



We're all consuming more sugar than our forebears, thanks to processed foods and sweetened drinks, but some say sugar is doing us more harm than we realise – and may even be addictive

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Sugar makes life sweeter. A homemade biscuit with your morning coffee, dessert in a restaurant, cake for a colleague's birthday, even that cold, fizzy pint of Coke to alleviate a Sunday hangover... these little treats get millions of us through the week and punctuate life with pleasurable moments. But are we eating far too much sugar? Is it doing more harm than we think? And is the pleasure we seek in sugar actually addictive?

There's no doubt that we are eating more sugar than our forebears, largely because it's present in so many processed foods. In the past 50 years, sugar consumption has tripled worldwide. In the US, the average person now consumes more than 600 calories from sugar and high-fructose corn syrup per day.

In the UK, the Department of Health (DoH) recommends that "no more than 11 per cent of our energy intake should come from added sugars (including the sugars in fruit juice and honey)", yet its latest data shows that intakes exceed this recommendation among all age groups. Given that the DoH recommendations are fairly generous – around 11 heaped teaspoons of added sugar per day for an average man and eight for a woman – that's an awful lot of the white stuff. But it's easy to exceed

this when you consider that one can of Coke contains the equivalent of 10 teaspoons of sugar.

Most of us know we're eating too much added sugar, and that it can lead to weight gain and the associated health problems, but surely it's easy enough to cut out sugar – it's not addictive, right?

In fact, many scientists and experts believe that sugar is addictive. The body of scientific evidence about this is growing, but isn't conclusive – yet. Several Princeton University studies on rats have shown that consuming large amounts of sugar has an effect on the brain that's similar to that of addictive substances such as cocaine and morphine. Likewise, at Oregon Research Institute, neuroscientists took MRI scans that showed the brain responding to a sugar fix in the same way it does to cocaine – by releasing the pleasure chemical dopamine.

Dr Tony Goldstone of Imperial College London is conducting research that indicates obesity, and possibly sugar consumption, depletes leptin, the hormone that tells your brain that you are full. When leptin levels are depleted, your body doesn't realise you're full, so you keep on eating.

Other studies indicate sugar may also interfere with leptin's counterpart, the hormone ghrelin, which normally tells your brain when you're hungry. "Sugar dampens the suppression of ghrelin," says Dr Robert Lustig of the University of California, San Francisco (UCSF). He's one of sugar's most outspoken critics and has concluded that it's actually toxic. His verdict: "Sugar is as addictive as cocaine."

In a paper published in the journal *Nature* in February 2012, Lustig and his UCSF colleagues Laura Schmidt and Claire Brindis argued that sugar has "clear potential for abuse. Like tobacco and alcohol

[sugar] acts on the brain to encourage subsequent intake”.

Lustig believes the more sugar we consume, the more we need to get the same ‘fix’. This, he says, is because sugar “reduces dopamine signalling in the brain’s reward centre, decreasing the pleasure derived from food and compelling the individual to consume more”.

Nutritionist Dana James agrees. “When we eat something sugary, an immediate dopamine response starts to flood our brains, and we get a sense of feeling good,” she says. “But the more you eat, the more desensitised you become.” In other words, the more Haribo Starmix we shovel into our mouths, the more we need to eat to achieve the same amount of pleasure.

There certainly seems to be a growing amount of evidence to show that sugar is addictive, but for many, the findings are, so far, inconclusive. “I believe sugar is addictive,” says Jeff O’Connell, author of *Sugar Nation*. But is there enough evidence to prove it? He answers: “If this were adjudicated in court and the evidence had to be overwhelming and incontrovertible, no. But the body of evidence is growing and will continue to grow.”

Others disagree. “Currently, there is not enough evidence to

indicate that sugar is addictive in humans,” says registered dietitian Andrew Wilson, of the British Dietetic Association (BDA). Helena Gibson-Moore of the British Nutrition Foundation (BNF) thinks the same: “Sweetness addiction does not appear to meet the criteria for substance dependence as formulated in the Diagnostic and Statistical Manual of Mental Disorders.” The DoH, on the other hand, is non-committal, saying it is keeping “the evidence base under review”.

