, intestinal cramps, sweating, vomiting, nausea, weakness, headache. IV fluids and anti-nausea drugs. |

[1]S = Senior (65+), A = adult (25-64), YA = young adult (13-24), C = child (5-12), YC = child <5

Table IX (cont.): Human Gastrointestinal Syndromes from Cooked Mushrooms

| Species, Date and Location | Number poisoned, sex, age & onset[1] | Symptoms, Treatment and Outcome |
|---|---|---|
| *Sutorius eximius* 8-26-20 NS | 1M, A, 3 hrs. 2 others also ill | Consumed 2 well-cooked caps after previous small meal had no adverse effects. Intestinal cramps, nausea, headache. Expected *Neoboletus luridiformis.* |
| *Trametes versicolor* 11-1-20 ? | 1F, ?, ? | Stomach upset from cup of 'turkey tail" tea. Mushrooms in photo looked over the hill. |
| *Tricholoma populinum* 10-15-18 WA | 1M, A, ? 1M C, ? | They consumed part of 1 cooked mushroom thinking it was "fried chicken mushroom". Symptoms not reported. |
| *Turbinellus floccosus* or *kauffmanii* 8-13-20 WA | 1M, A, 8 hrs. 1 other adult ill | ½ pound fresh, well cooked. Both suffered diarrhea, intestinal cramps, headache. Expected "white chanterelles" |
| *Volvariella volvacea* 12-11-20 TX | 1F, A, 11 hrs. | Consumed about 1 cup lightly cooked at restaurant. Diarrhea, burning urination like a UTI. |

[1]S = Senior (65+), A = adult (25-64), YA = young adult (13-24), C = child (5-12), YC = child <5

Table X: Human Gastrointestinal Syndromes from Mixed Collections

| Species, Date and Location | Number poisoned, sex, age & onset[1] | Symptoms, Treatment and Outcome |
|---|---|---|
| *Armillaria* sp. *Inocybe* cf. *sindonia* 10-18-18 BC | 1M, A, 2.5 hrs. | Consumed about 7 grams from roadside to get high. Felt high at first, then severe vomiting and nausea. Received anti-emetics. Labs normal. |
| *Boletus edulis* (purchased porcini) & *Agaricus bisporus* 2-9-20 NY | 1F, S, 3 hrs. Husband not affected | Consumed one bowl mushroom soup with alcohol. Flushing, headache, rapid pulse, pounding in chest, slightly short of breath. No problem when consumed without alcohol or by husband who drank little. |
| *Boletus mirabilis*, *Armillaria* sp., *Crepidotus* sp. 10-16-18 BC | 1M, A, 12+ hrs.? | Patient said he consumed only 6 "Galerina-like caps" which would likely be the *Armillaria* (honey mushrooms). Suffered abdominal pain, cramping, and mildly loose stools. Lab work normal. No treatment indicated. |
| *Cantharellus subalbidus Hypomyces lactiflorum* + possible *Amanita* 9-29-20 BC | 1F, A, 4 hrs. | Consumed a portion of mixed cooked mushrooms. Vomited about 10 times, watery diarrhea. Low serum potassium, otherwise normal labs. Third mushroom very whitish and soft texture like an *Amanita.* |
| *Entoloma* species and some other species 4-14-20 ? | 1M, A, ? | Bemushroomed with *Psilocybe azurescens*, he consumed several small *entolomas etc.* Watery stools, dull ache in left side of abdomen (possibly from alcohol abuse). |
| *Leccinum manzanitae* + *Cantharellus formosus* 10-06-19 OR | 1F, A, 6 hrs. 1 similarly affected, 1 less affected | Four to 5 adults shared two well-cooked boletes, five chanterelles. Two suffered chills, diarrhea, disorientation, vomiting, nausea, weakness, headache. Treated with activated charcoal and IV fluids. I blame the *Leccinum.* |
| *Pleurotus ostreatus* with a *Clitocybe* sp. Fall 2018, IL | 1M, A, 3 hrs. | About 0.5 ounces of well-cooked white-spored mushrooms (photo included one *Clitocybe*) with alcohol. Chills, diarrhea, generally strange feeling, anxiety, restlessness. |
| Dried mushroom mix 4-21-20 VA | 1F, S, 3 hrs. | Consumed about ¼ cup well-cooked. Flushing, diarrhea, intestinal cramps. Commercial product. |
| *Boletus edulis* "and related groups" 5-22-20 CA | 1F, A, 1.5 hrs. 1?, A, 1.5 hrs. | Two individuals consumed about 10 grams (1/3 ounce) of imported dried mushrooms. Both experienced diarrhea and intestinal cramping. |
| *Hericium erinaceus* and "some other kind" 7-18-20 VA | 1F, A, 2-5 hrs. | Consumed a "decent amount" of well-cooked mushrooms purchased at a drive through. Vomiting, nausea, upper gastrointestinal discomfort. |

