

Low- and no-calorie sweeteners: The basics



Low- and no-calorie sweeteners (LNCS) are intensely sweet compounds that can be used to provide sweetness in food and beverages while helping to reduce sugar and calorie intake.^{1,2}

All LNCS approved for use are safe and are among the most studied substances by regulatory and scientific bodies around the world.



HOW DO YOU KNOW IF A LNCS IS SAFE FOR CONSUMPTION?

When you find conflicting information, it is important to verify using a trusted source such as:



JECFA

The Joint (FAO / WHO) Expert Committee on Food Additives



FDA

United States Food and Drug Administration

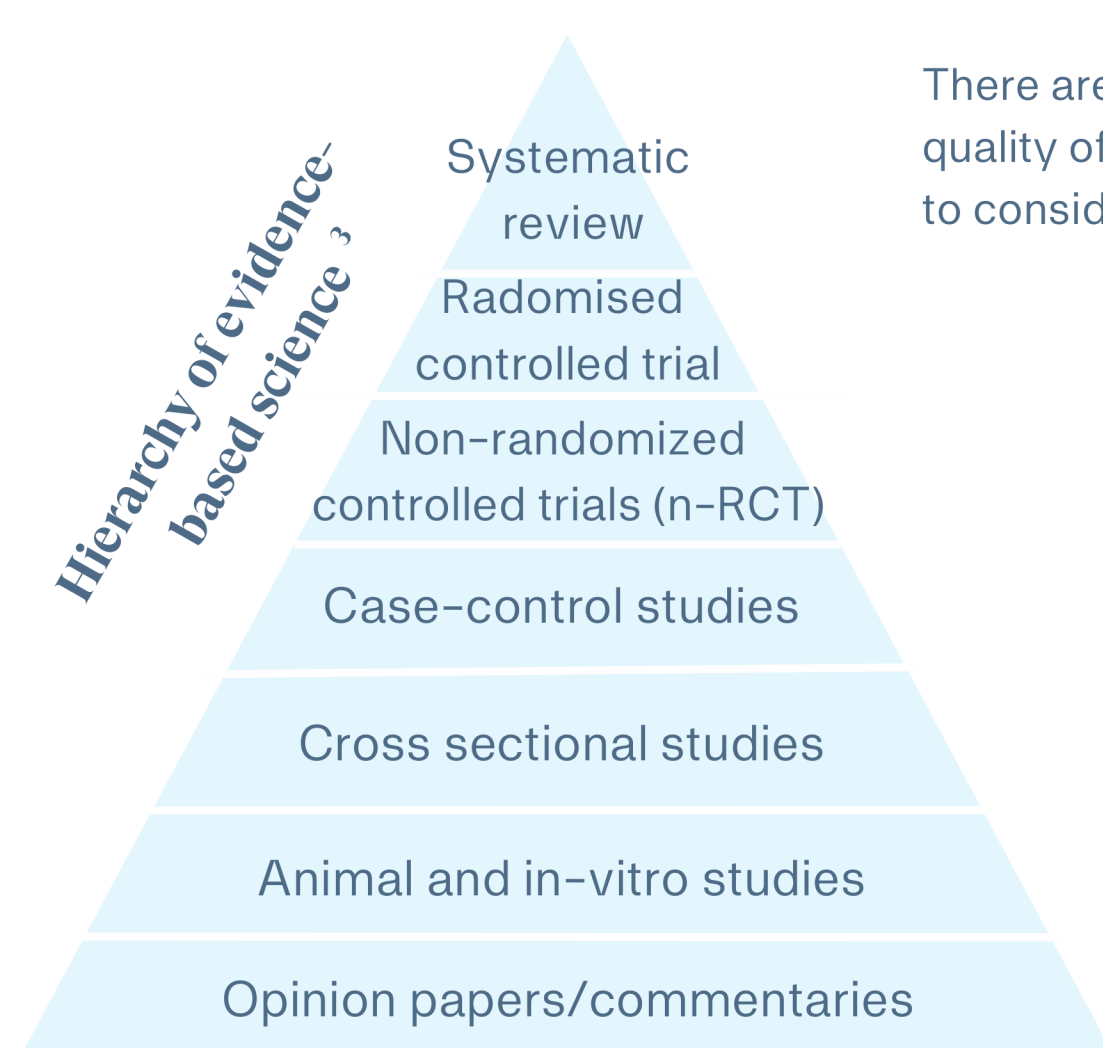


EFSA

European Food Safety Authority

LNCS are among the most studied substances around the world. Regulatory bodies examine the total weight of evidence before a clear indication of the safety of a sweetener is given. All approved low- and no-calorie sweeteners are safe for use.

HOW DO YOU ASSESS SCIENTIFIC STUDIES?



There are criteria used to evaluate the quality of scientific studies. Some points to consider are:⁴

Number of people studied (n)

Type of population studied

Type and robustness of the study

Duration of the intervention*

*especially important for RCTs. RCTs are designed to look at cause and effect, which can not be assessed in a cohort study.

WHAT IS THE ADI (ACCEPTABLE DAILY INTAKE)?

