Artificial sweeteners may not be safe sugar alternatives: study

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Artificial sweeteners may not be safe sugar alternatives. Credit: Mathilde Touvier (CC-BY 4.0, creativecommons.org/licenses/by/4.0/)

Artificial sweeteners reduce added sugar content and corresponding calories while maintaining sweetness. A study publishing March 24th in *PLOS Medicine* by Charlotte Debras and Mathilde Touvier at the French National Institute for Health and Medical Research (Inserm) and Sorbonne Paris Nord University, France and colleagues suggests that some artificial sweeteners are associated with increased cancer risk.

Many food products and beverages containing artificial sweeteners are consumed by millions of people daily. However, the safety of these additives has been a subject of debate. To evaluate the potential carcinogenicity of artificial sweeteners, researchers analyzed data from 102,865 French adults participating in the NutriNet-Santé study. The NutriNet-Santé study is an ongoing web-based cohort initiated in 2009 by the Nutritional Epidemiology Research Team (EREN). Participants enroll voluntarily and self-report medical history, sociodemographic, diet, lifestyle, and health data. Researchers gathered data concerning artificial sweetener intake from 24-hour dietary records. After collecting cancer diagnosis information during follow-up, the researchers conducted statistical analyses to investigate the associations between artificial sweetener intakes and cancer risk. They also adjusted for a range of variables including age, sex, education, physical activity, smoking, body mass index, height, weight-gain during follow-up, diabetes, family history of cancer, as well as baseline intakes of energy, alcohol, sodium, saturated fatty acids, fiber, sugar, whole-grain foods, and dairy products.

The researchers found that enrollees consuming larger quantities of artificial sweeteners, particularly aspartame and acesulfame-K, had higher risk of overall cancer compared to non-consumers (hazard ratio 1.13, 95% confidence interval 1.03 to 1.25). Higher risks were observed for breast cancer and obesity-related cancers.

The study had several important limitations; dietary intakes are self-

reported. Selection bias may also have been a factor, as participants were more likely to be women, to have higher educational levels, and to exhibit health-conscious behaviors. The observational nature of the study also means that residual confounding is possible and reverse causality cannot be ruled out. Additional research will be required to confirm the findings and clarify the underlying mechanisms.

According to the authors, "Our findings do not support the use of artificial sweeteners as safe alternatives for sugar in foods or beverages and provide important and novel information to address the controversies about their potential adverse health effects. While these results need to be replicated in other large-scale cohorts and underlying mechanisms clarified by experimental studies, they provide important and novel insights for the ongoing re-evaluation of food additive sweeteners by the European Food Safety Authority and other health agencies globally".

Debras adds, "Results from the NutriNet-Santé cohort (n=102,865) suggest that artificial sweeteners found in many food and beverage brands worldwide may be associated with increased cancer risk, in line with several experimental in vivo / in vitro studies. These findings provide novel information for the re-evaluation of these food additives by health agencies."

More information: Debras C, Chazelas E, Srour B, Druesne-Pecollo N, Esseddik Y, Szabo de Edelenyi F, et al. (2022) Artificial sweeteners and cancer risk: Results from the NutriNet-Santé population-based cohort study. *PLoS Med* 19(3): e1003950. doi.org/10.1371/journal.pmed.1003950