But why all the hoo-hah over sugar addiction in the first place? Yes, too much cake and cola can rot our teeth and cause weight gain, but surely that’s the worst they can do? Maybe not. The same growing band of scientists, authors and nutritionists who believe sugar is addictive also say it causes more harm to the human body than just providing us with ‘empty calories’ and frequent visits to the dentist.

Drinking one can of sugary drink every day can increase your risk of heart disease by 19 per cent, concluded a recent Harvard University study. And at Touro University California, Professor Jean-Marc Schwarz is studying sugar’s effects on the liver. “When sugar and fructose are abundant in our diet, they may be converted to saturated fat in our liver,” he says. “This can not only damage the liver, but may also lead to metabolic complications including insulin resistance and cardiovascular disease.”

Diabetes UK is adamant that it’s obesity, not sugar, that can lead to insulin resistance (the reduced ability

of the hormone insulin to lower blood-sugar levels) and increase the risk of Type 2 diabetes. “Research shows there isn’t a direct link between increased sugar consumption and insulin resistance,” says Pav Kalsi, clinical advisor at Diabetes UK. “Sugar doesn’t cause Type 2 diabetes but being overweight does. The more sugar you eat, the more likely you are to put on weight.”

But some people are equally convinced that there’s a direct link between sugar and insulin resistance, even for those at a healthy weight. “People worldwide are becoming insulin-resistant in droves because they drastically over-consume processed carbohydrates, led by added sugars,” says Jeff O’Connell, a fitness journalist and former writer at *Men’s Health*, who was a healthy weight when he was diagnosed with pre-diabetes (which includes insulin resistance). “Between 10 and 15 per cent of the insulin-resistant remain normal weight or even thin, like me. Over time, insulin resistance tends to lead to Type 2 diabetes, regardless of body type,” he says.

Further to this, there is an even more controversial link: between excess sugar consumption and some types of cancer. “Insulin resistance may be a fundamental underlying defect in many cancers, as it is in Type 2 diabetes and heart disease,” wrote Gary Taubes in a 2011 article for the *New York Times*. He spoke to researchers exploring the link between diet and cancer, some of whom blamed sugar. Taubes quotes Lewis Cantley, director of the Cancer Center at Harvard Medical School: “Sugar scares me”. The evidence to date is far from overwhelming, but research has shown potential links between insulin resistance and tumour growth.

But before you chuck out the Silver Spoon, don’t panic. Even the most strident anti-sugar campaigners say that a little sugar as part of a healthy diet is fine. More to the point, we actually need to eat some sugars, says the

BNF’s Gibson-Moore. “Sugars are a type of carbohydrate, and are the preferred source of energy for our organs,” she says. “They are therefore fundamental in providing energy for the maintenance of life.” The BNF and other health bodies are also quick to point out that, while we should cut down our sugar intake, it is added sugars, including fruit juice and honey, we should be focusing on, rather than “those found occurring naturally in foods such as fruit”, says Gibson-Moore.

So how much added sugar is it safe to eat? Well, the DoH’s recommended maximum of 11 per cent of your daily energy intake translates to 220 calories from sugar for women, and 275 calories for men. The BDA is slightly stricter, recommending that no more than 10 per cent of total daily calories comes from added sugars.

“Food should be enjoyed,” says Wilson, on behalf of the organisation, who advocates eating sugar in moderation. Diabetes UK’s Kalsi agrees that sugar needn’t be banned entirely. “Diabetes UK advocates eating a healthy diet, but this doesn’t mean it has to be sugar-free. Sugar can still be used in foods and in baking as part of a healthy diet,” she says.

So the one thing researchers, anti-sugar crusaders and bodies like the DoH can all agree on is that we should cut down on our added sugar intake. But that doesn’t mean swearing off biscuits and birthday cake for life.

“There are social and cultural aspects of eating sugar,” says Dana James. “I tell my clients to go ahead and enjoy those special times: just keep it to those occasions.” Perhaps we all need to learn to eat more mindfully, so that sugary treats revert to being occasional pleasures, rather than a crutch that gets us through the day – a crutch that may be doing us more harm than we realise. ●