


## [Why Does Spicy Food Taste Hot?](#)

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James Gorman has a delightful [investigation](#) of spicy food and evolution. One of the mysteries he explores is why we like these painful foods in the first place. Shouldn't we want to avoid a fruit that sings the mouth and makes us imbibe vast quantities of water?

Some experts argue that we like chilies because they are good for us. They can help lower [blood pressure](#), may have some antimicrobial effects, and they increase [salivation](#), which is good if you eat a boring diet based on one bland staple crop like corn or rice. The pain of chilies can even kill other pain, a concept supported by recent research. Others, notably [Dr. Paul Rozin at the University of Pennsylvania](#), argue that the beneficial effects are too small to explain the great human love of chili-spiced food. "I don't think they have anything to do with why people eat and like it," he said in an interview. Dr. Rozin, who studies other human emotions and likes and dislikes ("I am the

father of disgust in [psychology](#),” he says) thinks that we’re in it for the pain. “This is a theory,” he emphasizes. “I don’t know that this is true.”

But he has evidence for what he calls benign masochism. For example, he tested chili eaters by gradually increasing the pain, or, as the pros call it, the pungency, of the food, right up to the point at which the subjects said they just could not go further. When asked after the test what level of heat they liked the best, they chose the highest level they could stand, “just below the level of unbearable pain.” As Delbert McClinton sings (about a different line of research), “It felt so good to hurt so bad.”

But here’s the question I’m interested in: Why does spicy food taste “hot”? After all, a chili pepper at room temperature will still “burn” our tongue and cause us to sweat. We’ll crave ice-cold water and wave our hands frantically in front of our face. To answer this question, we need to investigate the physiology of taste. It turns out that capsaicin – the active ingredient in spicy food – binds to a special class of vanilloid receptor inside our mouth called VR1 receptors. After capsaicin binds to these receptors, the sensory neuron is depolarized, and it sends along a signal indicating the presence of spicy stimuli.

But here’s the strange part: [VR1](#) receptors weren’t designed to detect capsaicin. They bind spicy food by accident. The real purpose of VR1 receptors is thermoreception, or the detection of heat. This means that they are supposed to prevent us from consuming food that will burn our sensitive flesh. (That’s why our VR1 receptors are clustered in our tongue, mouth and skin.) As a result, when the receptors are activated by capsaicin, the sensation we experience is indelibly linked to the perception of temperature, to the feeling of eating something near the boiling point of water. But that pain is just an illusory side-effect of our confused neural receptors. There is nothing “hot” about spicy food.

The larger point, of course, is that vast swaths of the reality we take for granted are mere accidents of anatomy. We can’t help but believe in the “hotness” of chilis – the pain is so visceral – but that belief is an illusion. And so, every time I eat spicy food I think for a second about what other perceptions I’m taking too literally. Which of my cinematic sensations can I actually trust? And then I go back to chugging water.

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