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How low-cal sweeteners can make it HARDER to lose weight

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CONCERNS ABOUT the effect sugar can have on weight and teeth has fuelled demand for products made with caloriefree, chemical-based artificial sweeteners, such as aspartame, acesulfame K, saccharin, sorbitol, sucralose and xylitol.



These products, seen as a marker for healthy living, are found in everything from soft drinks and ready meals to cakes and toothpaste, and Britons spend an estimated £68 million a year on them.

But while there's little doubt they reduce the risk of dental decay, there are questions about how healthy they are as a slimming aid — with suggestions they may actually make our cravings for sweet and fattening foods even worse.

Several studies in recent years have found that regular consumption of sweetener-based foods and drinks can make it harder, not easier, for some people to lose weight because of the way the chemicals interact with the brain. Now scientists think they know why. Ground-breaking new research suggests cells in the gut that tell the brain we have eaten sugar — and therefore taken on calories — don't do that for sweeteners, leaving us still craving sweet food.

Other studies show the brain itself reacts differently to sweeteners than sugar.

One of the most recent, in 2021, was carried out by experts at the Diabetes and Obesity Institute, at the University of Southern California in Los Angeles, who scanned the brains of 74 men and women after they consumed sucralose — a widely used sugar alternative and which is 600 times sweeter than sugar.

During a series of laboratory experiments, the volunteers were asked to drink either plain water, a drink containing sucralose, or a drink flavoured with sugar.

After each drink, they underwent an MRI scan to measure blood flow to different areas of the brain at the same time as they viewed images of high-calorie foods, sweet treats or savoury snacks.

The results, published in September 2021 in the journal JAMA Network Open, revealed higher rates of blood flow — a sign of increased neural (brain cell) activity — in the areas of the brain responsible for food cravings, such as the hippocampus, after downing a sweetener-based drink than a sugary one.

In a separate test, the volunteers were also told to help themselves to an all-you-caneat buffet two hours after consuming the same drinks. They ate the most after having the sweetener-based drink.

The researchers stressed that their findings do not represent a clear and damning verdict on sweeteners — for one thing, the increased appetite was mainly seen in women, not men.

One theory is the women in this study were all in the prime childbearing years, when their brains may be more hard-wired to be on the lookout for more calorific foods to aid their chances of successful reproduction and survival.

BUT summarising the research, lead study author Dr Kathleen Page, an endocrinologist, said: 'Based on these findings, I would suggest sucralose may not be as effective in women as men for reducing appetite and food cravings.'

Other research questions if the effects are confined to women.

In a 2019 study at Leiden University in the Netherlands, researchers carried out MRI scans on the brains of healthy young men.

After a sugary drink, there was an immediate response in the hypothalamus, a part of the brain responsible for signalling satiety — or fullness — which led to a decline in cravings within minutes.

But after a drink made with the sweetener sucralose, this response was significantly smaller and delayed, increasing the likelihood of more calories being consumed later to feel full. Yet why would the brain respond so differently to a chemical sweetener than to sugar?

The latest research, published in January in Nature Neuroscience, may provide vital clues.

Scientists at Duke University, North Carolina, found that humans and animals have specific cells in the gut that can tell the difference between the two, rather like taste-buds differentiate between sweet and sour.

These 'sensor' cells — which the research team named neuropods — then trigger different messages to the brain, depending on which substance they have detected.

For example, within a second of detecting sugar in the gut, these neuropods release a chemical — called glutamate — that sends a signal to the brain via the vagus nerve.

This is the body's main 'motorway' for electrical signals travelling between the brain and many of the body's major organs.

That signal instantly tells the brain that the body's calorific needs have been reduced, thanks to a sugar 'hit'.

But no such increase in glutamate levels occurs when the gut detects sweeteners, so the craving for calories remains.

Other research calls into question whether replacing sugar with sweeteners is of any medical benefit to people with diabetes; it's been shown that sweeteners do not trigger an immediate spike in blood sugar levels like sugar does.

Indeed, a Diabetes UK position statement on sweeteners says: 'They can be used in the management of weight and diabetes, as long as substitution [for sugar] doesn't lead to later compensation with increased energy intake.'

The British Dietetic Association says sweeteners can 'assist' with weight loss and diabetes.

However, a 2020 Cochrane review of the evidence on sweeteners and diabetes, which looked at data from more than a dozen major trials, concluded: 'The available data did not show a clear difference between sweeteners and sugar for blood sugar, or body weight.'

Some experts go further. Mike Lean, a professor of human nutrition at Glasgow University, an authority in diabetes, who has written on the role of sugar in the obesity epidemic, says questions remain over the longterm benefits of sweeteners.

'There is no convincing evidence of better outcomes for using artificial sweeteners than sugar in normal amounts,' he says. 'International guidance says to keep added sugar below 10 per cent of calorie intake. And even this is to protect teeth — not to control diabetes or avoid weight gain: the evidence for those is very weak.'

Professor Tim Spector, an expert in genetic epidemiology at King's College London, author of The Diet Myth — The Real Science Behind What We Eat, concurs, saying that trials show little or no weight loss, or reduction in diabetes risk, in those who switch from sugary fizzy drinks to ones that contain sweeteners.

'There's no obvious benefit in switching to a diet drink — except when it comes to your teeth,' says Professor Spector. 'These people should be losing weight, but they're not.'

HE SAYS something else must be happening in the body; he says either the brain is being 'reset' at a neural level (i.e. among brain cells) by the chemicals in sweeteners, so it doesn't react as it does to sugar, or the artificial products affect the body's gut microbiome — the intestinal 'soup' made up of trillions of organisms thought to play a fundamental part in everything from our appetite to our immune system.

'It could be our gut microbes don't know how to deal with chemicals that we were never supposed to eat,' he says.

Proponents of stevia claim it is has the upper hand on other sweeteners because it is plantbased, and was not created in a laboratory.

But Professor Spector believes the very idea of replacing sugar with super-sweet alternatives is flawed. 'We should be weaning people, especially children, off ultra-sweetened foods and teaching them to enjoy other flavours instead,' he says.