[1]S = Senior (65+), A = adult (25-64), YA = young adult (13-24), C = child (5-12), YC = child <5

Table X (cont.): Human Gastrointestinal Syndromes from Mixed Collections

| Species, Date and Location | Number poisoned, sex, age & onset[1] | Symptoms, Treatment and Outcome |
|---|---|---|
| *Sparassis* and "black trumpets" 8-9-20 NC | 1F, A, 10 hrs. | Consumed 1 cup of cooked *Sparassis* and some black trumpets with ½ glass wine. Vomiting, nausea, headache. |
| Mixture of species, several known to be toxic 9-30-20 Canada | 1F, A, 1.5 hours | Consumed 3 well-cooked mushrooms from pile. Salivation, dizziness, disorientation, nausea, headache. Awoke with puffy face & blurred vision. Recovery 48 hrs. |
| Purchased dried mixed mushrooms 8-24-20 ? | 1F, A, 24 hrs. | Consumed 7.5-ounce mushrooms well cooked. Intestinal cramps, nausea, weakness, waves of nausea, abdominal pain, odd smelling stool. Symptoms persisted 10+ days. |
| *Russula & Lactarius* 8-10-19 PA | 1M, A, ? | Consumed several mushrooms, one peppery. Preparation not reported. Hypothermia, sweating profusely. |
| Matsutake, chanterelles, & boletes, 10-20-18 WA | 1F, S, 11 hrs. | Consumed raw and lightly cooked mushrooms at a B&B mushroom-themed dinner. Diarrhea, vomiting, and weakness with weakness persisting for several days. |
| *Hypomyces lactiflorum* and *Retiboletus ornatipes* 9-5-18 ME | 1M, S, 72 hrs. | Consumed 1 *R. ornatipes*, several *H. lactiflorum*, cooked. Creatine levels 7+ and rising on day 6. Acute tubular necrosis and interstitial nephritis. Prednisone and kidney dialysis for 3 days. Symptoms slowly resolving. |

[1]S = Senior (65+), A = adult (25-64), YA = young adult (13-24), C = child (5-12), YC = child <5

Table XI:
Human Cases Involving raw, unknown preparation, and/or spoiled mushrooms

| Species, Date and Location | Number poisoned, sex, age & onset[1] | Preparation, Symptoms, Treatment and Outcome |
|---|---|---|
| *Agaricus bisporus*? 4-5-18, GA | 1F, A, 17 hrs. | Consumed 6 lightly cooked mushrooms from open jar unrefrigerated for 4 days, then ate a few more. Chills, flushing, diarrhea, cramps, dizziness, nausea, headache. "Not tasting right." |
| *Agaricus bisporus* 6-14-18, SC | 1M, S, 2.5 hr. | Consumed a little over half of a lightly cooked stuffed mushroom appetizer for 2. Chills, diarrhea, dizziness, disorientation, vomiting, nausea, thirst. |
| *Agaricus bisporus* "crimini" 12-11-18, CA | 1F, A, 0.5 hrs. | Consumed raw. Chills, diarrhea, intestinal cramps, nausea. |
| *Agaricus bisporus* 5-21-19 | 1F, A, 1.5 hrs. | Consumed 50-6 whole, lightly cooked mushrooms that had started to age/shrivel in fridge. Passed out but had recovered 1 hour later. |
| *Agaricus* section *Derematii* 11-2-18, WA | 1M, A, 12 hrs. | Abdominal discomfort. Victim thought he was eating "shaggy manes" |
| *Agaricus hondensis* 10-23-18 BC | 2 friends, A, 2-3 hrs. | Consumed unknown quantity for supper (cooking not specified). Vomiting, abdominal cramps, verge of diarrhea, dizziness. One less affected. Mistaken for *A. campestris*. |
| *Agaricus xanthodermus* (probable) 9-21-18 CA | 1F, A, 1.5 hrs. | Consumed ½" x ½" piece raw. Diarrhea, sweating, uncontrollable vomiting. |
| *Agaricus* section *Xanthodermatei* 10-03-20 BC Awaiting DNA | 1F, A, 0.5 hr. | Consumed a few bites for breakfast. In ½ hr. had ½ hr. of nausea. Consumed more at dinner (cooked? raw?) and had vomiting, diarrhea, and abdominal pain lasting 2 hours, requiring hospitalization |
| *Agaricus* sp. 10-7-19 BC Awaiting DNA | 1?, YC, 10 hrs. | Child seen holding dirty mushrooms, but mouth was clean. Vomited several times. Seemed recovered when arrived at emergency department. No further symptoms. |

