High-dose saccharin does not induce gut microbiota changes or glucose intolerance

Joan Serrano
Kathleen R. Smith
Audra L. Crouch
Vandana Sharma
Fanchao Yi
Veronika Vargova
Traci E. LaMoia
Lydia M. Dupont
Vanida Serna
Fenfen Tang
Laisa Gomes-Dias
Joshua Blakeslee
Emmanuel Hatzakis
Scott N. Peterson
Matthew Anderson
Richard E. Pratley
George A. Kyriazi

Video Byte

Keywords: artificial sweeteners, saccharin, sweet taste receptors, gut microbiota, glucose intolerance, short-chain fatty acids, fecal metabolomics, T1R2, dysbiosis, Microbiome

Posted Date: March 11th, 2021

DOI: <https://doi.org/10.21203/rs.3.rs-318775/v1>

License: This work is licensed under a Creative Commons Attribution 4.0 International License.
[Read Full License](#)

Abstract

Non-caloric artificial sweeteners (NCAS) are widely used as a substitute for dietary sugars to control body weight or glycemia. With a drastic increase in their use recently, health officials have been concerned about the effects of NCAS use. Epidemiological studies have had conflicting results, with some studies suggesting that NCAS can alter the gut microbiota or induce glucose intolerance. A new clinical study explored the effects of pure saccharin on the gut microbiota and glucose tolerance in healthy individuals. In a double-blind, placebo-controlled, parallel arm study involving men and women, researchers found that the maximum acceptable daily intake of saccharin, lactisole, or saccharin with lactisole did not alter microbial diversity or oral glucose tolerance. A parallel study with healthy mice had similar results, with no treatment altering microbial diversity, glucose absorption, or microbial activity. While further studies are needed to expand these findings to additional sweeteners, the results suggest that short-term saccharin consumption on its own does not alter gut microbiota or induce glucose intolerance in healthy humans and mice. Future studies should concentrate on identifying the underlying physiological or lifestyle conditions that may make artificial sweetener use harmful.