



## **Outline**

- Baseline understanding of science
- Public health backdrop
- What others are saying about low and no calorie sweeteners (LNCS)
- What the evidence shows on LNCS and health outcomes
- Transparency
- Takeaways

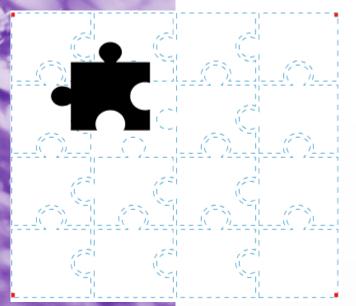


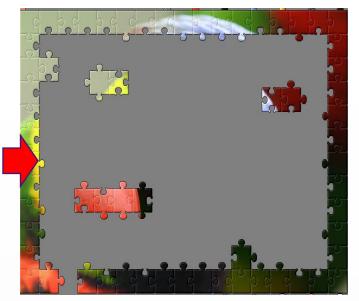


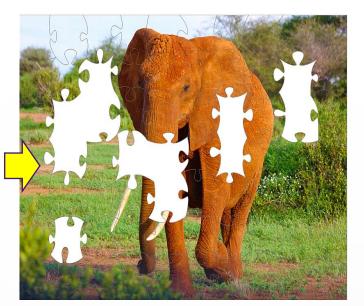
# Baseline Understanding of Science

# Piecing science together. Decisions on totality of science.

One study Limited evidence Clear evidence





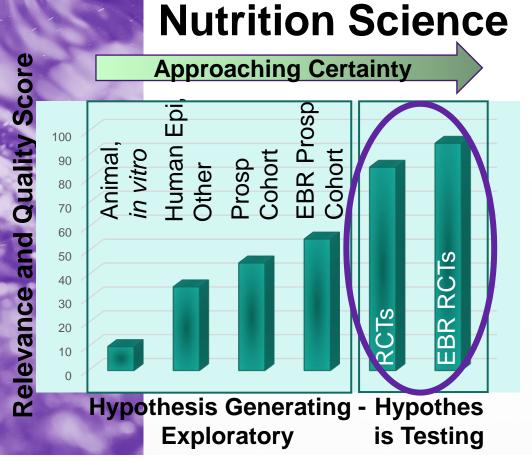




**Building the evidence - Timeless** 



# How does the science stack up? Quality Matters!



<sub>ω</sub>Ingredient/Product Toxicology **Approaching Certainty** Validated ir vivo/in vitro Ep n silico Human and Relevance **Hypothesis Generating - Hypothes** 

**Exploratory** 



EBR = Evidence-Based Reviews (Systematic Reviews and Meta-Analyses)

is Testing





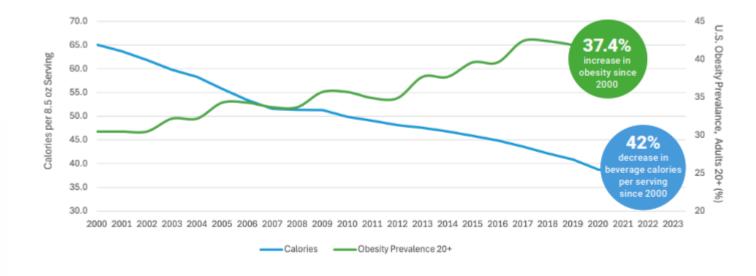
## Public Health Backdrop

## Obesity prevalence rising, SSB declining.

#### As obesity rises, calories consumed from soda are going down.

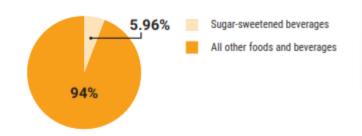
While adult obesity is up 37.4% since 2000, full-calorie soda sales are down 22.9% and beverage calories per serving are down 42%. 

If the two were connected, obesity rates should have decreased with the decline in soda consumption.



