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Are artificial sweeteners really that bad for us?

Sweeteners are often seen as a healthy alternative to sugar, which can contribute to many diseases and conditions such as obesity, type 2 diabetes, and heart disease. But in the last few years, research has suggested artificial sweeteners might not be the better option - and may be linked to an increased cancer risk.

What are artificial sweeteners?

Artificial sweeteners are chemicals that are added to food or drink instead of sugar to make them taste sweet. Although sweeteners contain some calories, they are much sweeter than sugar, so you only need a tiny amount and end up consuming fewer calories overall.

There are many different kinds like sucralose, which is found in sweets, yoghurts and protein bars, among other foods.

Are artificial sweeteners safe?

Sweeteners have long-been seen as a healthier alternative to sugar, but research suggests this might not be the case. In early 2023, aspartame - which is 200 times sweeter than sugar and found in diet fizzy drinks, chewing gum and other foods[1] - was declared a possible cancer risk to humans[2].

The World Health Organization's cancer research arm, the International Agency for Research on Cancer (IARC), conducted a safety review of aspartame and labelled it "possibly carcinogenic to humans" - meaning there is some evidence linking aspartame to cancer, but it is limited.

A 2022 French study suggested those who consumed larger amounts of artificial sweeteners, including aspartame, had a slightly higher cancer risk[3]. However, experts say the implications of the study are complex.

Dr Michael Jones, senior staff scientist in genetics and epidemiology at The Institute of Cancer Research in London, explains: “This large observational study of over 100,000 adults in France links the use of artificial sweeteners to cancer risk. However, the current consensus, according to the US National Cancer Institute, is that there is no clear evidence that artificial sweeteners cause cancer in humans – although there is frequent re-evaluation of the available evidence by food safety health authorities.

"The link between artificial sweeteners and cancer reported in this study does not imply causation – it is not proof that artificial sweeteners cause cancer,” he adds. “The types of people who use artificial sweeteners may be different in many ways to those who do not, and these differences may partly or fully explain the association."

In other words, the connection is not simple - and more research is needed to understand the link.

Artificial sweeteners and heart disease

Research has suggested sweeteners may be bad for our health in other ways too. A study published in the British Medical Journal linked regularly eating or drinking foods and drinks with artificial sweeteners with a greater risk of heart and circulatory diseases[4].

Tracy Parker, senior dietitian at the British Heart Foundation (BHF), says these studies suggest there may be a link, but more research is needed to fully understand the relationship between artificial sweeteners and heart disease.

"Most adults in the UK eat too much sugar, and this is linked to health problems such as obesity and tooth decay. Artificial sweeteners are an attractive way to reduce sugar intake, and before they can be added to food in Europe the European Food Safety Agency (EFSA) has to approve their use. This is a rigorous process, so you can feel confident they are safe to eat.

"While these findings shouldn't cause too much worry, it's always a good idea to look at the amount of sugar and sweeteners in your diet. Try to swap fizzy drinks for water and increase your intake of heart healthy foods, like lentils, nuts and seeds, as well as fruit, vegetables and wholegrains."

Sweeteners can lead to other problems, including diarrhoea, as they can have a laxative effect. The sweetener aspartame is not suitable for people with phenylketonuria (PKU), a rare inherited condition. This is because aspartame contains phenylalanine, which people with PKU cannot metabolise.

Artificial sweeteners, appetite and sugar cravings

Although sweeteners have fewer calories than sugar alternatives, they might actually increase appetite and lead to weight gain. This may be because artificial sweeteners fail to activate the brain's food reward system, which helps to make you feel satisfied after you eat[5].

At the same time, research suggests, artificial sweeteners may encourage sugar cravings because they are sweet - making you want more. So rather than simply swapping from sugary fizzy drinks to diet versions, it is healthier to cut down. It may also help to swap to an alternative like sparkling water with fresh lemon for flavour.

Artificial sweeteners and type 2 diabetes

Type 2 diabetes is a condition that causes the level of sugar in the blood to become too high. One of the treatments is to reduce sugar intake - and drinks and foods that contain sweeteners are often marketed as a good alternative to sugary versions. However, these sugar substitutes may actually be harmful to those with type 2 diabetes.

The sweeteners saccharin and sucralose could lead to increased blood sugar levels in some adults and may negatively affect the body's ability to regulate its blood sugar levels[6]. This is because sweeteners can change the balance of the trillions of different microbes that live in our gut. However, research found the effects these sweeteners have varies greatly among different people - and more evidence is needed.

How to spot sweeteners on packaging

The best way to see if your food or drink contains sweeteners is to check the packaging. They're found in drinks, desserts, ready meals and sweets.

Common sweeteners approved for use in the UK include:

- Acesulfame K (E950).
- Aspartame (E951).
- Erythritol (E968).
- Saccharin (E954).
- Sorbitol (E420).
- Steviol glycosides (E960).
- Sucralose (E955).
- Xylitol (E967).

The research into sweeteners and health is mixed. What we do know is that eating too much sugar is bad for us, so cutting down is important. And while the odd diet drink probably won't affect your health, it's better to consume sweeteners in moderation.

Further reading

1. European Food Safety Authority: Aspartame.
2. World Health Organisation: Aspartame hazard and risk assessment results released.
3. Debras et al: Artificial sweeteners and cancer risk: Results from the NutriNet-Santé population-based cohort study.
4. Debras et al: Artificial sweeteners and risk of cardiovascular diseases: results from the prospective NutriNet-Santé cohort.
5. Yang: Gain weight by going diet? Artificial sweeteners and the neurobiology of sugar cravings.

6. Suez at el: Personalised microbiome-driven effects of non-nutritive sweeteners on human glucose tolerance.

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