[1]S = Senior (65+), A = adult (25-64), YA = young adult (13-24), C = child (5-12), YC = child <5

Table XI (cont.):
Human Cases Involving raw, unknown preparation, and/or spoiled mushrooms

| Species, Date and Location | Number poisoned, sex, age & onset[1] | Preparation, Symptoms, Treatment and Outcome |
|---|---|---|
| *Armillaria* sp. 10-23-18 NY | 1M, A, 2-3 hrs. 1F, A, 2-3 hrs. | M consumed 1 raw. F consumed some under-cooked. Both developed nausea, vomiting, chills. Purchased mushrooms. |
| *Cantharellus* species 11-?-20 OR | 1 person, no details | Severe gastrointestinal distress. Hospitalized overnight and released after blood work-up. No other details. |
| *Cantharellus formosus* 9-19-19 BC Haida Gwaii | 1M, S, 6 hrs. Friend asymptomatic | Consumed unknown quantity, unknown preparation. Intermittent sweating, nausea. Slightly elevated liver enzymes approaching normal later in day. |
| *Chlorophyllum molybdites* 08-02-20 ? | 1M, A, 3.5 hrs. 1F, A, 3.5 hrs. 1F, YC, 3.5 hrs. | Vomiting, nausea. |
| *Chlorophyllum molybdites* 8-2-20 NC | 1M, S, 2 hrs. | Consumed 6-8 medium sized raw mushrooms. Chills, diarrhea, intestinal cramps, muscle spasms, vomiting, nausea. Self-treated with Pepto Bismol and adult electrolyte solution. Expected *Amanita* (*Saproamanita) thiersii* |
| *Chlorophyllum molybdites* 8-20-20 GA | 1M, A, 1 hour 2nd person also ill | Two people consumed 2-3 caps raw. Flushing, diarrhea, dizziness, intestinal cramps, sweating, disorientation, muscle spasms, vomiting, drowsiness, nausea, weakness, headache, low blood pressure. One in ICU for 48 hours. |
| *Chlorophyllum molybdites* 8-22-18 VA | Whole family No details | Family picked and consumed unfamiliar mushrooms in apartment courtyard. Vomiting, stomach pains. |
| "chaga" 2014, BC | 1M, S, ? | Report of a 2014 case that resulted in hepatitis and renal failure. No information on preparation |
| "chaga" 2015, BC | 1F, A, ? | Consumed "chaga" tea. Vomiting and some confusion for three days. Elevated liver enzymes, elevated serum creatinine, and coagulopathy |
| "chaga" 2016, BC | 1F, A, 1 hour | Feeling lightheaded and tingly after consuming one cup of "chaga" tea from a store. |
| "chaga" 2019, BC | 1M, A, ? | Drinking "chaga" tea intermittently for 3 weeks but since starting was experiencing fatigue, light headedness, body aches, and plugged ears. May be another cause. |
| "chaga" 2011, BC | 1A, ?, ? | Frequently consumed "chaga" tea from a sealed container and developed gastrointestinal distress from moldy tea with a musty actinomycete-like odor. |
| "chaga" 08-14-20 NJ | 1M, A, delayed | Used "chaga" tea for 2 weeks. Lower trunk and legs turning purple. Blood work-up abnormal. Given platelets. |
| "chaga" 5-10-18 BC | 1M, A, delayed | Male drinking "chaga" tea (simmered 4 hours) intermittently for 3 weeks. Had been experiencing fatigue, light-headedness, body aches and plugged ears since starting tea. Called when vomiting began. Recovered. |
| *Chlorophyllum brunneum* 10-10-18 BC | 1M, A, 1 hour | Consumed a big bite from a brown mushroom. Dizziness and nausea. No treatment details. |
| *Conocybe apala* 7-30-19 BC (not the mushroom?) | 1?, C, 48 hrs. | Consumed small portion of cap from lawn and 48 hours later diarrhea. Neutrophils slightly elevated. Had also swallowed swimming pool water. |
| *Coprinopsis atramentaria* 6-6-17 BC | 1M, A, 5-6 hrs. | Quantity and preparation unknown. Flushing, swelling around eyes, sometimes hyperventilating, vomiting lasting 2-3 hrs., some lingering abdominal pain. Labs normal. |

