

# Why Chili Peppers and Spicy Foods Trigger Hiccups

Analysis by [Dr. Joseph Mercola](#)

May 28, 2024

## STORY AT-A-GLANCE

- › There are specific health benefits to spicy foods that range from helping your body fight some cancers, to reducing mucus production in your lungs and helping to prevent emphysema
- › The chemical compound in spicy chili peppers may trigger hiccups by irritating the nerves that innervate your diaphragm or by being sprayed during chewing into your lungs and triggering a response from irritated lung tissue
- › Hiccups are annoying and uncomfortable, but often self-limited; several home remedies may help get rid of them, including sucking on a lemon, squeezing your fingernail or gargling with ice water

***Editor's Note: This article is a reprint. It was originally published July 22, 2017.***

I love spicy foods and enjoy the benefits of the spicy chemical in peppers — capsaicin — that may improve health. [Chili peppers](#), one of the main sources of capsaicin, are a staple in diets of Central America, Asia and India. Even in the U.S. there are many who believe "the spicier the better."

One food industry report found the number of people who enjoy spicy foods is growing, up to 54% from 46% in 2009.<sup>1,2</sup> The same report found those between 18 and 34 were the most likely to order spicy food from a restaurant menu. Interestingly, the heat you experience from the chili pepper is a protection for the plant, designed to make you not want to eat them.

As far as scientists know, humans are the only animal who willingly chooses to eat chili peppers.<sup>3</sup> On some level you may have learned to tolerate the heat, and may even crave the peppers. This ability to desensitize to the heat in peppers is well-documented, but other studies also demonstrate it may not play as large a role in your desire for spicy peppers as once thought.<sup>4</sup>

Researchers from Pennsylvania State University dug further and discovered people who enjoyed hot peppers also enjoyed sensation-seeking, including activities like riding roller coasters or exploring. Interestingly, individuals who enjoyed the peppers didn't feel any less heat from the **capsaicin** than those who didn't enjoy hot foods. In other words, this study group didn't demonstrate desensitization to the peppers.

Your preference for spicy foods may be determined by not only your personality type, but also your genetics.<sup>5</sup> Using identical and non-identical twins from Finland, researchers evaluated their responses to capsaicin-laced jelly. Genetic factors accounted for a wide range in variation between people who perceived the spicy jelly as pleasant or unpleasant. Those who did find the experience pleasant shared a genetic variance.

## **Spicy Food May Trigger Hiccups**

If you love a bit of heat with your meal, you're in luck, as spicy foods are some of the best for your health. The capsaicinoid found in the in the food has been linked to the prevention of chronic diseases. Coupled with their high concentration of vitamins and **antioxidants**, those spicy peppers are a unique superfood, if you can tolerate the heat. However, while tasty and healthy, these little spice bombs may also trigger the hiccups.

Hiccups may be triggered from stomach distension or irritating the nerve to your diaphragm when you drink too quickly. Spicy peppers don't trigger hiccups in this way though. Although the exact way in which the pepper triggers hiccups has not been definitively established, scientists do know that not everyone gets hiccups from chili peppers.

Although some people get hiccups just anticipating eating hot peppers, others never get them. The chemical in peppers, capsaicin, that generates the heat, is believed to irritate the nerve that triggers hiccups.<sup>6</sup> Others believe the chemical is released in the mouth in a fine spray that enters the lungs and disrupts the normal rhythm of the diaphragm.<sup>7</sup> As your diaphragm begins to contract and relax to expel the substance from your lungs, it triggers a hiccup.

## **What's Happening When You Have Hiccups?**

Hiccups are an involuntary spasm in your diaphragm, the muscle separating your chest from your abdomen, which plays a significant role in breathing.

In this short video, you'll see how hiccups may start after an irritation to nerves that service your chest and lungs. When your diaphragm contracts the space between your vocal cords closes and creates the characteristic "hic" sound. In order to draw breath, your diaphragm pulls down toward your abdomen, creating negative pressure in your lungs causing air to enter.

During the hiccups your diaphragm spasms, causing you to draw in an involuntary breath. In the simplest cases your stomach may get overdistended or you may have drunk fluid too quickly, irritating the nerve that innervates the diaphragm. Although the true reason for hiccups has not been determined, some believe an irritant triggers the diaphragm to contract helping to rid your gut of air that is trapped, or to draw food down your esophagus to your stomach.

Hiccups are usually self-limited and are nothing more than an uncomfortable nuisance. However, sometimes they can last for a long period of time, or be a signal that something else is wrong. A disturbance in the nerve pathway between the brain and the muscles involved can also trigger hiccups, which explains why you may get hiccups with an emotional situation and why they may be stopped when you are shocked.<sup>8</sup>

Hiccups are an involuntary movement triggered in part by your autonomic nervous system, the part of your nervous system that controls your breathing, heartbeat and

other involuntary functions. Even unborn babies hiccup, which may perhaps prepare them for breathing. But, while virtually everyone gets hiccups, the reason you do has not been established and there is no hard and fast cure you may use each time you get them.

