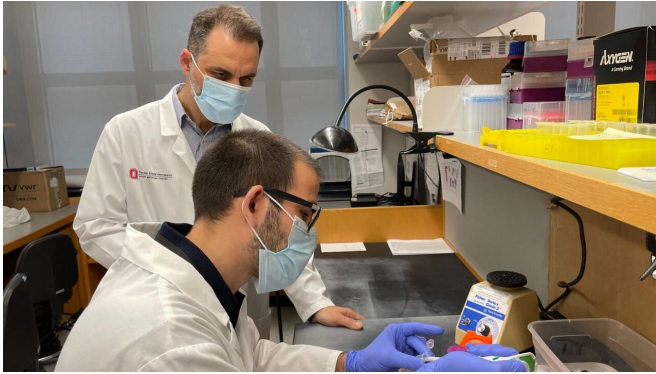


High doses of saccharin don't lead to diabetes in healthy adults, study finds

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Researchers at The Ohio State University Wexner Medical Center conducted a study expecting to confirm how artificial sweeteners contribute to glucose intolerance, but surprisingly learned that the sweeteners have no adverse effects on healthy adults and do not change metabolic profiles or lead to diabetes. Credit: The Ohio State University Wexner Medical Center

For those trying to live a healthy lifestyle, the choice between sugar and artificial sweeteners such as saccharin can be confusing. A new study led by researchers at The Ohio State University Wexner Medical Center and The Ohio State University College of Medicine found the sugar substitute saccharin doesn't lead to the development of diabetes in healthy adults as previous studies have suggested.

The study findings are published in the journal *Microbiome*.

"It's not that the findings of previous studies are wrong, they just didn't adequately control for things like underlying [health conditions](#), diet choices and lifestyle habits," said George Kyriazis, assistant professor of biological chemistry and pharmacology at Ohio State and senior author of the study. "By studying the artificial [sweetener saccharin](#) in [healthy adults](#), we've isolated its

effects and found no change in participants' gut microbiome or their metabolic profiles, as it was previously suggested."

Kyriazis collaborated with researchers at Ohio State's College of Food, Agricultural & Environmental Sciences, Ohio State's College of Arts and Sciences, Sanford Burnham Prebys Medical Discovery Institute in California and the Translational Research Institute for Metabolism and Diabetes at Advent-Health in Florida.

Non-caloric [artificial sweeteners](#) are often consumed as a substitute for dietary sugars, and saccharin is one of six artificial sweeteners approved by the Food and Drug Administration.



Kelly Scully uses artificial sweetener in her coffee each day to reduce her sugar intake. A new study by researchers at The Ohio State University Wexner Medical Center finds sugar substitutes do not lead to diabetes in healthy adults as previous studies have suggested. Credit: The Ohio State University Wexner Medical Center

The use of artificial sweeteners has increased dramatically over the past decade due to growing

awareness of the negative health outcomes associated with consuming too much sugar, study authors noted.

"Previous studies elsewhere have suggested that consuming artificial sweeteners is associated with metabolic syndrome, weight gain, obesity and non-alcoholic fatty liver disease. These findings have raised concerns that consuming them may lead to adverse public health outcomes, and a lack of well-controlled interventional studies contributed to the confusion," said study first author Joan Serrano, a researcher in the department of biological chemistry and pharmacology at Ohio State.

A total of 46 healthy adults ages 18-45 with body mass indexes of 25 or less completed this randomized, double-blind, placebo-controlled study.

Participants ingested capsules that contained the maximum acceptable daily amount of either saccharin, or lactisole (a sweet taste receptor inhibitor, or saccharin with lactisole or placebo every day for two weeks. The maximum acceptable daily amount of saccharin is 400 milligrams per day, which is far more than the average consumer would consume.

The study excluded people with acute or chronic medical conditions or taking medications that could potentially affect metabolic function, such as diabetes, bariatric surgery, inflammatory bowel disease or a history of malabsorption and pregnant or nursing.

Researchers also tested for 10 weeks the effects of even higher dose of saccharin in mice that genetically lack sweet taste receptors with the same results: the artificial sweetener didn't affect glucose tolerance, or cause any significant gut microbiota changes or apparent adverse health effects.

"Sugar, on the other hand, is well-documented to contribute to obesity, heart disease and diabetes," Kyriazis said. "So when given the choice, artificial sweeteners such as saccharin are the clear winner based on all of the scientific information we currently have."

Future research will study each FDA-approved sweetener individually to examine if there are any differences in how they're metabolized.

Researchers will study these substances over a longer period of time to ensure they're safe for daily use.

More information: Joan Serrano et al, High-dose saccharin supplementation does not induce gut microbiota changes or glucose intolerance in healthy humans and mice, *Microbiome* (2021). DOI: [10.1186/s40168-020-00976-w](https://doi.org/10.1186/s40168-020-00976-w)

Provided by The Ohio State University

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