[1]S = Senior (65+), A = adult (25-64), YA = young adult (13-24), C = child (5-12), YC = child <5

Table XI (cont.):
Human Cases Involving raw, unknown preparation, and/or spoiled mushrooms

| Species, Date and Location | Number poisoned, sex, age & onset[1] | Preparation, Symptoms, Treatment and Outcome |
|---|---|---|
| *Entoloma* subspecies *Nolanea* or *Leptonia* 4-21-20 ? | No details | Nausea, vomiting, intestinal cramps, gas, lethargy, frequent urination, burning thirst, headache, sensations of coldness, shivering, hot flashes with sweating, gastrointestinal upset, severe lower back pain. |
| *Fulviformes inermis* "Corky flat conk" ?-?-18, CA | 1M, ?, ? | Patient presented with severe immunologic disease and developed lung disease. *F. inermis* cultured from respiratory fluid. |
| *Hericium erinaceus* "lion's mane" 5-21-20 ? | 1F, A, 4.5 hours 1 other also ill | Consumed a large and relatively uncooked amount of home grown "lion's mane". Gastrointestinal discomfort, intense nausea, felt intense urge to vomit. |
| *Hericium erinaceus* 9-26-20 ? | 1F, A 12 hrs. | Consumed 1 gram of raw mushroom that had been grown from a liquid culture and 'planted" outside. Appeared spoiled in photo. |
| *Inocybe* cf. *geophylla* 1-5-19 B.C. | 1?, YC, no symptoms | Consumed dime size piece. Treated with activated charcoal. No symptoms. |
| *Leccinum atrostipitatum/insigne* group, 8-21-18, ME | 1F, A, 1 hour | Consumed several bites. Vomiting, nausea, weakness. Treatment IV fluids and Zofran. Released after several hours in ED. |
| *Leccinum* 8-21-18, VT | 1F, A, ? | Consumed some raw. Vomiting for 2 hours |
| *Leccinum* sp. 8-01-20 CO | 1F, C, 6 hours | Consumed raw. Vomiting. Expected porcini (*Boletus edulis*). |
| *Listeria monocytogenes* food poisoning from "Enoki" Mushrooms 6-10-20 17 States | 36 people sick in 17 states, 31 hospitalized. | Nationwide food poisoning case from imported "Enoki" mushrooms (cultivated *Flammulina velutipes*) resulting in 4 dead and 31 hospitalized. Symptoms high fever, stiff neck, severe headache, muscle aches, nausea, diarrhea. |
| *Marasmius oreades* 7-22-20 BC | 1?, YC, 12 hrs. | Consumed very old mushrooms from lawn, raw. Abdominal cramps. At 36 hrs. some diarrhea, continuing abdominal pain. Elevated blood urea nitrogen (dehydration?). |
| *Neolentinus lepideus* 6-25-20 NH | 1F, YC, 2.5 hrs. | Consumed a couple of bites raw. Intestinal cramps, vomiting, nausea. Treatment IV fluids and Zofran. |
| *Paxillus involutus* group 10-15-17 BC | 1F, YC, no symptoms | Consumed small piece of mushroom. Diarrhea all previous week but not day of ingestion. Given activated charcoal. Note: normally causes problems only on later ingestions. |
| *Pholiota* sp. 11-11-18 BC Awaits DNA | 1F, C, 2 hrs. | Consumed mushroom from playground field? (but claims only to have held it). Presented in ED with abdominal cramping. Still reported cramping 3 hrs. later. |
| *Pleurotus ostreatus* (commercial blue) 3-18-18, MD | 1F, A, 0.75 hr. | Consumed several raw stipes. Chills, flushing, diarrhea, intestinal cramps, sweating, muscle spasms, vomiting, drowsiness, weakness, headache, blotchy skin on face. |
| *Protostropharia cf dorispora* 6-27-19 BC | 1?, YC, 0.75 hr. | Found holding mushroom from manure pile. Started difficult to control screaming. Assessed for 3-5 hours and released. |
| *Rubroboletus* sp. 7-26-20 BC Awaiting DNA | 2?, A, 2 hrs. | Gastrointestinal distress. Only old, slightly decomposed piece of cap for ID |
| *Scleroderma cepa* group, 9-1-18, WA? | 1?, YC, ? | Infant foraging incident. Three spells of vomiting. |

