

A spoonful of sugar

Do artificial sweeteners help keep the weight off? JOANNA McMILLAN PRICE has some answers

Oh, how we love something sweet. We're born that way — just watch an infant's reaction to a honey-dipped finger.

Once, this may have been a survival mechanism. Naturally sweet foods are rarely poisonous, while sour or bitter foods often are. But in today's world of abundant food at relatively cheap prices, our sweet tooth undoubtedly contributes to our expanding waistlines. So can we have our cake and eat it?

Enter the artificial sweetener. There's big money to be had for those who can produce a substance that provides the sweetness of sugar — but without the calories.

Currently, eight artificial sweeteners that do just that are permitted for use in Australia and New Zealand: saccharin, cyclamate, aspartame, acesulphame-K, thaumatin, sucralose, alitame and neotame. The question is whether all this sweetness comes at a price.

Artificial sweeteners are among the most controversial food additives, with numerous allegations of adverse health effects. These include headaches, seizures, skin problems, allergic reactions, mood disorders, behavioural changes, respiratory disorders and, perhaps most worryingly, cancer.

A large number of studies have tested the safety of these substances but the conclusions have been far from unanimous. Most studies supporting the safety of artificial sweeteners are funded by the companies that make them, while those raising concerns are usually independent. This has fuelled conspiracy theories claiming governments approve the use of these substances to support big business.

On the other hand, it can't be said there

is no clear evidence of harm from regular consumption of any artificial sweetener. The conclusion by most scientists and government bodies is that, while in moderate amounts they pose a minimal risk, there may be a small risk at excessively high levels. Yet artificial sweeteners continue to elicit fiery debate.

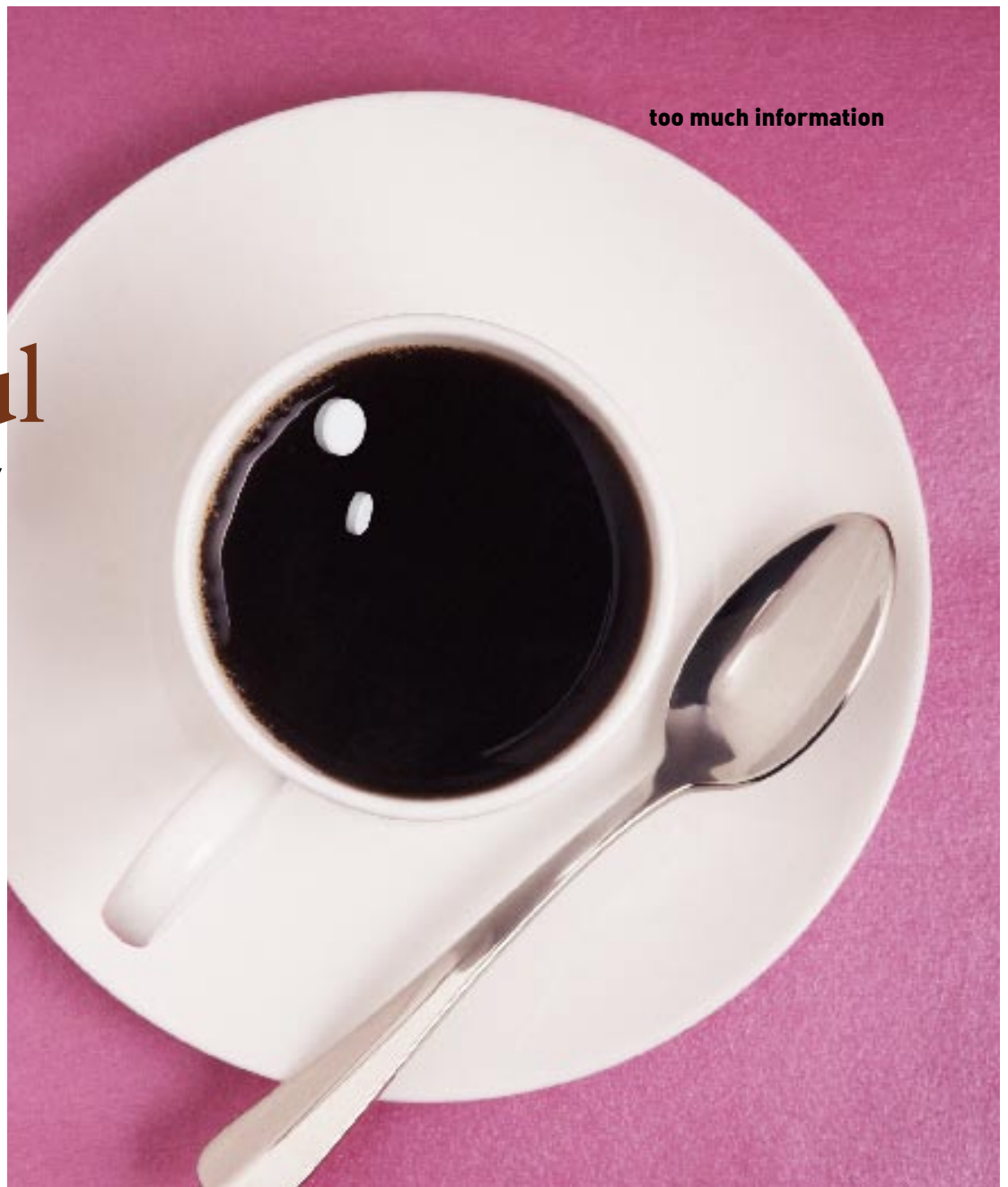
Saccharin was the first artificial sweetener and has been used for more than a century; as a result, it's one of the most widely studied. But controversy still abounds as to its safety.

