



# Poison or Venom? Difference and Medical Treatment

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Many living things such as plants and animals use toxins to defend themselves from predators or to capture food. Although both poison and venom are dangerous, they work differently. It is important to understand the difference particularly when it comes to treating patients exposed to these substances.



## Key Differences

Poison refers to a toxin that causes harm when it is absorbed by your body. This typically happens if you touch it, eat it, or breathe it in. A key characteristic of poison is that the plant or animal itself does not actively inject the toxin into you. Instead, you become poisoned through direct contact.

Some naturally occurring chemicals such as arsenic, mercury, and lead can be found in soil and water. They can cause serious illness or death if ingested in large amounts.

In contrast, venom is a toxin that an animal directly injects into another creature. This process usually occurs through a bite or a sting. For venom to cause harm, the animal must actively deliver it into your body.

Venom can affect the body in different ways. Some venoms are neurotoxins, that is, they attack the nervous system. Others are hemotoxins, which affect the blood. The specific type of venom depends on the animal.

## Examples

### Poisonous

- Some frogs have poison on their skin, which can affect you if touched.
- The pufferfish has tetrotoxin (a powerful neurotoxin) in certain organs such as the liver, ovaries, intestines, and skin. Unless it is prepared correctly, it can be extremely dangerous to eat its flesh (called fugu in Japan).
- While many mushrooms are edible and nutritious, some contain potent toxins that can cause mild symptoms like nausea or severe effects such as liver failure, hallucinations, and death.
- Stinging nettle (*Urtica dioica*) is not inherently poisonous, but it can cause a reaction due to chemicals on its surface. The plant's tiny hairs (called trichomes) inject irritants that cause a stinging or burning sensation, redness, and itching. Once cooked, dried, or blended, the stinging hairs are neutralized, and the plant becomes safe to eat.

- Cassava (*Manihot esculenta*) is an edible root containing natural compounds that can become toxic if not processed properly. Specifically, cassava can release cyanide unless it is prepared properly.

### Venomous

- Snakes inject venom using their fangs when they bite in self-defense or when hunting prey.
- Jellyfish and some plants such as the stinging nettle also possess stingers, though they operate differently from insect stingers. They contain special cells that release venom upon contact.
- Scorpions and wasps use sharp stingers, which pierce the skin and inject venom.
- Bees leave their stingers in your body, which continue to contract and inject venom into you. Losing its stinger causes a bee to die later.

## Why the Difference Matters for Patient Treatment

When people are poisoned, they have come into contact with the toxin by touching it, ingesting it, or breathing it in. Therefore, medical treatment will focus on actions related to these routes of exposure.

If a **poison** has been ingested, treatment may involve administering activated charcoal to bind the toxin, performing gastric lavage (stomach pumping), or giving specific antidotes if available. In cases of inhalation, providing fresh air or oxygen and removing the person from the source is crucial. For skin contact, decontamination through thorough washing with soap and water is a priority, sometimes followed by appropriate medication as needed.

If patients have been **envenomated**, treatment must address the direct entry of the toxin into the bloodstream or tissues. Medical staff assess whether the venom is primarily a neurotoxin or a hemotoxin. Treatment could involve administering a specific antivenom along with supportive care such as pain management, intravenous fluids, respiratory support, or wound care. In some cases, monitoring for allergic reactions or systemic effects is also necessary.

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## Comprehension Questions

**Instructions.** Answer the following questions based on the information in the passage. When you are done, see “Answer Key” to check your answers.

1. What is the main difference between poison and venom?
  - a. Poison is only found in animals; venom is only found in plants.
  - b. Poison harms through contact or ingestion; venom must be injected by the animal.
  - c. A poison is injected by an animal or plant whereas a venom is ingested or touched.
2. How do animals typically inject venom?
  - a. Through special cells on their skin
  - b. Through bites or stings
  - c. Through contact
3. Which of the following is an example of a **poisonous** organism?
  - a. Bee
  - b. Scorpion
  - c. Pufferfish
4. What type of toxins attack the nervous system and the blood?
  - a. Hemotoxins and neurotoxins
  - b. Neurotoxins and homotoxins
  - c. Neurotoxins and tetrotoxins
5. Poisonous plants and mushrooms are safe to eat as long as you cook them properly.
  - a. That’s correct. Many cultures around the world have learned how to cook poisonous foods so that toxins are neutralized.
  - b. That is a myth. If an organism has any kind of toxins in it, you can never eat them.
  - c. This is true of some plants; however, you can never eat poisonous mushrooms.
6. If a person is stung by a jellyfish, what kind of medical treatment might they need?
  - a. Activated charcoal
  - b. Antivenom and wound care
  - c. Stomach pumping (lavage)
7. What do neurotoxins and hemotoxins both have in common?
  - a. They are types of toxins that affect different parts of the body.
  - b. They both require stomach pumping as a treatment.
  - c. They are both found in plants that inject venom into your body through special hair-like structures called trichomes.



