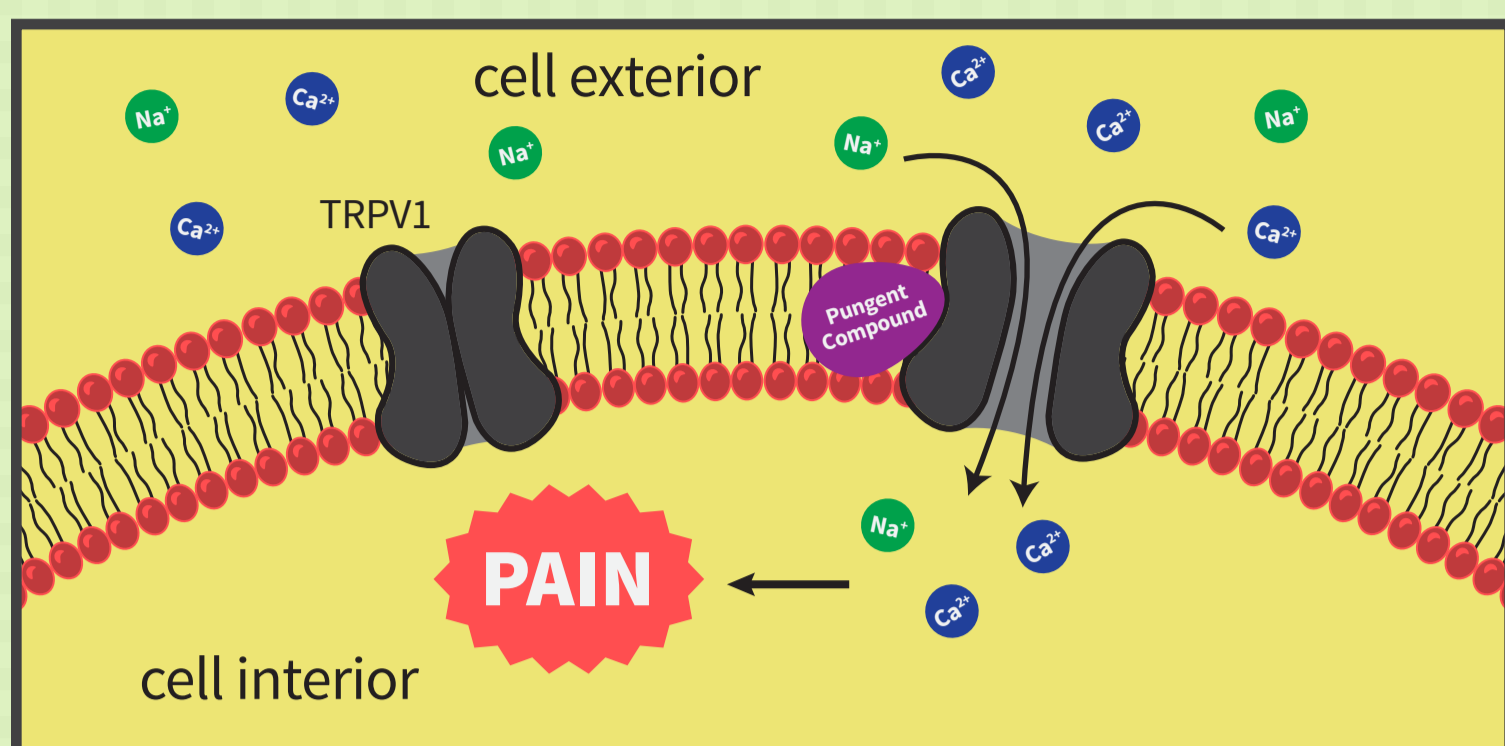


PUNGENCY

The state or quality of being pungent, classically known as “**spiciness**”, “**hotness**”, or “**heat**” with regards to food

MECHANISM

In many cases, pungent compounds illicit their reaction by triggering a **specific receptor** in the mouth, called **TRPV1**

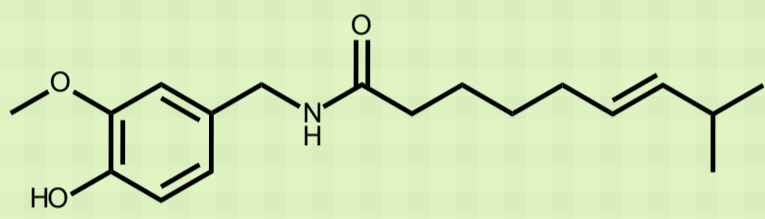


Pungent compounds activate **TRPV1**, causing an influx of **ions** into nerve cell interior. This sets off a cascade that leads to the **pain sensation**.

