

# Spicy food: not just about taste



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## Spicy Food: Not Just About Taste

We all have distinct feelings towards spicy food. Some people found spicy food enjoyable: the tongue trembling, like having sparks flying through, and then the body warming up and sweating. Others however, found them absolutely terrifying: the mouth drying out and urgently howling for water. Love it or hate it, it is mostly about the trembling that people have distinguished opinions on. But do you know the sciences behind spicy food that sets our lips and tongue trembling?

### Sanshool: The Accelerator For Pungency

Gustatory scientists have revealed that the secret power that creates the taste of spicy is called the sanshool. This is an ingredient that's responsible for the numbing, tingling sensation caused by eating food cooked with Szechuan peppercorns. Interestingly enough, the sanshool does not have a taste component, but rather acts like a vibrator, tickling our taste buds. It triggers the motion of trembling, which is then detected by the special tactile sensors on our tongues. Apparently, sanshool is found very rich in an oriental spice, known as the Szechuan pepper, which is widely distributed in all the Chinese restaurants in Britain.

To investigate this, Dr Hagura and his research team at University College London have devised an interesting experiment on the sanshool. The sanshool was applied to the lower lip of participants. Their right index finger was attached to electrodes that generate vibrations. When pungency was sensed, participants were asked to judge the frequency of the tingly

sensation brought on the lip by comparing it with the frequency of mechanical vibrations applied to their right index finger.

As a result, the frequency that the most participants felt was around 50 Hz which corresponds to tactile RA1 afferent fibres. According to brain anatomy, the RA1 area is responsible for detecting light touch and vibration. Vibration receptors tell you whether, for example, you're running your finger across silk or denim. Thus the sensation is therefore not contributing to the taste, but a tactile factor generating vibrating sensations that activate the taste buds.

#### How Do We Feel The Spiciness?

Many simple actions in our daily life, for example, picking up a cup dropped on the floor, are not as simple, in terms of neuroscience, as they seem when conducting. They are in fact complex combinations of different signals emitted by nerve fibres that transfer sensory information to our brain. The way peppers make our tongues tremble is to selectively stimulate specific nerve fibre, the smallest unit of sensory, located on our tongue.

All feelings are transmitted to the brain through electric-pulse signals produced by cells, and the brain's different interpretations of these signals converge to produce a recognisable feeling—a flavour. Our little taste buds, spread all over the tongue, are taste receptors, cells reacting to flavour compounds in food. Traditionally, there are four basic tastes including sweet, bitter, sour and salty. But some tastes such as savoury, and debatably, fat, are caused by other feelings, not just flavour.

In fact, “ taste” is a single sensation that composed by taste, smell and the touch of a food. This combination of qualities happens because all sensory information spring from a common region. On the roof of the mouth and the tongue, there are many taste buds, which contain the flavour recognising cell. They can be activated when we are eating or sipping. At the same time, the sensory cells that are located along with the taste cells, allow us to feel qualities such as temperature and spiciness.

### Fake Pain

Your eyes are full of tears, your nose is running, and your mouth feels like an inferno. Even at room temperature, eating chilli pepper can also generate a “ firing” burning sensation. Why? It has to be explained by senses again.

Scientists have found that an active chemical substance in pepper called capsaicin. Our bodies can be fooled by it, thinking pepper is literally ‘ hot’. As a matter of fact, capsaicin can arouse nerve cells in the mouth, some of which are sensitive to the change of temperature. When they are activated, the signal that the brain eventually receives is similar to a burning feeling of drinking scalding water, which is not truly burning, but the burning illusion of nerve receptors after being “ confused”.

Now, let’s look at some more interesting facts about capsaicin. The sensitivity of your body to capsaicin is proportional to the density of the neural receptors in that particular part of your body. That’s why it can be unbearable by getting pepper in your eyes, and why touching the pepper, however, is usually not painful.

Fortunately for spicy-food-lovers, it indicates capsaicin cannot cause long-term tissue damage, even in large doses. “ It’s what I call ‘ fake pain’,” says Mark Peacock, a plant scientist from the University of Sydney, “ It doesn’t actually cause you physical harm, even though it feels like it.”

### Why Some Like It Hot?

People who live in hot climates are attracted to spicy foods since the red-hot seasonings keep them healthy. The research shows that because of the natural antimicrobials in the spices, people in warmer regions of the world benefit from eating them. Thus they developed a preference for it.

When people live in a tropical country like Thailand, for instance, have a spicy meal, the chance they spend the next few days with a bout of diarrhoea is much less than people in that region who eat mild foods.

Oppositely, for country has a cooler climate like Iceland, a steak that left outside overnight might freeze. The low temperature would slow the growth of germ in the meat. As a matter of course, Icelandic dishes have left the pepper neglected.

Although there may be some medicinal value, pepper has no real nutritional value itself. So why do some people living in the normal, temperate climate still eat a large quantity of pepper?

Studies of some scientists show the pain brought from pepper could offset other pains. Some other scientists believe that the reason why humans love pepper is directed at the pain brought from pepper rather than its various advantages.

Psychologist Paul Rozin proposes:” They like the burn”. When we bite into a pepper, pepper allows our body a chance to believe that we’re doing something dangerous without any real repercussions. “ Humans seem to enjoy situations in which their bodies warn them of danger but they know they are really okay,” said by Rozin. It allows us live dangerously for the moment.

### Spicy Food And Health

Research reveals that the sensation caused by eating spices sets off the flow of saliva and gastric juices and therefore can stimulate the appetite. This explains that in torrid zone where the oppressive heat operates as an appetite deterrent. This nutritionally important effect has held some good health benefits.

**Weight Loss:** It is not surprising that spices have become associated with dieting trend. Studies show that a thermo genic effect can be caused by capsaicin -the main compound in peppers. This effect can induce the body to burn bonus calories for 20 minutes. Also, the extra kick of hot spicy food can make the bland diet food more palatable, which is more likely to help us stick with our weight loss plan.

**Heart Health:** Studies show that much lower incidence of heart attack and stroke occur in the cultures that eat the spiciest food. It is potentially because peppers can cut down the damaging effects of bad cholesterol and inflammation can also be defeated by capsaicin.

Lower Blood Pressure: Vitamins A and C enhance the heart muscle walls, and the heat of the pepper improves blood flow throughout our body. All of this leads to a stronger cardiovascular system.

Chronic diseases: The neuroscientists had already used menthol and chilli to help them understand how the body feels pain and temperature, and the pungency will help them understand the mystery of feeling. The study of wild pepper would help scientists to better figure out how the brain processes these sensory signals in the future, so as to find ways to relieve tingling.

To draw a conclusion, food with more distinctive flavours is becoming increasingly sought after. The global popularity of spicy foods, combined with the trend towards ethnic foods and healthy diet, makes more and more people believe that spicy food is good to human bodies. As global food trends became more powerful, spicy food is no longer just about taste.