### Calories from sugar-sweetened beverages are a small part of the American diet.

When consumption of all sugar-sweetened beverages are combined, they account for less than 6% of calories in the American diet, according to USDA analysis of government data.<sup>3</sup>







# What Others Are Saying About LNCS



# U.S. Food and Drug Administration (FDA, 2025)

- "[b]ased on the FDA determinations of safety, we do not have a basis for concluding that products bearing the "healthy" claim should not contain low- or no-calorie sweeteners due to any perceived impact on consumers' ability to maintain healthy dietary practices.
- "Products may contain low- and no-calorie sweeteners for a variety of reasons, including to replace sugars, which can cause dental caries and impact blood glucose levels.
- "We view the inclusion of ... no- or low-calorie sweeteners ... to be consistent with current nutrition science, Federal dietary guidance, and our food additive regulations."
  - 89 FR 106064, "Food Labeling: Nutrient Content Claims; Definition of Term `Healthy""
  - <u>90 FR 10592</u>, "Food Labeling: Nutrient Content Claims; Definition of Term "Healthy", effective date delayed to April 28, 2025."





# U.S. Dietary Guidelines for Americans

- 2020-2025 Dietary Guidelines for Americans
  - It should be noted that replacing added sugars with low- and no-calorie sweeteners may reduce calorie intake in the short-term and aid in weight management, yet questions remain about their effectiveness as a long-term weight management strategy.
- 2020 Dietary Guidelines Advisory Committee (DGAC) Report
  - "Added sugars intakes could be greatly reduced ... by consuming low- or nosugar-added versions of foods and beverages that can make positive contributions to diet (p. 691)."
  - "Replacing 1 or both of those (SSBs) per day with water or other beverages that do not contribute energy... could reduce total energy intakes and help contribute to reduced energy balance (p.180)."





## **European Sponsored Reviews**

- European Association for the Study of Diabetes (EASD)-Funded Study (2022)
  - The evidence supports the use of LNCSBs as an alternative replacement strategy for SSBs over the moderate term in adults with overweight or obesity who are at risk for or have diabetes.

McGlynn ND, Khan TA, Wang L, et al. 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 Netw Open. 2022;5(3):e222092. doi:10.1001/jamanetworkopen.2022.2092

- European Food Safety Authority (2011)
  - Dental Caries:
    - "... consumption of foods/drinks containing ... sucralose ... instead of sugar in sugar-containing foods/drinks, may maintain tooth mineralisation compared with sugar-containing foods..." (https://efsa.onlinelibrary.wiley.com/doi/epdf/10.2903/j.efsa.2011.2076)
    - "The Panel considers that thescientific substantiation and proposed conditions of use **also apply to intense sweeteners**." (<a href="https://efsa.onlinelibrary.wiley.com/doi/epdf/10.2903/j.efsa.2011.2229">https://efsa.onlinelibrary.wiley.com/doi/epdf/10.2903/j.efsa.2011.2229</a>)
  - Post-Prandial Blood Glucose:
    - ".. the Panel concludes that a cause and effect relationship has been established between the consumption of foods/drinks containing ... sucralose ... instead of sugar and reduction in post-prandial blood glucose responses (without disproportionally increasing post-prandial insulinaemic responses) as compared to sugar-containing foods/drinks."
       (https://efsa.onlinelibrary.wiley.com/doi/epdf/10.2903/j.efsa.2011.2076)
    - "The Panel considers that thescientific substantiation and proposed conditions of use **also apply to intense sweeteners**." (<a href="https://efsa.onlinelibrary.wiley.com/doi/epdf/10.2903/j.efsa.2011.2229">https://efsa.onlinelibrary.wiley.com/doi/epdf/10.2903/j.efsa.2011.2229</a>)





## **American Academy of Pediatrics (AAP)**

2015

POLICY STATEMENT Deganizational Principles to Guide and Define the Child Health Care System and/or Improve the Health of all Children

American Academy of Pediatrics

Snacks, Sweetened Beverages, Added Sugars, and Schools

COUNCIL ON SCHOOL HEATH, COMMITTEE ON HUTRITION

"Additional improvements in nutrient density of sweet-tasting products could be obtained if nonnutritive sweeteners are used as a tool to replace added sugars and help lower caloric intake."

wegetable beverages. Since then, school nutrition has undergone a significant transformation. Federal, state, and local regulations and policies, along with alternative products developed by industry, have helped decrease the availability of nutrient poor foods and beverages in school. However, regular access to foods of high energy and low quality remains a school issue, much of it attributable to students, parents, and staff. Pediatricians, aligning with experts on child nutrition, are in a position to offer a perspective promoting nutrient rich foods within calone guidelines to improve those foods brought into or sold in schools. A positive emphasis on nutritional value, variety, appropriate portion, and encouragement for a steady improvement in quality will be a more effective approach for improving nutrition and health than simply advocating for the elimination of added sugars.