[1]S = Senior (65+), A = adult (25-64), YA = young adult (13-24), C = child (5-12), YC = child <5

Table XI (cont.):
Human Cases Involving raw, unknown preparation, and/or spoiled mushrooms

| Species, Date and Location | Number poisoned, sex, age & onset[1] | Preparation, Symptoms, Treatment and Outcome |
|---|---|---|
| *Scleroderma* sp. 7-7-17 BC | 1M, A, fast | Consumed 1 bite of a raw "puffball". Nausea, blurred vision, weak, dizzy. Full recovery 3-4 hrs., no treatment. |
| *Tricholoma focale* 10-15-18, WA? | 1F, A, ?<br>1M, A, ? | Vomiting after consuming old wormy mushrooms mistaken for Matsutake. No other details. |
| *Tubaria* sp. 3-16-17 BC | 1M, YA, 0.5 hr. | Consumed 1 mushroom from park. Mild stomach upset. |

[1]S = Senior (65+), A = adult (25-64), YA = young adult (13-24), C = child (5-12), YC = child <5

Table XII: Poisonings of Animals

| Species, Date and Location | Animal, Age & onset[1] | Symptoms, Treatment and Outcome |
|---|---|---|
| *Agaricus* sp. (probable) 9-25-18 CO | Dog, 0.6, ? hrs. | Diarrhea, vomiting, drowsiness, nausea, weakness. Vet treatment. Recovered after 2 days. |
| *Amanita ocreata* 3-29-18, CA | Dog, 1.2, 10 hrs. | Vomiting and diarrhea rapidly followed by fulminant liver failure with sever hypoglycemia, coagulopathy. DEATH |
| *Amanita ocreata* or *Amanita phalloides* 2-28-19, CA | Dog, ?, ? | French bulldog ate mushrooms in yard and was taken to Vet before symptoms. Liver failure and neurological damage. DEATH within 24 hours |
| *Amanita phalloides* or *A. ocreata* 7-?-19 CA | 10 Puppies, ?, ? | Ten puppy DEATHS in one 2-week period at one Pet Care Vet Hospital. |
| *Amanita phalloides* 7-2-19 CA | Puppy, 0.3 yr., 8 hrs. | Consumed three mushrooms and vomited. Vet treatment unknown. DEATH the next day. |
| *Amanita phalloides* 3-11-2019, CA | 2 Dogs, ?, ? | Seizing, shaking uncontrollably. No other details our outcome. |
| *Amanita phalloides* 3-20-19, CA | Dog, ?, ? | Low blood pressure, low body temperature. No other details. Survival was predicted but outcome unknown. |
| *Amanita phalloides* 6-12-19 CA | Puppy, 0.3 yr. 6 hrs. | Diarrhea, vomiting, drowsiness, lethargy. Treatment IV fluids, cysteine, plasma transplant. DEATH |
| *Amanita phalloides* 10-16-19 BC | Puppy, 0.3 yrs., ? | Dog DIED 2 days after going to vet. Death caps located in yard after puppy died. |
| *Amanita phalloides* 5-30-20 CA | Dog, ?, 6 hrs. | Consumed estimated 1 square inch. Diarrhea, vomiting, drowsiness, lethargy. IV fluids, "liver support meds", oral Denamarin. Brief improvement, rapid decline. DEATH. |
| Amanita phalloides 7-29-20 ? | Puppy, 0.7 yrs. 7 hrs. | Consumed ½ of immature specimen. Intestinal cramps, disorientation, vomiting, drowsiness, unusual barking. Treatment IV fluids, biliary drain, plasma, vit. K, milk thistle, antibiotics. Liver failure, DEATH. |
| *Amanita phalloides* 8-3-20 CA | Puppy, 0.5 yrs., 10 hrs. | Unknown quantity eaten. Diarrhea, vomiting, weakness. Received platelet transfusions, other treatments. DEATH. |
| *Amanita phalloides* Fall? 2020 BC | Dog, 7, ? | Movie star dog consumed mushrooms in park. Weakness, salivating, abdominal pain. "Extensive treatment" including gall bladder aspiration which vet feels saved the dog. Liver failure but has recovered and liver will heal. |
| *Amanita phalloides* (suspected) 12-2-20 VA | Dog, ?, ? | Vomiting, lethargic, walking with arched back, weak, listless, disturbing neurological symptoms, hypoglycemia, internal bleeding. Treatment multiple blood transfusions, vitamin K. Liver failure. DEATH. |