ADI is the estimated quantity of substance (mg) per kg of body weight per day that a person can consume for a lifetime without posing any health risk.⁵

The ADI values are rigorously defined by The Joint (FAO/WHO) Expert Committee on Food Additives (JECFA) and consider a large margin of safety. Therefore, it is unlikely that one would reach the ADI.⁶

Examples of ADI:

LNCS	Acceptable Daily Intake (ADI) (mg/kg/day) ⁷	# of Tabletop Sweetener Packets Equivalent to ADI ⁸
Acesulfame-K	15	23
Aspartame	50	75
Cyclamate	11	3
Erythritol	not specified	
Steviol glycosides	12	27
Saccharin	15	45
Sucralose	5	23
Neotame	0.3	23

*based on a 60kg person

Busting common myths

Based on the scientific literature, approved LNCS:

Do not cause obesity, cancer or other conditions.⁸⁻¹¹

Can support weight management when used to replace sugar in products consumed in the diet.^{10,12,13}

Support glycaemic response, as they do not alter glycaemic levels and insulin response.^{9,10,13,14}

Are non-cariogenic.^{11,15}

Globally, rates of obesity and chronic disease are rising. Public health authorities recommend limiting the intake of free sugars in the diet. The World Health Organization (WHO) recommends reducing free sugar intake to less than 10% of the daily caloric intake with a further reduction to 5% for additional benefits.¹⁶ For example, for a 2,000 kcal/day diet, it is recommended to consume less than 50 grams of sugar. LNCS are one way to achieve a reduction in free sugars intake as they provide sweetness without significant calories.¹⁶



WHICH LNCS IS THE BEST?

The best LNCS is the one that is best suited to your taste preference!

To find your favourite:



Explore various flavours.



Choose the format of your preference (drops, sachet, bulk, etc.)



Consider the price

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References

- Gibson S, et al. 2014. Consensus statement on benefits of low-calorie sweeteners. *Nutr. Bull.* Nov;39(4): 386-389.
- International Sweeteners Association (ISA). What are low/no calorie sweeteners? <https://www.sweeteners.org/what-are-low-no-calorie-sweeteners/>. Accessed 22 February 2024.
- International Sweeteners Association (ISA). The Importance of Evidence Hierarchy in Nutrition Science: The Case of Low/No Calorie Sweeteners. https://www.sweeteners.org/wp-content/uploads/2022/05/isa_infographic_the-importance-of-evidence-hierarchy-in-science.pdf. Accessed 22 February 2024.
- Daher M, et al. 2019. Non-nutritive sweeteners and type 2 diabetes: Should we ring the bell? *Diabetes Res Clin Pract.* Sep;155:107786.
- Gilman, MB. 2011. Additives in Dairy Foods-Safety. *Encyclopedia of Dairy Sciences (Second Edition)*. Academic Press. p 55-60.
- EFSA Panel on Food Additives and Nutrient Sources added to Food (ANS). 2012 (amended Mar. 2021). Guidance for submission for food additive evaluations. *EFSA Journal* 10(7):2760.
- U.S. Food & Drug Administration (FDA) Aspartame and Other Sweeteners in Food. <https://www.fda.gov/food/food-additives-petitions/aspartame-and-other-sweeteners-food>. Accessed 22 February 2024.
- Laviada-Molina H, et al. 2020. Effects of nonnutritive sweeteners on body weight and BMI in diverse clinical contexts: Systematic review and meta-analysis. *Obes Rev.* Jul;21(7):e13020.
- Lohner S, et al. 2017. Health outcomes of non-nutritive sweeteners: analysis of the research landscape. *Nutr J.* Jun;16(1): 55.
- Nichol AD, et al. 2018. Glycemic impact of non-nutritive sweeteners: a systematic review and meta-analysis of randomized controlled trials. *Eur J Clin Nutr.* Jun;72(6):796-804.
- Rios-Leyvraz, et al. 2022. Health effects of the use of non-sugar sweeteners: a systematic review and meta-analysis. Geneva: World Health Organization. License: CCBY-NC-SA3.0IGO.
- Ashwell M, et al. 2020. Expert consensus on low-calorie sweeteners: facts, research gaps and suggested actions. *Nutr Res Rev.* Jun;33(1):145-154.
- McGlynn ND, et al. 2022. Association of Low- and No-Calorie Sweetened Beverages as a Replacement for Sugar-Sweetened Beverages with Body Weight and Cardiometabolic Risk: A Systematic Review and Meta-analysis. *JAMA network open.* Mar;5(3):e222092.
- Greyling A, et al. 2020. Acute glycaemic and insulinemic effects of low-energy sweeteners: a systematic review and meta-analysis of randomized controlled trials. *Am J Clin Nutr.* Oct;112(4):1002-1014.
- Moynihan PJ & Kelly SA. 2014. Effect on caries of restricting sugars intake: systematic review to inform WHO guidelines. *J Dent Res.* Jan;93(1): 8-18
- World Health Organization. 2023. Use of non-sugar sweeteners: WHO guideline. Geneva: World Health Organization. License: CCBY-NC-SA3.0IGO.