## **Hiccups That Last Longer Than 48 Hours May Need Attention**

Most cases of hiccups are self-limiting, lasting no more than several minutes to a day. However, in some cases **hiccups** may last for days – or even years. A persistent case of hiccups lasting more than 48 hours may signal a cause for concern. Hiccups that last more than one month are called intractable hiccups. In some cases, hiccups also persist during sleep.

Since the condition is uncomfortable, some who suffer with persistent or intractable hiccups seek medical care in the hospital. In one study of a community hospital between 1995 and 2000, 54 of more than 100,000 visits were related to hiccups. Most of these patients were over 50 and had other health conditions.<sup>9</sup> According to the Journal of Clinical Sleep Medicine:<sup>10</sup>

*"Chronic persistent hiccups can be debilitating and have been associated with weight loss, insomnia and fatigue. They can be caused by a wide variety of medical conditions, including central nervous system abnormalities, metabolic imbalances, and chest and abdomen pathology. Among the medications known to cause hiccups, the most common include corticosteroids, antidepressants, dopaminergics, and opioids."*

Irritation to the nerves that serve your diaphragm is often the cause for long-term hiccups and may be triggered by gastroesophageal reflux, laryngitis, a tumor, cyst or **goiter** in your neck or even a hair touching your eardrum.<sup>11</sup> Other causes may be related to infection, damage or trauma to your central nervous system, including **stroke**, head injury, tumor or multiple sclerosis. Long-term hiccups may also be triggered by:

Alcoholism

Anesthesia

Barbiturates

Diabetes

Electrolyte imbalance

Kidney failure

Steroids

Tranquilizers

## How Capsaicin Interacts With Your Body

Your body has transient receptor potential vanilloid 1 (TRPV1) pain receptors which are activated by capsaicin, opening the floodgates to pain. This is one of the reasons your mouth likely feels as if it's on fire when you eat something spicy.<sup>12</sup> However, while the chemical does trigger pain, it also has a unique side effect. After exposure, your TRPV1 receptors go through a period of rest.

During this time, the receptors cease transmitting pain signals to your brain, and while your body may continue to experience the pain, your mind won't recognize it. This is one of the ways capsaicin pain creams help treat peripheral pain. Scientists call this process "defunctionalization."<sup>13</sup> These creams are produced from highly purified capsaicin and also deplete the neurotransmitter, substance P, which sends pain messages to your brain.<sup>14</sup>

Although you may experience an increase in the intensity of **pain** when you first use capsaicin cream, it usually decreases with the second use.<sup>15</sup> In some cases, it may take a week or more to help treat pain originating in your joints, as your levels of substance P must be depleted and the cream must be continued to keep the substance from building up again.<sup>16</sup> The cream has been used to relieve pain from neurological pain, cluster headaches, surgical pain and arthritic disorders.

Capsaicin has also been used as a dietary supplement as there is evidence it may improve digestion, help reduce diarrhea triggered by bad bacteria in your intestines and

fight bacterial infections in your body.<sup>17</sup> As a supplement, it may help thin the mucus in your lungs and is an antioxidant that may help fight free radicals.

## The Benefits of Spicy Foods

Capsaicin's interactions in your body explain many of the benefits you may experience when you eat spicy foods. Eating spicy foods helps increase your satiety, or feelings of fullness after a meal. You often feel full faster eating less food, and the peppers may rev your metabolism a bit, helping you to burn more calories at rest. Researchers have discovered including spicy foods may help shrink fat cells and lower blood fat levels.<sup>18</sup>

Past research has suggested that thermogenic ingredients, or those compounds that increase your body's heat production, may increase your metabolism by up to 5% and the ability of your body to burn fat by up to 16%.<sup>19</sup> Capsaicin is a thermogenic substance that may temporarily increase the ability of your body to burn fat to produce heat.

In fact, when eating spicy foods, you may feel your internal heat rising, even though the temperature in the room has remained the same. The heat you're feeling is the result of the activation of the TRPV1 receptors.

Although the activation of TRPV1 helps to reduce pain, it may also be responsible for many of the other health benefits you experience. In a journal article in *Open Heart*, scientists explored a mechanism that may explain the favorable results researchers have found in animal studies using capsaicin-rich diets, including a positive effect on health conditions such as metabolic syndrome, obesity, hypertension, atherosclerosis and stroke.<sup>20</sup>

As capsaicin thins mucus, it may help to clear your lungs during an illness, strengthen your lung capacity and may help prevent or treat emphysema.<sup>21</sup> Various studies also demonstrate that capsaicin may effectively help your body fight **prostate cancer**.<sup>22</sup>

Animal studies have found oral supplementation is effective against *H. pylori*, the bacteria that triggers gastritis and ulcerations of the stomach wall. Capsaicin has also

demonstrated some effectiveness against breast cancer, lymphoma and some lung tumors.

The continued application of capsaicin cream may help reduce the proliferation of skin cells common to psoriasis.<sup>23</sup> Participants in this study did report the initial week of application caused skin irritation. Men and women with diabetes experienced some improvement in their blood glucose levels, and women who suffered from gestational diabetes (altered blood glucose/insulin resistance during pregnancy) also experienced improvements.

