ISA Scientific Symposium

Low/no calorie sweeteners as a tool in reducing sugars intake, body weight and risk of non-communicable diseases (NCDs): From evidence to recommendations

Thursday 16th November 2023, 11:00 – 12:30 (Room 1)

Detailed overview

Low/no calorie sweeteners and risk of non-communicable diseases (NCDs): Correlation vs. Causation

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The role of low-no-calorie sweeteners (LNCS) on cancer has been widely debated since the 70s. Still, the meta-analyses from the WHO 2022 – Health effects of the use of non-sugar sweeteners found no excess risk of other cancers from LNCS.[1]

To provide further information on the role of LNCS on the risk of cancer, we performed a meta-analysis using the four studies including information on non-SSB and mortality from all cancer sites combined.[2] All estimates were close to unity with no between-study heterogeneity. Our pooled estimate for all cancers was 1.01 (95% CI: 0.96, 1.06), thus indicating no excess risk for the highest level of consumption. The International Agency for Research on Cancer (IARC) classified in June 2023 aspartame as possibly carcinogenic to humans (Group 2B) mainly on the basis of a European cohort study on liver cancer.[3] However, a study subsequently published based on the Women's Health Initiative cohort study found no association between aspartame and liver cancer.[4] Thus, we can now exclude a consistent association between LNCS and cancer risk, too.

With reference to cardiovascular diseases and related indicators, the WHO 2022 – Health effects of the use of non-sugar sweeteners indicate systematic different findings from randomized controlled trials (RCT) and observational (mainly cohort) studies.[1] Observational studies, in fact, found moderate associations between LNCS and cardiovascular diseases or stroke. This was however not confirmed when substitution analysis was performed.[5] Randomized clinical trials (RCT) indicate moderate but consistent favorable effects of LNCS on measures of body weight and consequently indicators of metabolic and cardio-metabolic risk.[1] Observational studies are exposed to a series of biases, information, selection, follow-up participation biases, etc., and can hardly prove moderate associations, i.e. relative risks of the order of 1.1 to 1.3. The key issue here however is **reverse causation**, i.e., overweight and obese subjects tend to use and continue to use more frequently LNCS.

References

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4. Zhao L, Zhang X, Coday M, et al. Sugar-Sweetened and Artificially Sweetened Beverages and Risk of Liver Cancer and Chronic Liver Disease Mortality. JAMA. 2023 Aug 8;330(6):537-546.
5. Lee JJ, Khan TA, McGlynn N, et al. Relation of Change or Substitution of Low- and No-Calorie Sweetened Beverages With Cardiometabolic Outcomes: A Systematic Review and Meta-analysis of Prospective Cohort Studies. Diabetes Care. 2022;45(8):1917-1930