This stems primarily from studies in the early 1970s linking saccharin to bladder cancer in rats. Subsequently, it was listed as a suspected carcinogen in the US government's *Report on Carcinogens* and products containing saccharin were required to state on the label: "Use of this product may be hazardous to your health. This product contains saccharin, which has been determined to cause cancer in laboratory animals." Enough, surely, to put you off your diet soda.

Since then, further studies have shown the risk applies only to rats, not humans — particularly since the rats were fed very high doses that would be practically impossible to achieve in a human diet (you'd have to drink about 800 cans of diet soda a day). As a result, in 2000, saccharin was de-listed as a carcinogen and US products no longer bear the warning.

While the link to cancer continues to be emphasised by alarmist internet sites, studies of humans with bladder cancer or in groups that consume the highest levels of saccharin have shown no link. It seems that if there is an increased cancer risk, it's immeasurably small.

Aspartame is the most controversial. The internet is rife with allegations of health problems, some as serious as multiple sclerosis, brain tumours and seizures. Most official complaints cite headaches, dizziness, visual difficulties and mood alterations. So is there any substance to the claims? Well, not according to the vast majority of the research. ➤



Theoretically, aspartame could cause problems, as all three of its breakdown products are toxic in high doses. Two of these are amino acids normally present in protein in the diet: phenylalanine and aspartic acid.

While both are required in small amounts, excessively high blood levels of phenylalanine can cause brain damage. This has fuelled allegations that aspartame is linked to various brain disorders, including brain cancer. The only proven risk, though, is to the very small number of people with an inherited metabolic disorder called phenylketonuria, or PKU.

Those with PKU cannot metabolise phenylalanine. Dangerous levels accumulate and cross into the brain, causing permanent damage. Children born with PKU must follow a low-protein diet to develop normally. Clearly, aspartame is unsuitable for those with PKU and this is why all products containing aspartame carry the warning, "This product contains phenylalanine."

A can of soft drink contains about eight teaspoons of sugar — 130 calories you can save by choosing a diet drink instead. Yet studies have found that the use of diet products does not improve weight loss.