Table XII (cont.): Poisonings of Animals

| Species, Date and Location | Animal, Age & onset[1] | Symptoms, Treatment and Outcome |
|---|---|---|
| *Amanita phalloides* 8-?-19 BC | Puppy, ?, ? | Puppy DIED at vets. Numerous *A. phalloides* found in yard near a European white birch. |
| *Amanita muscaria* 10-18-19 MA | Dog, ?, ? | Dog could not open eyes. Even after 2 doses antibiotic ophthalmic drops, dog guarding and not normal. Unusual! |
| *Amanita muscaria* 11-3-20 OR | Dog, 1.5, 2 hrs. | Consumed as much as 1 cup. Dizziness, disorientation, weakness, dilated pupils, shallow breathing, unresponsive, skittish. IV fluids, blood work. Recovered in 24 hours. |
| *Amanita pantherina* 5-21-18, WA | Dog, ?, 5 hrs. | Unsteady, could not walk, panting, vomited twice. Treated at vets for 2 days with IV fluids. |
| *Amanita pantherina* 6-23-19 CA | Puppy, 0.5, 0.5 hrs. | Fever, dizziness, disorientation, muscle spasms, drowsiness, weakness, loss of motor control. Stumbling, falling. Treatment IV fluids, Midazolam, Atropine (contra-indicated!). DEATH 1 hour later. |
| *Amanita pantherina* 8-13-19 UT | Puppy, 0.5 yr., 5 hrs. | Puppy consumed large dried out specimen. Diarrhea, hallucinations, salivation, dizziness, disorientation, drowsiness, irregular breathing, uncontrollable bladder. Given IV fluids only, recovered <24 hours. |
| *Amanita pantherina* probable 1-22-19 WA | Dog, ?, ? | Only detail is that mushroom material from dog's stomach initially thought to be *Galerina autumnalis* was a likely *Amanita* button. |
| *Amanita pantherina* 6-5-15, ID | Dog, 0.5 yr., ? | Puppy ate caps of two mushrooms and was rushed to vet. Puppy rapidly declined and DIED. |
| Probable *Amanita pantherina* 4-28-19, WA | 2 Dogs, ?, ? | Profuse vomiting, hypothermic, hypotensive, bradycardia and hypersalivation. Full recovery. |
| *Amanita pantherina* 7-22-20 OR | Puppy, 0.2 yrs., 1.5 hrs. | Vomiting and mild tremors. IV fluids and activated charcoal. Full recovery. |
| *Amanita pantherina* 11-15-20 IN | Dog, ?, ? | Vomiting, drooling, staggering, fast heart rate, twitchy front legs, agitated. Treatment included Atropine. DEATH. |
| *Amanita pantherina* 3-28-20 CA | 3 Ducks, Mature, 5 minutes | Apparent hallucinations, dizzy, disoriented, muscle spasms, drowsiness, weakness, ataxia, semi-comatose, couldn't stand, dilated pupils. Treatment oral rehydration overnight. Full recovery within 24 hours. |
| (*Sapro*)*Amanita thiersii* About 2018 TX | 2 Dogs, ?, ? | DEATH (both). No other details available. |
| *Armillaria mellea* complex 10-11-18, ? | Puppy, ?, ? | Vet treated puppy. Symptoms and treatment unspecified. Mushrooms were quite rotten when eaten. |
| *Chlorophyllum molybdites* 6-3-18, AZ | Dog, ?, ? | "Dog acting sick" Vet found slightly elevated but not alarming liver and kidney enzymes. |
| *Chlorophyllum* cf *molybdites* 7-8-19 FL | 2 Dogs, ?, ? | Lachrymation, eye irritation, vomiting, diarrhea. Recovered. |
| *Clitocybe cf rivulosa* 12-23-20 WA | Dog, ?, ? | Nausea, vomiting, diarrhea. No other details. |
| *Clitocybe* sp. definite 8-30-18, WI | Puppy, 10 weeks, ? | Puppy vomited mushrooms. |
| *Clitocybe* sp. probable 8-29-18, ? | Dog, ?, ? | Vomiting and diarrhea. Owner advised to take dog to vet. ID from not very good diagnostic photo. |
| *Clitocybe* (probable) *Inocybe* (possible) 10-22-19 WA | Dog, 6.5 yrs., 1 hour | Chills, diarrhea, salivation, vomiting, nausea, drooling. Whole mushroom in vomit. Fed chicken broth for hydration, breathing and heart rate remained normal. |