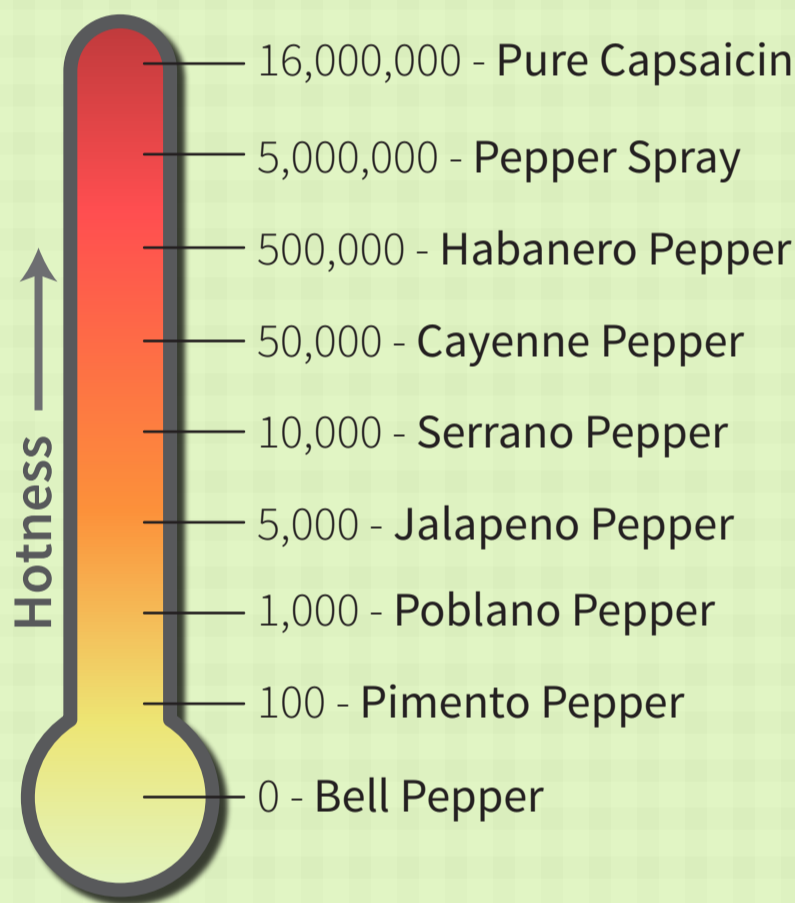
COMPOUNDS

There are various compounds in a variety of foods that illicit the pungent response

Capsaicin



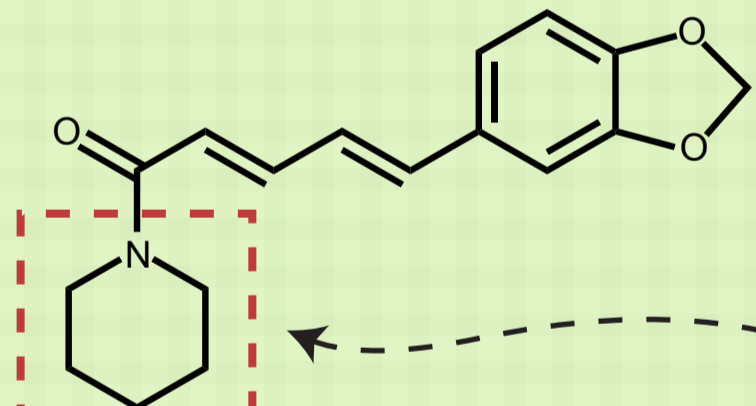
Scoville Scale



- ✓ Found in Chile Peppers
- ✓ Classically measured in **Scoville Heat Units**
- ✓ Water insoluble

The scale is based on how much **sugar water** it takes to neutralize the spicy taste

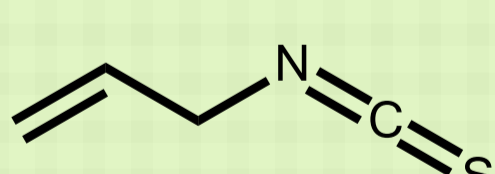
Piperine



- ✓ Found in black pepper
- ✓ Slightly water soluble

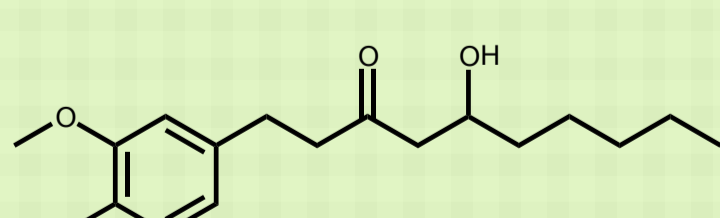
Piperidine unit - found in fire ant toxin and hemlock

Allyl isothiocyanate



- ✓ Found in mustard, horseradish, and wasabi
- ✓ Slightly water soluble

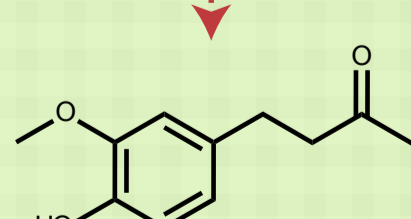
Gingerol



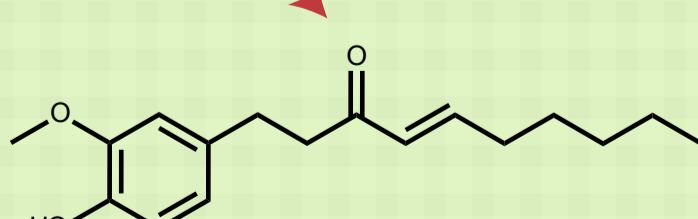
- ✓ Found in fresh ginger
- ✓ Degraded by heat to form zingerone (sweeter)

heat

dehydration



Zingerone



Shogaol

Sources:

Dekker, Marcel. 1998. Spice Qualities and Specifications in Spice Science and Technology.

Julius, David & Basbaum, Allan. 2001. Molecular mechanisms of nociception. Nature. 413: 203-210

Tominaga, Makoto. 2005. Molecular Mechanisms of Trigeminal Nociception and Sensation of Pungency. Chemical Senses. 30: 191-192