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### Commonly used sweetener found linked to anxious behaviour in mice

Story by Vishwam Sankaran • 5h ago



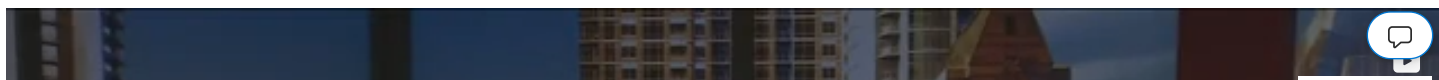
Researchers have found that aspartame, a commonly used artificial sweetener found in nearly 5,000 diet foods and drinks, is linked to anxiety-like behavior in mice.



Photo illustration of 'Ultra Processed' foods on February 16, 2018 in London, England © Getty Images

The study, published in the journal PNAS, noted that mice that consumed aspartame experienced anxiety, and the effects extended up to two generations from the male rodents exposed to the sweetener.

“What this study is showing is we need to look back at the environmental factors, because what we see today is not only what’s happening today, but what happened two generations ago and maybe even longer,” study co-author Pradeep Bhide from the Florida State University College of Medicine in the US said.





Scientists say the effects may be due to epigenetic changes in mice.

Unlike mutations in genes, epigenetic changes are reversible and don't change the DNA sequence but can change how the body reads a DNA sequence.

Researchers found that aspartame exposure in mice led to changes in the expression of genes regulating excitation-inhibition balance in the brain region amygdala which regulates anxiety and fear.

In the study, they provided mice with drinking water that contained aspartame at approximately 15 per cent of the FDA-approved maximum daily human intake.

This dosage, scientists say, is equivalent to about six to eight 8-ounce cans of diet soda a day for humans, and was continued for 12 weeks in the study spanning four years.

When consumed, aspartame – a sweetener approved by the US Food and Drug Administration (FDA) in 1981 – becomes aspartic acid, phenylalanine, and methanol, all of which can have potent effects on the central nervous system, researchers say.

Researchers found “pronounced anxiety-like behaviour” in the mice through a variety of maze tests across multiple generations descending from the aspartame-exposed males.

“The anxiety, its response to diazepam and the changes in amygdala gene expression are not limited to the aspartame-exposed individuals but also appear in up to two generations descending from the aspartame-exposed males,” scientists wrote in the study.

“It was such a robust anxiety-like trait that I don't think any of us were anticipating we would see. It was completely unexpected. Usually you see subtle changes,” Sara Jones, another co-author of the study, said.

When the mice were given diazepam – a drug used to treat anxiety disorder in humans – they stopped showing anxiety-like behavior, scientists say.

“Extrapolation of the findings to humans suggests that aspartame consumption at doses below the FDA recommended maximum daily intake may produce neurobehavioral changes in aspartame-consuming individuals and their descendants,” researchers wrote.

In further studies, researchers hope to understand how aspartame affects memory in mice and the mechanisms that likely influence the transmission of aspartame's effect across generations.

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