Table XII (cont.): Poisonings of Animals

| Species, Date and Location | Animal, Age & onset[1] | Symptoms, Treatment and Outcome |
|---|---|---|
| *Clitocybe* sp. 10-21-20 NC | Dog, ?, ? | "Not doing well". No details. Symptoms consistent with muscarine. |
| *Clitocybe* species 11-8-20 SC | 3 Dogs, ?, 1 hour | Intense salivation, diarrhea that turned bloody, vomiting. DEATH (one dog). IV fluids and oxygen (one dog). |
| *Coprinellus micaceus* group, 4-20-18, WA | Dog, ?, ? | Significant abdominal pain. Note: dog presumed, but not stated, could have been a cat but unlikely |
| *Entoloma* sp. 9-15-19 NY | Puppy, 0.3, 16 hrs. | Consumed ½ mushroom, pieces in vomit. Diarrhea, salivation, vomiting, nausea, lethargic, stomach gurgling, drooling. Vet administered anti-nausea med. |
| *Gyromitra esculenta* 4-13-20 WA | Dog, ?, ? | Dog sick at vets. No details. |
| *Gyromitra esculenta* 4-4-20 WA | Dog, 7, 3 hrs. | Consumed 3-5 specimens. Vomiting, shaking/trembling, labored breathing. Numerous interventions including blood and plasma transfusions. Kidneys failed, DEATH. |
| *Inocybe* species 2-?-18, DC | Dog, ?, ? | Death? Of a miniature Doberman. |
| *Inocybe* sp. 10-2-20 MD | Dog, 1.75, 4 hrs. | Consumed 1-2 whole mushrooms. Diarrhea, vomiting. Diagnosis acute hemorrhagic diarrhea syndrome. IV fluids and other meds. No improvement. |
| *Inocybe* species 11-19-19 OR | Puppy, 0.5 yrs., 0.5 hrs. | Excessive drooling. Treated with IV fluids and anti-nausea meds. |
| *Inocybe* sp. 11-28-19 GA | Dog, ?, ? | Typical muscarinic symptoms including gastrointestinal distress, bradycardia, hypotension. |
| *Inocybe* sp. 5-31-18, WY | Dog, ?, ? | Muscarinic symptoms plus arched back, excessive vocalization at vet's office. |
| *Inocybe pudica* group 11-23-18, ? | Dog, ?, 0.25 hrs. | Rapid onset of vomiting and diarrhea. Rapid recovery at veterinarian. Treatment unknown. Few details. |
| *Inocybe* sp. 8-12-20 ND | Dog, 4.5, 18 hrs. | Consumed 1-2 whole mushrooms. Salivation, very agitated, unsettled. Successfully treated with Atropine. |
| *Inocybe* sp. 7-22-20 ID | Dog, 3, 4 hrs. | Diarrhea, salivation, vomiting, nausea, and tachypnea. Treatment SQ fluids, Maropitant, Prilosec. Diarrhea resolved in 12 hrs., salivation in 48 hrs. |
| *Inocybe* sp. 8-9-20 MN | Puppy, 0.2 yr., 2 hrs. | Consumed 5-6 bites. Chills, diarrhea, salivation, sweating, muscle spasms, drowsiness, weakness, tears, clear liquid from nose, tremors. Treatment IV fluids and unspecified meds. |
| *Laccaria* sp. 10-12-19 OR | Dog, 2, 5 hrs. | Vomited three times, nausea after consuming several mushrooms. Given liquid charcoal then anti-nausea shot. |
| *Lepiota subincarnata* 10-4-18 BC | Puppy, ?, ? | Puppy consumed small mushrooms in yard. Severe vomiting, diarrhea. Elevated liver enzymes, liver damage. Apparently recovered. |
| *Lepista (Clitocybe) nuda* 9-6-19, TX | Dog, ?, ? | Bloody diarrhea, vomiting |
| *Leucocoprinus birnbaumii* 8-26-18, CA | Dog, 4, ? | Dog consumed 2-3 caps. Dizziness, disorientation, vomiting, drowsiness, nausea, weakness. Vomiting was induced. |
| *Lycoperdon foetidum* 6-23-18, WA or OR | Dog, ?, ? | Vomiting |
| Old puffball 12-01-18, GA | Puppy | Respiratory distress and tremors from a lung full of spores. No follow-up details. |

