

High-Fructose Corn Syrup Affects Brain Health

High-fructose corn syrup (HFCS) is a sweetener commonly used in processed foods and beverages. It's made from corn starch and is typically used as a substitute for sucrose (table sugar) because it's cheaper and more shelf-stable.

[Research recently published](#) in the Public Library of Science (PLOS) used an animal model to find consuming HFCS from a young age caused adverse changes in a part of the brain responsible for memory, emotion, and nervous system function.

A prolonged intake of HFCS will result in a prolonged reduction in metabolism in these brain regions, causing degeneration of these regions and leading to the cognitive decline typical of Alzheimer's disease.

A March 2023 [review of studies](#) published in The American Journal of Clinical Nutrition also suggests that fructose may reduce metabolism in brain regions involved in higher cognitive functions.

The researchers involved in the review theorize that increased fructose levels in the brain may increase our risk for Alzheimer's disease.

However, they also emphasize it's the consumption of glucose (table sugar) and high glycemic index foods that play the greatest role in increasing fructose levels in the brain.

"We make the case that Alzheimer's disease is driven by diet," the review's lead author, Dr. Richard Johnson, a professor at the University of Colorado School of Medicine specializing in renal disease and hypertension, [said in a statement](#).

Johnson suspects a response he calls the "survival switch," which helped ancient humans survive during times of food scarcity, is stuck in the "on" position in a time of abundant food. This leads to overeating high-fat, sugary, and salty food, which prompts excess fructose production.

Humans still have adaptations from prehistoric times that affect how we respond to food stimuli in modern times.

Johnson believes that initially this process was “reversible and meant to be beneficial,” but chronic and persistent fructose consumption “leads to progressive brain atrophy and neuron loss with all of the features of AD [Alzheimer’s disease].”

He suggests that dietary and pharmacologic trials to reduce fructose exposure or block fructose metabolism should be performed to find if there’s a benefit that will aid in the prevention, management, or treatment of Alzheimer’s disease.

Fructose Changes Brain Metabolism

Fructose consumption [has increased significantly](#) due to the extensive use of HFCS in beverages and processed foods.

This sweetener is also been shown to cause [negative health effects](#), especially diabetes.

“Research has suggested Type 2 diabetes can be a risk factor for Alzheimer’s disease and other types of dementia, like vascular dementia,” Claire Sexton, who holds a doctorate in psychiatry from the University of Oxford and is the Alzheimer’s Association senior director of scientific programs and outreach, told The Epoch Times.

She explained that this could be because the factors that increase the risk of Type 2 diabetes have also been shown to increase the risk of dementia. It could also be a result of the long-term impacts of impaired sugar metabolism in the brain, which lead to low blood sugar, since the brain needs blood sugar to stay fueled.

In a [double-blinded study](#) at the University of California, Davis, researchers observed [increased liver fat](#) and reduced [insulin sensitivity](#) in two groups that drank either three HFCS-sweetened or three sugar-sweetened beverages daily for only two weeks.

This doesn’t mean that eating fruit is bad for our health. Fructose is only harmful [in excess amounts](#) and not when it comes from fruit, which contains small amounts compared to many processed foods.

Fruits are also packed with nutrients and fiber that help us maintain a balanced diet that encourages good health.

The problem is our consumption of free sugars, which are fructose, glucose, and sucrose that are separated from their naturally occurring source. This includes sugars that are added to food and drinks during commercial processing.

Evidence shows that the [health risks from sugars](#) are related to consuming too many free sugars in the diet, not from eating sugars that are naturally present in fruits or milk.

Is Alzheimer's Disease Type 3 Diabetes?

Scientists report a [close association](#) between Type 2 diabetes and Alzheimer's, pointing out that Alzheimer's disease is twice more frequent in diabetic patients. This theory suggests that Alzheimer's may be a metabolic disorder, similar to Type 2 diabetes, in which the body is unable to properly process insulin.

Studies [show that insulin](#) plays a critical role in brain function, and [insulin resistance](#) in the brain plays a role in cognitive decline.

A study published in [Frontiers in Neuroscience](#) finds that diabetic hyperglycemia (high blood sugar) can directly result in brain hyperglycemia (high brain sugar levels). This may cause the blood-brain barrier to adapt by letting in less glucose, which the brain needs to function. The researchers concluded that brain hyperglycemia provides a plausible explanation for the well-documented link between Alzheimer's disease and diabetes.

There has been a growing interest in the idea that Alzheimer's disease may be another type of diabetes, called "[type 3 diabetes](#)."

However, this theory is controversial, and there is disagreement about whether this is really how the disease develops.

Sexton said she doesn't think Alzheimer's is diabetes, and to suggest they are the same does not account for the complexity of either disease.

"While studies have shown a link between insulin resistance and risk of developing Alzheimer's disease, the condition can still develop without the presence of excessive glucose in the brain," said Sexton.

When asked if treating insulin resistance could potentially reduce Alzheimer's

risk, she said that idea is currently being explored in clinical trials.

“In fact, last year at the Alzheimer’s Association International Conference, T3D [type 3 diabetes] Therapeutics reported positive interim results from their phase 2 trial of T3D- 959, which seeks to overcome insulin resistance in the brain and restore its metabolic health,” said Sexton.