8. Which of the following treatments is most appropriate for someone who touched a poisonous plant?
- a. Inject antivenom as soon as possible and observe the patient for allergic reactions.
  - b. Wash the area well to remove the stingers and give the patient the appropriate antivenom.
  - c. Wash the skin thoroughly and apply medication.
9. Imagine someone ate improperly prepared fugu. What might a doctor do first?
- a. Use activated charcoal or stomach pumping and monitor for neurotoxic effects
  - b. Give the patient oxygen and monitor the patient for allergic reactions
  - c. Give the patient a high dose of antivenom
10. Which of the following scenarios indicates that someone may have been envenomated? (**Select all that apply.**)
- a. A person feels a bite while walking in the woods. A few minutes later, they start feeling numb and nauseous.
  - b. A person touches a frog. Quickly the person has blurry vision and a dry mouth.
  - c. A person is swimming in the ocean and feels a sharp sting. Soon after, the person's leg starts to swell.
  - d. A person eats cassava and starts feeling stomach pains.



## Vocabulary

Study the vocabulary that you saw in the passage.

**activated charcoal** / 'æk tɪ,veɪ tɪd 'tʃɑːr koʊl / noun • a black powder made from carbon that is used to absorb poisons or drugs in the stomach.

Example: *The doctor gave her activated charcoal to stop the poison from spreading.*

**breathe in** / brið ɪn / phrasal verb • to take air, gas, or smoke into your lungs through your nose or mouth.

Example: *He accidentally breathed in some toxic fumes at work.*

**edible** / 'ɛ dɪ bəl / adjective • safe and suitable to eat.

Example: *It looks like these berries are edible, but we should check before eating them.*

**envenomate** / ɪn've nə,meɪt / verb • to inject venom into someone or something.

Example: *Snakes envenomate their prey before swallowing it.*

**envenomated** / ɪn've nə,meɪ tɪd / adjective • having had venom injected into the body.

Example: *The man was envenomated after stepping on a scorpion.*

**fang** / fæŋ / noun • a long, sharp tooth used by some animals, such as snakes, to inject venom.

Example: *The snake's fangs left two small holes in his ankle.*

**hallucination** / hə,lu sə'nei fən / noun • something a person sees, hears, or feels that is not actually there, often caused by illness or a drug.

Example: *After eating the wrong mushrooms, he started having strange hallucinations.*

**hemotoxin** / 'hi mə,tɒk sɪn / noun • a type of venom that affects the blood and damages blood cells or organs.

Example: *The viper's venom is a powerful hemotoxin that can cause internal bleeding.*

**ingest** / ɪn'dʒɛst/ verb • to take something into the body through the mouth, especially food, drink, or medicine.

Example: *It's dangerous to ingest large amounts of this chemical.*

**lead** / lɛd / noun • a heavy, soft gray metal that is toxic to humans if ingested or inhaled.

Example: *Old pipes in the house may contain lead, which is harmful to drink from.*

**liver** / 'lɪ və / noun • a large organ in the body that helps digest food and remove toxins from the blood.

Example: *The poison damaged his liver, and he had to stay in the hospital for several days.*

**neurotoxin** / 'nʊər ɒʊ,tɒk sɪn / noun • a poison that affects the nervous system and brain.

Example: *Some jellyfish release a neurotoxin that can cause paralysis.*

**poison** / 'pɔɪ zən / noun • a harmful substance that can cause illness or death if it is eaten, touched, or breathed in.

Example: *The berries looked tasty, but they contained a deadly poison.*



**poisoned** / 'pɔɪ zənd / adjective • harmed or killed by a toxic substance through eating, touching, or breathing it.

Example: *The hikers were accidentally poisoned after eating wild plants.*

**predator** / 'prɛ də tə / noun • an animal that hunts and eats other animals.

Example: *The spider uses its web to trap insects and catch them as a predator.*

**stinger** / 'sti ŋə / noun • a sharp part of an animal or insect that can stick into skin and deliver venom.

Example: *The bee left its stinger in his arm after the sting.*

**toxin** / 'tɒk sɪn / noun • a harmful substance produced by living things such as animals, plants, or bacteria.

Example: *The plant releases a toxin to protect itself from insects.*

**venom** / 've nəm / noun • a toxic substance that some animals inject into other animals through bites or stings.

Example: *The snake uses its fangs to inject venom into its prey.*

## Vocabulary Exercise

**Instructions:** Fill in the blanks with one of the vocabulary words in the passage. Write the whole word, paying close attention to spelling and word form.

1. Snakes use their \_\_\_\_\_ to inject venom into their prey.
2. The scorpion used its \_\_\_\_\_ to immobilize the frog that was trying to eat it.
3. After being \_\_\_\_\_ by a jellyfish, the swimmer needed medical care.
4. The spider's powerful \_\_\_\_\_ affected the dog's nervous system quickly.
5. You need to \_\_\_\_\_ only a small amount of this poison to feel its effects.
6. Her liver was damaged after she was \_\_\_\_\_ by contaminated water.
7. The poisonous mushroom caused the man to \_\_\_\_\_. He thought he saw insects that were not really there.
8. Large cats such as lions, tigers, and pumas are common \_\_\_\_\_ all over the world.
9. The rattlesnake's venom is a type of \_\_\_\_\_ that destroys blood cells.
10. Doctors use \_\_\_\_\_ to absorb poisons in a patient's stomach.



## Answer Key

### Comprehension Questions

- |      |      |             |
|------|------|-------------|
| 1. b | 5. c | 9. a        |
| 2. b | 6. b | 10. a and c |
| 3. c | 7. a |             |
| 4. b | 8. c |             |

### Vocabulary Exercise

1. fangs
2. stinger
3. stung or envenomated
4. neurotoxin, venom, or toxin
5. ingest
6. poisoned
7. hallucinate
8. predators
9. homotoxin, toxin, or venom
10. activated charcoal

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