



# Global warming

Why the world has taken to chilies

**T**ASTELESS, colourless, odourless and painful, pure capsaicin is a curious substance. It does no lasting damage, but the body's natural response to even a modest dose (such as that found in a chili pepper) is self-defence: sweat pours, the pulse quickens, the tongue flinches, tears may roll. But then something else kicks in: pain relief. The bloodstream floods with endorphins—the closest thing to morphine that the body produces. The result is a high. And the more capsaicin you ingest, the bigger and better it gets.

Which is why the diet in the rich world is heating up. Hot chilies, once the preserve of aficionados with exotic tastes for cuisine from places such as India, Thailand or Mexico, are now a staple ingredient in everything from ready meals to cocktails.

One reason is that globalisation has raised the rich world's tolerance to capsaicin. What may seem unbearably hot to those reared on the bland diets of Europe or the Anglosphere half a century ago is just a pleasantly spicy dish to their children and grandchildren, whose student years were spent scoffing cheap curries or nacho chips with salsa. Recipes in the past used to call for a cautious pinch of cayenne pepper. For today's guzzlers, even standard-strength Tabasco sauce, the world's best-selling chili-based condiment, may be

too mild. The Louisiana-based firm now produces an extra-hot version, based on habanero peppers, the fieriest of the commonly-consumed chilies.

But for the real "heat geeks", even that is too tame. Tesco, Britain's biggest supermarket chain, recently added a new pepper to its vegetable shelves: the Dorset naga. Inhaling its vapour makes your nose tingle. Touching it is painful; cooks are advised to wear gloves. It is the only food product that Tesco will not sell to children. By the standards of other chilies, it is astronomically hot. On the commonly used Scoville scale (based on dilution in sugar syrup to the point that the capsaicin becomes no longer noticeable to the taster) it rates 1.6m units, close to the 2m score of pepper spray used in riot control. The pepper that previously counted as the world's hottest, the Bhut Jolokia grown by the Chile Pepper Institute at the New Mexico State University, scored just over 1m. That in turn displaced a chili grown by the Indian Defence Research Laboratory in Tezpur, which scored a mere 855,000. The hottest habanero chilies score a wimpy 577,000.

The naga, originally from Bangladesh, was developed commercially by Michael Michaud, who runs a specialist online chili supply firm in south-western Britain. Having spotted it in an ethnic-food shop in the

coastal town of Bournemouth, he bred a dependable and much hotter strain and had it tested. "I sent the powder to a couple of labs. They didn't believe the reading. They thought they had made a mistake," he recalls. Jonathan Corbett, the buyer who handles (cautiously) specialist chilies for Tesco says that the naga makes a standard hot curry "taste like a bowl of breakfast cereal".

The naga has been a runaway success. In 2007, a Tesco outlet in Newcastle in northern England was supplied with 400 packs for a pilot period that was intended to last a month. The entire stock sold out on the first morning. According to AC Nielsen, a market-research firm, demand for hot chilies across all British retailers rose by 18% in the last year. At Tesco, the growth has been 29%. Demand for the naga has been so high that it has been forced to sell unripe green ones, intended for sale early next year. Tesco's supplier is Britain's biggest chili farmer, Filippo Salvatore. Based near Biggleswade, he is also a leading light in the Bedford Sicilian Association. He is hurrying to grow more.

Tesco is one of the world's largest retailers, with outlets in both continental Europe and North America. But Mr Corbett says that his colleagues have no plans to stock the naga elsewhere, for example in the firm's Fresh & Easy chain in America. "Tas-



tes in the UK are hotter," he says. That may be true, though the chili-eating milieu is certainly bigger in America, where the calendar is dotted with events such as the rumbustious Fiery Foods and Barbecue Show (in Albuquerque) and the more academic 19th International Pepper Conference (which took place in September in Atlantic City, concluding with a barbecue).

For connoisseurs though, the macho hullabaloo about ever-hotter chilies is distasteful, even vulgar: rather like rating wine only according to its alcohol content. Steve Waters, who runs the South Devon Chili Farm, says even the idea that the spectrum runs on a simple one-dimensional axis between "hot" and "mild" is misleading. He prefers the more complex Mexican matrix, which categorises chilies both by heat, and whether they are fresh, dried, pickled, or smoked. Any of these can produce big changes in flavour: he highlights the Aji (pronounced ah-hee), a Peruvian chili, which "ripens to bright yellow, with a strong lemony taste when fresh, very zesty. When dried it picks up a banana flavour."

