Aspartame: Popular sweetener could be classified as a possible carcinogen by WHO—but there's no cause for panic

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Credit: AI-generated image (disclaimer)

According to reports, the International Agency for Research on Cancer (IARC), part of the World Health Organization (WHO), is set to declare the artificial sweetener aspartame as "possibly carcinogenic to humans".

Aspartame is about 200 times sweeter than sugar and is one of the most commonly used artificial sweeteners. It's used particularly in "low calorie" or "diet" foods and beverages, but is contained in a wide variety of products including drinks, ice creams, chewing gums, confectionery, sauces and snacks.

We don't have further information yet on what evidence the IARC will base this new classification on, but the WHO will publish the full data on July 14.

While reports like these can understandably be worrying, there's no reason to panic at this stage.

Aspartame was first approved for use by the US Food and Drug Administration (FDA) in 1974, and ever since then there have been claims made about its potential effects on health.

Over time, aspartame has not only been linked to cancer, but also to other conditions such as multiple sclerosis, blindness, seizures, memory loss, depression, anxiety, birth defects and death.

However, frequent evaluations by regulatory agencies such as the WHO, the FDA and the European Food Safety Authority (EFSA) have found no evidence to support these assertions.

So far, the regulators have all agreed that it's safe for a person to consume 40mg of aspartame per kilogram of their body weight per day. That's about 2.8g for a 70kg adult—and is much more than most people consume.

What does 'possibly carcinogenic' actually mean?

The safety of food additives is regularly reevaluated. This is important as

new evidence can emerge, especially with the development of different methods to assess the health effects of additives.

This year, aspartame has been reevaluated by two WHO agencies: the International Agency for Research on Cancer (IARC) and the Joint FAO/WHO Expert Committee on Food Additives (JECFA).

The two agencies have very different remits. The IARC looks at hazard and JECFA at risk. This distinction is important. For example, sunshine is a hazard as it can cause skin cancer, but the risk depends on the time spent in the sun and whether one uses sunscreen.

The IARC's job is to investigate possible causes of cancer and identify hazards. In its reports (called monographs), it reviews all available evidence and classifies hazards into one of four categories:

- Group 1: carcinogenic to humans (sufficient evidence for cancer in humans)
- Group 2a: probably carcinogenic to humans (limited evidence in humans, sufficient evidence in animals)
- Group 2b: possibly carcinogenic to humans (limited evidence in humans, insufficient evidence in animals)
- Group 3: not classifiable (inadequate evidence in humans or animals).

Aspartame will reportedly be classified into group 2b. It shares this category with aloe vera leaves, electromagnetic radiation, the heart drug digoxin and engine exhaust fumes, among many other things. For all of these hazards, there is some limited data that suggests they might cause cancer—but nothing convincing.

These categories can be confusing, because they refer only to the strength of the evidence that something can cause cancer, not the degree

of risk. Group 1 for example includes smoking, alcohol, processed meat, plutonium and sunlight. There's convincing evidence each one can cause cancer.

But the actual risks are very different and depend on amount and exposure. For instance, plutonium and smoking are best avoided, but there's no reason to avoid processed meat or alcohol completely.

While the IARC assesses the hazard, it's JECFA's job to assess the risk and make a recommendation about the acceptable daily intake.

Their assessment will also be published on July 14, but there hasn't been an indication in the media reports what it will say. It's possible the acceptable daily intake will remain at 40mg per kilogram of body weight, or it may be reduced. Without having access to the data, is impossible to predict.

The evidence so far

The last review of aspartame's safety was conducted by EFSA in 2013. This review didn't find any new evidence that aspartame causes cancer and confirmed previous reviews by other regulators.

One compound that was of particular interest was methanol, which is formed in the gut when aspartame is broken down and converted into formaldehyde by the human body. Formaldehyde is a known carcinogen (group 1). However, the amount that can form after the consumption of aspartame is much lower than what the body produces naturally.

In the interim there has been some data from a French study, which asked participants to provide information about their diet and followed them up for several years afterwards. This research suggested high consumption of aspartame increases cancer risk.

However, the results are difficult to interpret as obesity is an independent risk factor for cancer and people who are obese often use sweeteners. It's also difficult to estimate aspartame intake accurately from diet data alone.

It's likely that the upcoming assessments will include this data and therefore provide a better estimate of aspartame's risk. Until then, there is no reason for concern. Aspartame has been scrutinized for a long time and the classification of "possibly carcinogenic" suggests it's unlikely there will be any major change in assessment or implications for consumers.

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