WHY WE LOVE AND HATE SPICY FOODS

(1) Imagine eating something that makes your eyes water, your skin sweat and causes you burning sensations of pain? Would you willingly eat this? Every day hundreds of millions of people around the world volunteer to eat spicy foods that produce these results. Some not only volunteer, some demand that their food be even spicier. What exactly is "spiciness" and why do some people like it?

(2) The sensation of spiciness comes from a substance called capsaicin found in spicy foods like chili peppers. When capsaicin comes into contact with your tongue, it triggers receptors in the tongue called VR1 receptors which, strangely enough, are not actually made to detect a taste. VR1 receptors are thermoreceptors intended to detect temperature and when they are accidently triggered by capsaicin, the VR1 receptors send a signal to your brain telling it that heat has been detected. This is why eating spicy food makes your tongue feel like it's on fire; your brain is tricked into thinking that it is! This can also make the body feel hot which causes it to sweat. The sweat produced by spicy foods is called gustatory perspiration.

(3) Why does our tongue have VR1 receptors? VR1 receptors may have evolved to enable us to sense the temperature of foods to avoid eating foods that could burn our tongue and mouth when food is too hot. This may have come in handy as humans evolved from eating raw foods to cooked foods.

(4) Besides the capsaicin compound found in chili peppers, the piperine found in black peppers and the allyl isothiocyanate found in mustard and radishes also accidentally trigger the VR1 receptors in the same way that capsaicin does, therefore they all produce a similar burning sensation we call spiciness or heat.

(5) Chili peppers produce the most heat but there are different types of chili peppers. In 1912 Wilbur Scoville, an American pharmacist, developed a method of measuring the amount of spiciness in various foods. He called his measurement system the Scoville Scale and the units used to measure the amount of spiciness

in foods are called Scoville Heat Units (SHU). The higher the SHU measurement of a food, the more capsaicin it has and the spicier it is.

(6) The spiciest food in the world is currently a pepper called the Carolina Reaper which measures over 2 200 000 SHU of spicy pain. It is so spicy that the oil from this pepper can cause burning sensations if it comes into contact with skin. Your skin also has temperature receptors that can be fooled by capsaicin. Through selective breeding the Carolina Reaper was developed by Ed Currie, owner of PuckerButt Pepper Company in the United States. It has held the Guinness World Record as the world's hottest chili pepper since August 7th 2013.

Carolina Reaper, photo by Dale Thurber

(7) If chilies can produce so much discomfort and feelings of pain, how did some humans grow to use and enjoy chilies in their food? Cultures that have a tradition of eating spicy foods are usually located in warmer climates. This may be related to where chilies can grow best, as well as to the antibacterial action of chilies. In warmer climates, food spoils faster. Our ancestors did not have refrigeration

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technology and so had to find different ways of preserving foods in hot climates. One way is to add spicy ingredients because the spice has an antibacterial property that helps preserve the food.

(8) However, even people without a tradition of eating spicy foods can grow to love it. When eating spicy foods, the pain centers of the brain are triggered but so are the pleasure centers. In response to feelings of pain, your brain produces chemical painkillers called endorphins which relieve pain and cause a sensation of pleasure. People who love spicy foods are called pyro-gourmaniacs: *pyro* means fire and *gour* from the word *gourmand* which is a person who loves eating.

(9) If you are not a pyro-gourmaniac and you accidentally eat food that is too spicy, then the cure for that is milk, yogurt or ice cream, and the colder the better. The reason why dairy products take the fire away is because they contain a substance called casein which can dissolve capsaicin. When you drink milk, the capsaicin on your tongue is picked up by the casein and washed down and away from your tongue when you swallow. No more fire.

Article Questions

1) _____ is the chemical responsible for the sensation of spiciness in hot food. The level of spiciness in food is measured using the _____.

2) Why does spicy food feel "hot"?
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3) The world record holder for the spiciest pepper is the _____.

4) Why would adding chilies to foods in hot climates be useful?
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5) Define the term pyro-gourmaniac.
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6) Why do people like spicy food?
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7) If you ate food that was too spicy, what could you do to calm down the spice? Why does this method work?
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