

Why do onions make you cry?

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Credit: Pixabay

According to the National Onion Association (yes, that's a thing), approximately 170 countries grow onions, and it's estimated that 9.2 million acres of onions are harvested annually around the world. Onions are low in calories and packed with vitamins, minerals and antioxidants. They also go great in your salads, omelets and guacamole recipes.

However, as everyone from expert chefs to culinary novices has learned,

onions can bring a tear to your eye, and an expert from the Texas A&M College of Medicine explains why that happens.

It starts underground

Onions are vegetables that grow underground, and beneath the surface are a lot of critters who are trying to grab a bite to eat, but onions have a way to protect themselves.

Sulfur in the dirt mixes with the growing [onion](#) and creates amino acid sulfoxides, which are sulfur compounds that readily turn into a gas. When an onion breaks apart, the sulfoxides and onion enzymes are released, and this creates sulfenic acid. The sulfenic acid and onion enzymes react and create syn-propanethial-S-oxide—a tough-to-pronounce gas.

This gas floats up from the chopped (or bitten) onion and deters critters (and causes humans to shed tears). It takes a lot of precise chemical reactions, and some vegetables related to onions will produce fewer tears. White, yellow and red onions all have higher concentration of the onion enzyme necessary to create syn-propanethial-S-oxide while sweet onions, green onions and scallions have fewer of the necessary enzymes.

"It really is a complicated chemical process that creates the gas," said Robert H. Rosa Jr., MD, ophthalmologist and professor of surgery and medical physiology at the Texas A&M College of Medicine. "They all act as precursors that create the lachrymatory process—or what makes you tear up."

Onions and your eyes

Your eyes are sensitive, and considering their responsibilities, it's good

that they have defenses to harmful gases.

"Your eyes have a set of nerves that detect anything that's potentially harmful to your eyes," Rosa said. "Your eyes react to the gas that is formed, and your eyes try to flush it out with tears."

Luckily, the gases that are produced from chopping onions are more nuisance than harm. "Chopping onions can cause some burning and irritation and tears," Rosa said. "Other than that, it's pretty safe on your eyes. It's a temporary sensation with no known long-term effects, nor will it worsen any other conditions, like pink eye."

Also, some people may have more sensitive eyes than others, which is why not everyone will tear up when they chop onions but why others may feel the effects on the other side of the room.

Avoiding the tears

There are a few different ways to avoid tears when you're cutting onions. You can prevent the gas from reaching your eyes by wearing protective goggles, but that may be a bit excessive considering you're in a kitchen and not a laboratory.

"Some people may cut the onions in a bowl of water," Rosa said. "I'd personally recommend using eye drops, like comfort drops, to help lubricate or rinse the eyes and dilute the gas exposure to the eyes."

There has been talk about genetically modifying onions to knock out the alliinase enzyme that causes [tears](#), without changing the particular spice that onions provide in flavor. However, tear-free onions have yet to be commercialized. So, if you're planning to add some onions to your favorite recipes, you may want a couple of tissues handy.

Provided by Texas A&M University

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