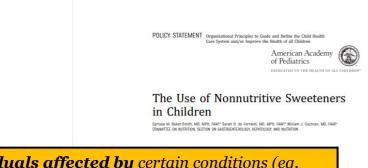
This document is copyrighted and is properly of the American Academyof Pediatrics and its Board of Dreidows. At authors have fled conflict of the fest statement with the American Academy of Pediatrics, Jany conflicts have been resolved through a process approved by the Board of Directors. The American Academy of Pediatrics has reither a dischaft for accepted any commercial.

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The recommendations in this statement do not indicate an exclusive course of treatment or serve as a standard of medical care. Variations, taking into account individual creamstances, may be

AAP Policy Statement. Snacks, Sweetened Beverages, Added Sugars, and Schools. *Pediatrics*. 2015;135(3) (e-pub). (<a href="http://pediatrics.aappublications.org/content/early/2015/02/17/peds.2014-3902.full.pdf+html">http://pediatrics.aappublications.org/content/early/2015/02/17/peds.2014-3902.full.pdf+html</a>)

2019



"Individuals affected by certain conditions (eg, obesity and type 1 or 2 diabetes mellitus) may benefit from the use of NNSs if substituted for caloric sweeteners.

"There are no absolute contraindications to use of NNSs by children.

"Use of NNSs has been associated with a reduced presence of dental caries."

Downloaded from www.aappublications.org/news.by-gues FROM THE AMERICAN ACADEMY (

AAP Policy Statement. The Use of Nonnutritive Sweeteners in Children. *Pediatrics*. 2019; 144(5) (e-pub). (e20192765; DOI: https://doi.org/10.1542/peds.2019-2765)





# LNCS are Safe. No Cancer Association.

#### **Aspartame**

- Overall, JECFA concluded that there was no convincing evidence from experimental animal or human data that aspartame has adverse effects after ingestion.
- Overall, the Committee concluded that the evidence of an association between aspartame consumption and cancer in humans is not convincing.

- Summary and Conclusions of the Ninety-sixth Joint (FAO/WHO) Expert Committee on Food Additives (**JECFA**, <u>Issued on 14 July **2023**</u>)

#### **Acesulfame Potassium**

- It is **unlikely** that intake of acesulfame K (E 950) is associated with cancer.
  - EFSA 2025 (<a href="https://efsa.onlinelibrary.wiley.com/doi/full/10.2903/j.efsa.2025.9317">https://efsa.onlinelibrary.wiley.com/doi/full/10.2903/j.efsa.2025.9317</a>)

#### **Sucralose**

- The agency has evaluated all the data in the petition and other information and concludes that the proposed uses of sucralose are safe.
  - FDA 1998 (https://www.govinfo.gov/content/pkg/FR-1998-04-03/pdf/98-8750.pdf)





# What The Evidence Shows on LNCS and Health Outcomes



## Gold Standard Science Shows Benefits of LNCS on Health Outcomes

 Almost all randomized-controlled clinical trials (50+) showing directionally similar outcomes (see Annex 7, <a href="https://www.who.int/publications/i/item/9789240046429">https://www.who.int/publications/i/item/9789240046429</a>)

Figure 2. Substitution of Low- and No-Calorie Sweetened Beverages (LNCSBs) for Sugar-Sweetened Beverages (SSBs

EASD-Funded 2022 Study:

