

VOICES OF THE EXPERTS:

DEVELOPING A DELIGHTFUL SPICY EXPERIENCE

Amy Trail, Sensory & Consumer Science Director & Jill Breiner, Senior Principal Scientist

Heat is, well, hot right now! While bold and spicy flavors have always had their place, consumers' palate-pushing tastes are driving innovation and experimentation across product types and menu offerings.

The level of heat, of course, varies by degree. Very, very hot flavors are in demand for applications like proteins and snacks. Many developers and chefs are doing interesting things with layering hot flavors to create exciting eating and drinking experiences. Sweet-spicy profiles, otherwise known as "swicy", are also on the rise, especially as consumers seek heat in unexpected places and crave layered taste experiences.

Getting heat right is important, since this is such a personal attribute based on individual sensory experiences. For Amy Trail, Sensory & Consumer Science Director, it's all in a day's work, as she identifies the heat that aligns with the experience of our customers' audiences. Jill Breiner, Senior Principal Scientist then develops the appropriate pleasing 'hot' seasoning solution. Read on as they share advice for creating a hot profile for your target audience.

Flavorsolutions

60% of Gen Z and Millennials describe their current taste preferences as 'spicy'*



Q. Why should heat be considered a profile in product innovation?

A. Consumers are experiencing spicy sensations through multiple avenues. They are trying more global cuisines, are exposed to different flavors and foods (think TikTok) and recognize that 'heat' can have various characteristics. For categories like snacks and sauces especially, spicy has become a table stake flavor.

Heat is Often Layered with:

+ Sweet (Fruits, Cocoa, Honey)

+ Sour (Citrus, Vinegar, Tamarind)

+ Cool (Cheese, Cream, Coconut)

We have tested many market products, including those from mainstream grocery to specialty direct-to-consumer businesses, and see these various articulations of heat, from extreme heat that focuses on specific hot chili peppers to heat balanced with other flavors. These multisensorial, layered heat profiles, which may involve sour and sweet blends, or contrasted with creamy cooling flavors, are becoming increasingly popular.

Our work in this area shows that consumers are becoming well versed in the nuances of heat and ready for even more exploration. This creates opportunities for developers, since there are many ways to approach spicy concepts and create delightful taste experiences.

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Q. How can heat can be brought to life through various compounds present in ingredients and foods?

A. In general, different compounds deliver different sensations of heat, so there are many ways to bring heat to life.

As product developers know, capsaicin is the compound primarily responsible for the heat in chiles, and other compounds such as piperine in black pepper or allyl isothiocyanate in wasabi and mustards elicit heat in varying ways and complexity. Other examples include allicin in the garlic/onion family; cinnamaldehyde/eugenol in the cinnamon/clove family; gingerol in ginger; and allyl isothiocyanate in radishes, horseradish, wasabi, and mustard.

These and other compounds can create nasal pungency, numbing, heat, and even pain, depending on the source and level. The rollercoaster spicy rush of habanero peppers, of course, is quite different than the mild burn of peppercorn. The compounds capsaicin and cinnamaldehyde, meanwhile, can evoke a slower-onset warm sensation that lingers in the aftertaste.

Consumers who consider themselves spicy lovers look for many types of heat to experience and enjoy, whether it's a numbing or lingering heat. They appreciate the adventure and the variety.

“I like spicy flavored snacks that give me an extra burst of flavor—it kind of wakes me up and gets the senses rolling.”

“Thai food and Indian food dishes are based on layers of flavors all together: sweet, salt, umami, garlic, and spicy. That's when your mouth is happy!”

“I like multiple layers of flavors: sweet & hot, cheese & hot, and wasabi with a nose kick to it!”

Articulations of Heat



CAPSICUMS/CHILIES

Family Solanaceae contains 3,000 species; half of which are indigenous to Central and South America. Contains capsaicin which causes a burning sensation.



PIPERINE

Compound in black and white peppercorns. Found in lower amounts than capsaicin, resulting in less burn.



OTHER COMPOUNDS

Create nasal pungency, numbing heat and even pain:

- Garlic/onion family (allicin)
- Cinnamon/clove (cinnamaldehyde/eugenol)
- Radishes, horseradish, wasabi and mustard (allyl isothiocyanate)
- Ginger (gingerol)



RESULTING EXPERIENCES

Warmth/Heat · Nasal Pungency · Burn · Pleasure

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Q. How can I leverage the various compounds to develop a pleasing ‘hot’ profile for my consumer target?

A. While heat can be complex, it can be used to create a signature taste experience – and a competitive advantage.

First, I recommend identifying the type of experience that is relevant for your brand and consumer target. It is important to determine how much heat (scoville target) your brand requires.

From there, you can use an array of ‘hot tools’ to build your brand’s target taste profile including ingredients, hot sauces and flavor pairings. These tools are helpful, since heat is more complicated than just the type of chile or peppercorn used.

Keep in mind that sensations such as pungency, saltiness, and sourness can intensify and change the heat experience. Indeed, using different ingredients can change the whole sensory experience, including when the heat is perceived, where in the mouth or nose it is felt, how long the heat lingers or how it builds in the aftertaste.

The level of the basic tastes and other flavor notes like saltiness, sourness, umami or fat can cause heat or burn to be enhanced or suppressed, based on how they are used in the formulation. For example, sourness can create a stronger heat experience when used with very hot peppers like the Carolina Reaper.

Developing a Complex, Spicy Experience Includes:

HEAT DELIVERY

Controlling when, where and how long the sensation builds (Upfront, back, middle or lingering)

HEAT SOURCE

Selecting the proper heat sensation from a toolbox of solutions like hot sauces, chile varieties and flavors

IMPACT OF PAIRINGS

Enhancing, complementing or suppressing sensations with the basic tastes and flavor notes like saltiness, sourness, umami or fat



Ultimately, understanding how to balance the many layers of sensations, flavors and taste appropriate for our customers’ target base is where our sensory and product development team shines. With a strong knowledge of developing heat, we savor the opportunity create a heat sensorial destination for our partners.

“The various compounds are all linked to real food pairings, culinary techniques, or global cuisines and dishes. Understanding this link informs how developers select the appropriate ingredients when building a spicy profile.”
-Jill



Want to HEAT things up for your product development?
Whatever heat experience you’re aiming for, we can help you deliver.

Reach out to discuss or request a flavor sample.

Click to connect | 630-578-8600