Table XII (cont.): Poisonings of Animals

| Species, Date and Location | Animal, Age & onset[1] | Symptoms, Treatment and Outcome |
|---|---|---|
| *Marasmius oreades?* Or *Clitocybe rivulosa* (likely), 9-20-18, ? | Dog, ?, 1 hour | Severe diarrhea, vomiting excessive drooling. Treatment nausea shot and some "flagella". ID from poor photo of the top of cap. |
| *Melanoleuca exscissa* 3-31-18 ID | Dog, ?, ? | Elevated liver enzymes. No other information, no symptoms specified. |
| *Panaeolus* (*Panaeolina*) *foenisecii* 5-15-19 PNW (not likely to be cause) | Dog, ?, ? | Dog DIED from acute liver and brain dysfunction. Mushrooms found in lawn suspected. This species is not known to be toxic. Psilocybin reported for species, but author has analyzed hundreds of specimens from PNW and found no psilocybin. |
| *Scleroderma* sp. 8-5-20 WA | Dog, ?, 0.25 hrs. | Vomited, lack of appetite. |
| *Scleroderma areolatum* 9-17-20 WA | Dog, ?, ? | Vomiting, listless. Blood chemistries and liver enzymes normal. Sent home for monitoring. |
| *Scleroderma* sp. 9-21-20 FL | 2 Puppies, 0.3 yr., 0.1 hr. | Two puppies each consumed about ¼ of a mushroom. Chills, intestinal cramps, disorientation, vomiting, drowsiness, nausea, weakness. Treatment unknown. Survived. |
| *Tricholoma* sp. 12-1-18 MI | Dog, ?, ? | Vomited blood after eating old rotten *Tricholoma.* |

**References**

Beug, Michael W. 2016. Amatoxin poisoning in North America. *McIlvainea* 25 (online at www.namyco.org)

Beug, Michael W.; Shaw, Marilyn; Cochran, Kenneth W. 2006. Thirty Years of Mushroom Poisoning Reports: Summary of the Approximately 2,000 Reports in the NAMA Case Registry. *McIlvainea* 16: 47-68

Cochran, Kenneth W. 1985. Mushroom Poisoning in 1984. *Mushroom* 3: 30-33

Goupil, Ryan C.; Davis, Megan; Kaufman, Abigail; Roberts, Diane; and Mitchell, Todd. 2021. Clinical recovery of 5 dogs from amatoxin mushroom poisoning using an adapted Santa Cruz protocol for people. *Journal of Veterinary Emergency and Critical Care* 2021: 1-14. https://doi.org/10.1111/vec.13040