Outcome	No. of trial comparisons		Total No. of participants			Pooled effect			
	Direct estimate	Network estimate	Direct estimate	Network estimate	MD (95% CI)	estimates, SMD (95% CI)	Favors LNCSBs	Favors SSBs	GRADE certainty of the evidence
Adiposity									
Body weight, kg	12	24	467	1444	-1.06 (-1.71 to -0.41)	-0.65 (-1.05 to -0.25)	-		♦♦♦♦ Moderate
BMI	9	14	437	836	-0.32 (-0.58 to -0.07)	-0.67 (-1.19 to -0.14)	_		♦♦♦♦ Low
Body fat, %	7	14	210	559	-0.60 (-1.03 to -0.18)	-0.74 (-1.27 to -0.22)	_		♦♦♦♦ Moderate
WC, cm	0	6	0	868	-0.52 (-4.98 to 3.94)	-0.09 (-0.89 to 0.71)			♦♦♦♦ Low
Glycemia									
HbA <sub>1c</sub> , %	4	9	154	630	0.12 (-0.08 to 0.32)	0.39 (-0.26 to 1.05)	_	_	♦♦♦♦ Moderate
FPG, mmol/L	7	19	210	1183	-0.06 (-0.16 to 0.03)	-0.32 (-0.77 to 0.13)	_		♦♦♦♦ Moderate
2HPP, mmol/L	4	9	154	440	0.29 (-0.45 to 1.03)	0.26 (-0.40 to 0.91)		-	♦♦♦♦ Moderate
FPI, pmol/L	7	16	210	512	-9.79 (-29.99 to 10.40)	-0.24 (-0.73 to 0.25)		_	♦♦♦♦ Low
HOMA-IR	2	7	56	265	-0.10 (-0.71 to 0.51)	-0.12 (-0.86 to 0.62)			♦♦♦♦ Moderate
Lipids, mmol/L									
LDL-C	6	16	183	894	-0.01 (-0.15 to 0.12)	-0.08 (-0.57 to 0.41)	_		♦♦♦♦ Moderate
Non-HDL-C	6	14	210	923	-0.08 (-0.25 to 0.09)	-0.25 (-0.77 to 0.28)			♦♦♦♦ Moderate
Triglycerides	7	17	210	923	-0.13 (-0.29 to 0.03)	-0.40 (-0.87 to 0.08)	_	-	♦♦♦♦ Moderate
HDL-Ca	7	17	210	923	-0.05 (-0.10 to 0.01)	-0.41 (-0.88 to 0.07)	_		♦♦♦♦ Moderate
Total cholesterol	6	14	210	923	-0.10 (-0.35 to 0.15)	-0.21 (-0.73 to 0.31)	_		♦♦♦♦ Low
Blood pressure, mm H	lg								
Systolic BP	3	10	56	706	-2.44 (-5.20 to 0.33)	-0.55 (-1.17 to 0.07)	_		♦♦♦♦ Moderate
Diastolic BP	3	9	56	483	-1.84 (-4.07 to 0.39)	-0.54 (-0.19 to 0.12)	_		♦♦♦♦ Low
Liver									
IHCL, SMD	2	4	49	62	-0.42 (-0.70 to -0.14)	-0.42 (-0.70 to -0.14)	-		♦♦♦♦ Moderate
ALT, U/L	2	6	27	143	-6.67 (-16.20 to 2.86)	-0.56 (-1.36 to 0.24)		_	♦♦♦♦ Low
AST, U/L	1	3	27	120	-1.50 (-7.87 to 4.87)	-0.27 (-1.40 to 0.87)			♦♦♦♦ Low
Uric acid									
Uric acid, mmol/L	3	7	49	62	-0.02 (-0.05 to 0.02)	-1.16 (-1.06 to 0.42)			◆◆◆◆ Moderate

McGlynn ND, Khan TA, Wang L, et al. 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 Netw Open. 2022;5(3):e222092. doi:10.1001/jamanetworkopen.2022.2092



