

ACS chemistry mavens stir up hot sauce science

February 28 2014, by Nancy Owano



The chemistry of Sriracha or "rooster" sauce joins the list of topics of interest for the American Chemical Society, which recently delivered a "Reactions" video on the sauce. Huy Fong Foods' Sriracha sauce has attracted much media as well as culinary attention. What is it about this sauce that compels so many people to use it on so many types of food, from pasta to soup to chicken? Why do people actually enjoy the burning sensation of a hot sauce? Where's the enjoyment—and kick? Is it simply the red chilies? The mix of vinegar, garlic, salt and sugar?

The ACS video travels inside the components of Sriracha to figure it out.

Inside the chilies are the group of molecules, capsaicinoids. The main capsaicinoids found in Sriracha are capsaicin and dihydrocapsaicin. These trigger the TRPV1 protein in the mouth, causing a spicy-hot sensation. The body responds to the burn by releasing the pain-killing endorphin rush, similar to what joggers experience in workouts after a long run. (Sriracha also has potassium sorbate and sodium bisulfite that help maintain its shelf life.)

The video also explored how one can measure which pepper is spicier than another. The Scoville scale is a measure of the hotness of a chili pepper or anything derived from [chili peppers](#). The scale is named after a pharmacist, Wilbur Scoville, who developed the heat measurement scale in 1912. (More modern means have been devised, such as in high performance liquid chromatography using American Spice Trade Association pungency units.)

While hotness can be measured, some people who shun hot foods wonder if those who reach for the hot sauce are somehow immune to the burn. Some years ago, Paul Rozin and Deborah Schiller of the University of Pennsylvania authored a paper published in 1980, in which they talked about the chili-eating experience in terms of hedonic shift. "The nature and acquisition of a preference for chili pepper by humans" carried interviews, observations and measurements in Mexico and United States.

Chili likers are not insensitive to the irritation and instead they begin to like the [burning sensation](#); there is a clear hedonic shift, they wrote.

"This could be produced by association with positive events, including enhancement of the taste of bland foods, postingestional effects, or social rewards. It is also possible that the initial negative response to chili pepper is essential for the eventual liking."

The authors said enjoying the irritation may result from the user's appreciation that the sensation and the body's reaction to it are harmless. "Eating of chili, riding on roller coasters, taking very hot baths, and many other human activities can be considered instances of thrill seeking or enjoyment of 'constrained risks.'"

More information: link.springer.com/article/10.1007%2F00995932#page-1

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