From this point of view, the most interesting trend is not in ever-higher doses of capsaicin for the maniac market, but in the presence of chili in a range of foodstuffs that previous generations would have regarded as preposterous candidates for hotting up. Chili-flavoured chocolate, for example, has gone from being a novelty item to a popular mainstream product. Mr Waters sells "hot apple chili jelly" as a condiment for meat, and chili-infused olive oil.

The reason may be that capsaicin excites the trigeminal nerve, increasing the body's receptiveness to the flavour of other foods. That is not just good news for gourmets. It is a useful feature in poor countries where the diet might otherwise be unbearably bland and stodgy. In a study in 1992 by the CSIRO's Sensory Research Centre, scientists looked at the effect of capsaicin on the response to solutions containing either sugar or salt. The sample was 35 people who all ate spicy food regularly but not exclusively. Even a small quantity of capsaicin increased the perceived intensity of the solutions ingested. Among other things, that may give a scientific explanation for the habit, not formally researched, of snorting the "pink fix" (a mixture of cocaine and chili powder).

A chili-eating habit may develop to a startling degree (your author guzzled a packet of nagas while writing this article, and puts Tabasco in his coffee). But indulging in capsaicin does not quite meet the formal medical definitions of addiction. It is at most a craving, not a physical necessity.

It does not cause loss of control when taken to excess, or illness in those deprived of it: heavy users may develop remarkable degrees of tolerance, but they do not require regular doses simply in order to feel normal. The preference does not wear off: ex-smokers, by contrast, may gag at the taste of a cigarette. And the effect on the brain is different: with nicotine, the more you smoke, the more you want.

Indeed, capsaicin has useful medical ef-

were less than those produced by aspirin. An alarming-sounding experiment a year later involved volunteers being fed minced jalapeño peppers through a tube, directly into the stomach. The results, observed by an endoscope (a camera on a tube) revealed no damage to the mucous membrane. Against that is a study of heavy chili-eaters in Mexico City, who appeared to have higher stomach cancer rates than a control group. But the rate of illness had no



From pain comes pleasure

## Adrenalin plus natural opiates form an unbeatable combination

fects. By disabling a part of the nervous system called "transient receptor potential vanilloid 1" it can stop the body registering the pain caused by rheumatoid arthritis, for example. It can also be used to help patients with multiple sclerosis, amputees, and people undergoing chemotherapy. With rather less scientific evidence, a capsaicin product is marketed as an alternative to Botox, a wrinkle-smoothing cosmetic treatment.

But does it do any harm? The use of pepper spray as a weapon, and chili powder as a means of torture, suggests that it must. Certainly capsaicin can be painful, causing stress: in itself a potential health risk. A big dose incapacitates. But as far as permanent physical damage is concerned, the evidence is negligible to non-existent.

That seems to contradict common sense, which suggests that hot food causes an upset stomach—or what medical specialists call "gastric mucosal injury". A study in 1987 on the effects of ordinary pepper produced some signs of gastric exfoliation (stripping away the stomach lining) and some bleeding—though the effects

correlation with the frequency of chilies eaten, leading to speculation that other factors may be at work.

Humans are the only mammals to eat chilies. Other species apparently reckon that nasty tastes are a powerful evolutionary signal that something may be poisonous. Paul Rosin, a psychology professor at the University of Pennsylvania, who is one of the world's best-known authorities on the effects of capsaicin, has had no success in persuading rats to eat chilies, and very limited success with dogs and chimpanzees: the handful of cases where these animals did eat chilies seemed to be because of their strong relationships with human handlers.

That offers a clue to the way in which mankind comes to develop a chili habit. In the same way as young people may come to like alcohol, tobacco and coffee (all of which initially taste nasty, but deliver a pleasurable chemical kick), chili-eating normally starts off as a social habit, bolstered by what Mr Rozin calls "benign masochism": doing something painful and seemingly dangerous, in the knowledge that it won't do any permanent harm. The adrenalin kick plus the natural opiates form an unbeatable combination for thrill-seekers. Just don't get it in your eyes. ■