## **Different Peppers Produce Different Levels of Heat**

The intensity of the heat you experience is measured in Scoville units, first developed by William Scoville in 1912.<sup>24</sup> Human tasters used to identify the different levels of heat in peppers that originates from the amount of capsaicin in the pepper. Today, machines do that job.

To put the heat in your peppers into perspective, pure capsaicin would have a Scoville unit rating of 16 million.<sup>25</sup> Police pepper spray has a unit rating of 2 million and the hottest pepper, the Carolina Reaper, has a unit rating of 2.2 million.<sup>26</sup> As of August 2013, the Guinness World Record book states this is the hottest pepper known to man. Well down the list is the Chocolate Habanero, ranking between 300,000 and 577,000 Scoville units.

Scotch Bonnet chili peppers, often used in spicy Caribbean foods, measure between 100,000 and 350,000 Scoville units. Jalapeno peppers, common in the U.S., measure 2,500 to 8,000, while Cubanelle peppers are a mild 100 to 1,000 Scoville units.<sup>27</sup>

## **Control Your Hiccups**

There are a number of different methods you may have read or heard about to get rid of hiccups. Dr. Tyler Cymet, head of medical education at the American Association of Colleges of Osteopathic Medicine, conducted a five-year study on 54 patients

hospitalized for hiccups to evaluate treatment methods.<sup>28</sup> What he found was that despite using a variety of treatments, from breath holding to strong medications, none of his patients successfully got rid of their hiccups.

He has continued to use a variety of treatments for patients who suffered from hiccups long enough to seek medical attention and found his patients may experience a 20% to 25% success rate.<sup>29</sup>

Those treatments include cognitive behavioral therapy, breathing exercise, **yoga** and Pilates. Each of these treatment options help reduce anxiety and control breathing, which seems to be the modalities that worked best for persistent hiccups. Other alternative remedies that appear to have success with people who don't suffer from persistent or intractable hiccups include:

- Having someone squeeze your pinky fingernail for 10 seconds<sup>30</sup>
- Gargling with ice water or sipping cold water
- Hypnosis
- Acupuncture

Additionally, there are a surprising number of hiccup remedies that have been studied, albeit using small participant numbers. For instance:<sup>31</sup>

- Eating a spoonful of sugar eliminated hiccups in 19 of 20 patients, possibly by stimulating the vagus nerve<sup>32</sup>
- Eating a lemon wedge soaked in bitters worked to eliminate hiccups in 14 out of 16 individuals<sup>33</sup>
- Triggering your gag reflex by blowing up a balloon may also work, possibly by causing a temporary break in respiration<sup>34</sup>
- Rectal massage using a finger cured intractable hiccups in 7 out of 7 patients, possibly by stimulating the sympathetic and parasympathetic nerves<sup>35</sup>



## Sources and References

---

- <sup>1</sup> Technomic, November 7, 2013 (Archived)
- <sup>2</sup> Time Magazine, July 31, 2014
- <sup>3, 6, 12, 13</sup> Medical News Today, July 6, 2017
- <sup>4</sup> Popular Science, December 6, 2012
- <sup>5</sup> Physiology and Behavior 2012;107(3):381
- <sup>7</sup> The Times of India, November 30, 2003
- <sup>8</sup> Medical News Today, June 23, 2023
- <sup>9</sup> Journal of the National Medical Association 2002;94(6):480
- <sup>10</sup> Journal of Clinical Sleep Medicine, 2013;9(1):92
- <sup>11</sup> Mayo Clinic, Hiccups: Symptoms and Causes
- <sup>14, 16</sup> Arthritis Foundation, Supplement Guide: Capsaicin (Archived)
- <sup>15, 17, 21</sup> WebMD Capsaicin Topic Overview (Archived)
- <sup>18</sup> Journal of Proteome Research, 2010;9(6):2977
- <sup>19</sup> International Journal of Obesity (London) 2010;34(4):659
- <sup>20</sup> Open Heart, 2015;2(1):e000262
- <sup>22</sup> Oncotarget. 2016 Jan 12; 7(2): 1569–1583
- <sup>23</sup> J Am Acad Dermatol. 1986 Sep;15(3):504-7
- <sup>24, 25</sup> Cooks Info, Scoville Units
- <sup>26</sup> Cayenne Diane, The Big List of Hot Peppers
- <sup>27</sup> Pepperscale, Hot Pepper Scale
- <sup>28, 29</sup> The Washington Post, June 2, 2014
- <sup>30</sup> Huffington Post, May 12, 2013
- <sup>31</sup> Mind the Science Gap, November 5, 2012 (Archived)
- <sup>32</sup> New England Journal of Medicine 1971; 285:1489
- <sup>33</sup> New England Journal of Medicine 1981; 305:1654
- <sup>34</sup> Medical Hypotheses, 2005;65(6):1206
- <sup>35</sup> Journal of Internal Medicine, 1990;227(2):145