## RCT Trial (18 mo) in Children (4-11 yrs) Shows LNCS Reduces Body Weight Gain

#### **Study Sponsors**

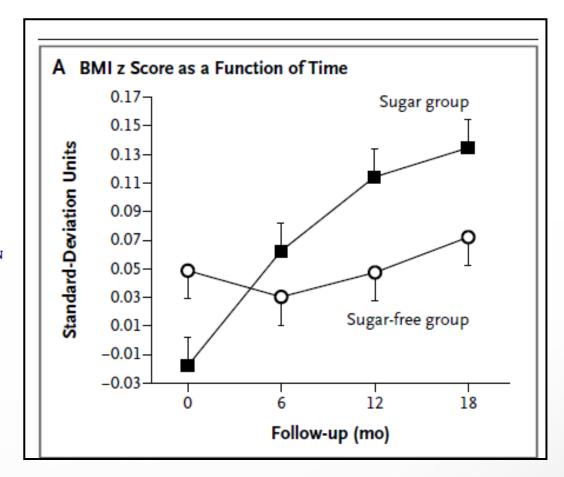






KONINKLIJKE NEDERLANDSE AKADEMIE VAN WETENSCHAPPEN

(Royal Netherlands Academy of Arts and Sciences, KNAW)





de Ruyter JC, Olthof J, M., Seidell J, and Katan MB. A trial of sugar-free or sugar-sweetened beverages and body weight in children. *N Engl J Med.* 2012;367:1397-1406. doi: 10.1056/NEJMoa1203034.



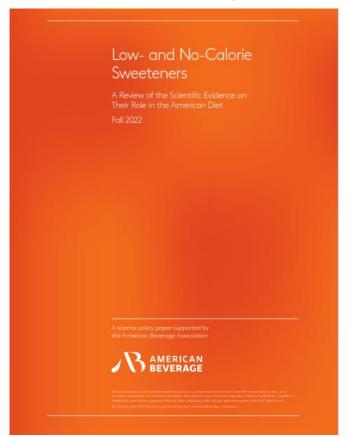


## Transparency



### **Available Materials**

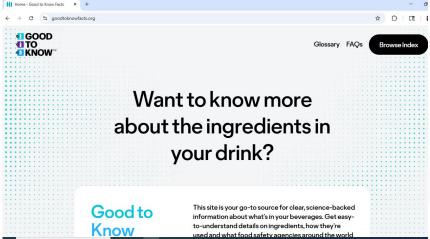
#### ABA LNCS Science Policy Paper (2022)



https://www.americanbeverage.org/ education-resources/policiesresearch/



https://www.safetyofaspartame.com/

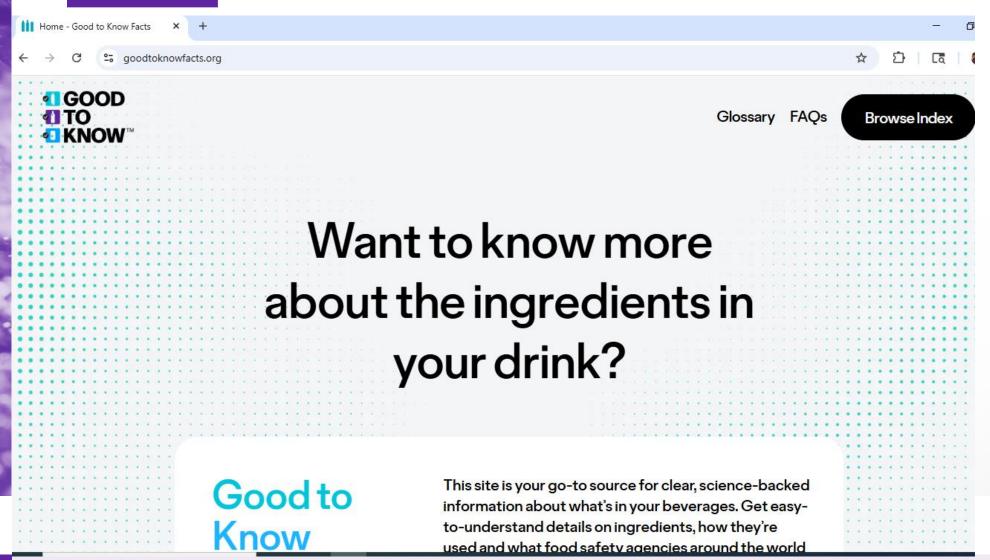


https://goodtoknowfacts.org/ (2025)





### Good To Know™ Initiative







## **Takeaways**



## **Takeaways**

 Low and no calorie sweeteners can be safely used as intended.

•Gold standard science shows that low and no calorie sweetened beverages are a helpful tool for people to manage calories and sugar in their diet.