In the rest of us, the level of phenylalanine in the blood after consuming aspartame is the same as after eating any protein-based food. Similarly, levels of aspartic acid have not been shown to be raised after consuming food or drink containing aspartame.

The third breakdown product is methanol, large doses of which can cause blindness or even be fatal. This sounds alarming and provides great fodder for those against the use of aspartame, but the truth is, methanol occurs naturally in foods. In fact, the methanol content of fruit juice is 2.5 times greater than the same amount of an aspartame-sweetened drink. Even at very high intakes of aspartame, blood levels of methanol are undetectable.

It seems unlikely that damage could result from any of these three breakdown products. Furthermore, double-blind studies (where neither the investigator nor the subject knows whether they are receiving aspartame or a

placebo) have failed to show a difference in reported adverse reactions between control and experimental groups. This doesn't mean anecdotal reports of such effects are not real, but that they may wrongly be attributing the effect to aspartame consumption.

This is even more likely in light of the adverse publicity surrounding this sweetener. In other words, you get a headache after drinking a can of diet cola and assume the aspartame in the drink is the cause, when in fact headaches can be caused by a whole host of common factors.

Nevertheless enough inconsistencies between reported problems and the research have prompted calls from many scientists to review the evidence and conduct more rigorous, unbiased testing of aspartame.

Cyclamates, too, have had their share of controversy. After they were approved for use in the late 50s, the US issued a ban a decade later when a study linked cyclamate use to

bladder tumours in rats. Despite more recent studies refuting such a link, as well as the failure of epidemiological studies to show any potential harm in humans, the ban has not yet been lifted in the US. In contrast, in line with this more recent evidence, cyclamates are permitted here in Australia and New Zealand and elsewhere, including Canada and Europe.

The fact is, despite all the adverse press regarding artificial sweeteners, those that are permitted here in Australia have been evaluated as safe by the major international health authorities. If there truly were high risks to our health from consumption of these compounds, the research results would be far more compelling.

Perhaps the real issue is one of a more practical nature: that is, do artificial sweeteners achieve what they set out to do and help us to lose weight? In theory, they should. An average can of soft drink contains about eight teaspoons of sugar, providing the

equivalent of 130 calories. That's 130 calories you can save by choosing a diet drink instead.

Yet a number of studies have found that the use of diet products containing artificial sweeteners does not improve weight loss. There are several possible reasons for that.

First, it seems that when we choose a diet food or drink, we are then more prone to reward ourselves with some other treat. It seems that either because we are not truly satisfied with the "diet" version, or because we relegate that food or drink as "free", we eat more of other foods: "I've only had a sugar-free chocolate bar, so I'm allowed this slice of cake."

Second, a study published in the *International Journal of Obesity* in 2004 showed that rats fed artificially sweetened beverages were less able to balance their energy intake and tended to overeat compared with rats not fed artificial sweeteners. If this also happens in humans, it means consumption of artificial sweeteners may be interfering with the appetite control mechanisms in the body that help us control our weight. Or it may simply be because if you regularly consume sweet foods and drinks, you condition your body into liking and wanting sweet things even more. So you crave something sweet more often and ingest more calories as a result.

A survey by Food Standards Australia and New Zealand found that 100 per cent of the respondents had consumed an artificial sweetener in the past seven days, the most common being aspartame. This highlights the need for resolution of the debate. While serious health consequences seem unlikely, it seems clear to me that choosing "diet" products does not equate to a healthy diet.

Choosing a diet cola over the regular sugar version may be a step in the right direction, but the fact is, it's still not good for you — for starters, the acidity destroys your teeth — and water remains the best choice. A sugar-free chocolate bar may seem like a dieter's dream, but don't be fooled by the marketing — the calorie count is still immense.

The last point is simple: there are so many artificial sweeteners because none can truly replicate sugar. Many have an unpleasant aftertaste or are destroyed on cooking or just don't have the same "mouth feel" as sugar.

My advice? Give them a miss and indulge in a little of nature's sweetness such as fruit, maple syrup or honey. ■