ঝাল ও ঝাঁঝ

Heat and sting

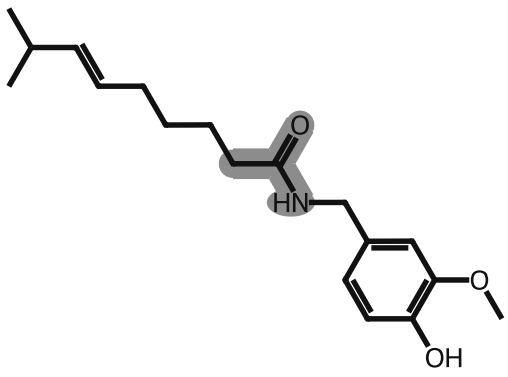
Six kitchen molecules that burn, sting and make you cry.

1 Heat and sting · 2 Aroma · 3 Taste and tricks

The grey glow marks the working part of each molecule.

Chem2Cure
Institute for Chemical Research and Therapeutics

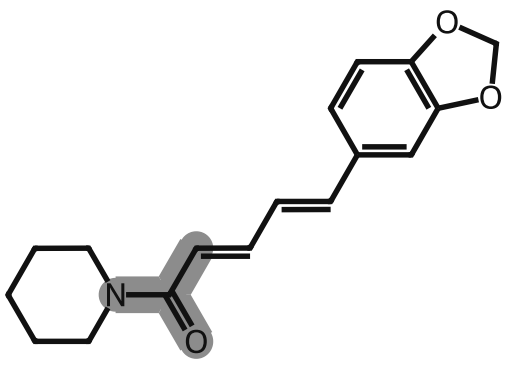
01 305.4



$C_{18}H_{27}NO_3$
CAPSAICIN

মরিচ — Chilli

02 285.3



$C_{17}H_{19}NO_3$
PIPERINE

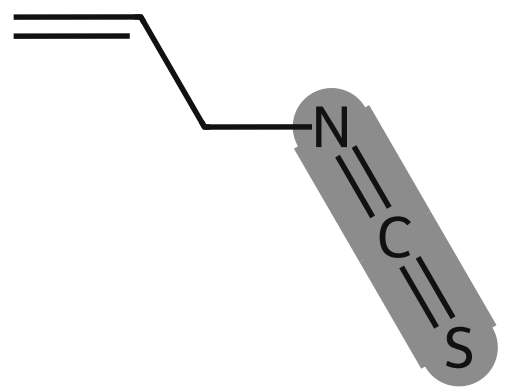
গোলমরিচ — Black pepper

HOW TO READ A TILE

Like an element, but tastier

01 · 305.4	The number, and the molar mass in g/mol
Drawing	The molecule, with its working part glowing
$C_{18}H_{27}NO_3$	Its formula
Band	The ingredient, in Bangla and English

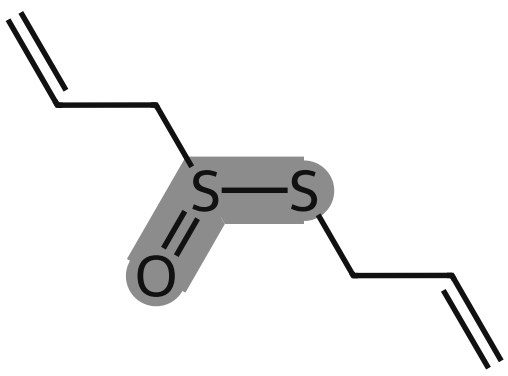
03 99.2



C_4H_5NS
ALLYL ISOTHIOCYANATE

সরিষা — Mustard

04 162.3



$C_6H_{10}OS_2$
ALLICIN

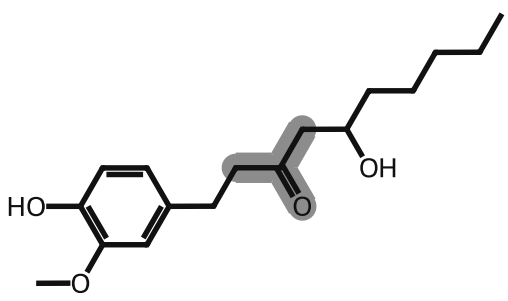
রসুন — Garlic

GOOD TO KNOW

The heat sensors

Chilli and black pepper switch on TRPV1, a sensor in your nerves that detects heat. Mustard and garlic switch on TRPA1, a sensor for irritants. The 2021 Nobel Prize in Physiology or Medicine honoured the discovery of the body's temperature and touch sensors, and David Julius found TRPV1 using capsaicin.

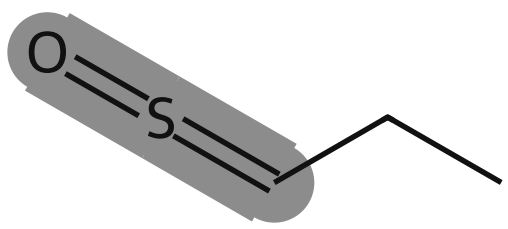
05 294.4



$C_{17}H_{26}O_4$
6-GINGEROL

আদা — Ginger

06 90.1



C_3H_6OS
PROPANETHIAL S-OXIDE

পেঁয়াজ — Onion

GOOD TO KNOW

Cool the burn

Capsaicin dissolves in fat, not in water, so a drink of water just spreads it around. Milk and yoghurt work better: the fat dissolves it, and casein, a milk protein, grabs hold of it.

TRY IT AT HOME

Two experiments for the kitchen table.

Mustard, dry and wet
Crush a few dry mustard seeds and smell them: mild. Add a drop of water and crush again. The sting appears, because allyl isothiocyanate forms only when water is there.

Garlic, whole and crushed
Smell a whole garlic clove, then crush it and smell again. Crushing starts the reaction that makes allicin.

Ask an adult first. Never taste an experiment.

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