U.S. Consumers' Consumption, Knowledge, and Perceptions of Low-Calorie Sweeteners

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Introduction

In the United States (U.S.), the average daily intake of added sugars was 17 teaspoons for adults aged 20 or older, higher than the 12 teaspoons recommended by the *Dietary Guidelines for Americans 2020–2025* (Centers for Disease Control and Prevention, 2024). The high intake of sugar, especially the widespread consumption of sugar-sweetened beverages formulated with high-fructose corn syrup, has been a key dietary driver of obesity, diabetes, and heart disease (Malik & Hu, 2022). As awareness of diet-related health impacts has grown, consumers are increasingly seeking healthier sugar alternatives that reduce caloric intake without compromising taste. In response to this growing demand, the food industry has introduced a wide range of low-calorie sweeteners to replace traditional sugars in foods and beverages. In the U.S., 25.1% of children and 41.4% adults reported consuming low-calorie sweeteners (Sylvetsky et al., 2017).

Low-calorie sweetener (LCS), or non-nutritive sweeteners, provide negligible calories because they are not metabolized for energy or are absorbed only in very small amounts. LCS includes both natural and synthetic forms. Examples include stevia and monk fruit extract, which are natural non-nutritive sweeteners, while sucralose, aspartame, and saccharin are examples of synthetic (artificial) non-nutritive sweeteners (Ashwell et al., 2020). There is a misunderstanding among consumers that all LCS sugars, as "alternative sugar" substitutes for regular sugar (sucrose), are non-natural, chemically processed, and perceived less safe than traditional sugars.

Their broader implementation remains constrained by public uncertainty about LCSs. Consumers' perceptions are often shaped by longstanding confusion and controversy surrounding artificial and alternative sweeteners, including perceived health risks such as cancer or gastrointestinal discomfort associated with artificial sweeteners. Although some LCSs, such as tagatose, are naturally occurring and metabolically beneficial sweeteners, many consumers may not differentiate them from synthetic or highly processed alternatives. Furthermore, the growing preference for foods perceived as "natural" and minimally processed presents an additional communication challenge, as limited transparency and public education can constrain consumers' ability to accurately interpret and evaluate the characteristics of LCSs. To inform more effective communication strategies and promote evidence-based understanding of low-calorie sweeteners, we propose the following research questions:

RQ1: How frequently do U.S. consumers consume LCSs?

RQ2: What level of knowledge do U.S. consumers have about LCSs?

RQ3: How do U.S. consumers perceive the health impacts of LCSs?

Methodology

An online survey was administered via Qualtrics and distributed publicly in October 2025, allowing participants to voluntarily self-select into the study. A total of 808 participants completed the survey. The majority of participants were female (57.1%), white (78.7%), with 4-year degree (35.5%). Age varied: 18-24 (3.5%), 25-34 (26.1%), 35-44 (21.3%), 45-54 (19.3%), 55-64 (18.6%), 65 and above (11.2%).

Results

To answer RQ1, results demonstrate that consumers' consumption of low-calorie sweetened foods or beverages is frequent, as nearly 68.0% of participants reported consuming

LCSs at least weekly. The most popular product category that is sweetened with LCS (Figure 1) is soft drinks (71.2%).

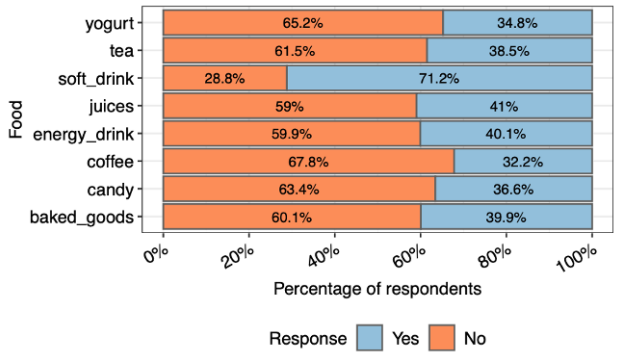

Figure 1

Acceptance of A Sweetened Version with Low-Calorie Sugars Across Food Categories.

To answer RQ2, results show that consumers' true knowledge about LCSs was quite low. 77.1% of respondents agreed that "a zero-calorie sugar is artificial," even though several zero-calorie sweeteners, such as stevia and monk fruit, are naturally derived. In addition, the self-assessed knowledge about sugar contained in foods or drinks was at a moderate level. 74.6% of respondents reported checking the *Nutrition Facts Panel* when purchasing foods, however, only 47.3% self-reported that they to some extent understand the difference between "total sugar" and "added sugar." One possible reason for the insufficient knowledge is that fewer participants were familiar with naturally occurring low-calorie sweeteners, such as allulose (35.4%) and tagatose (15%), compared with higher familiarity for stevia (93.9%, natural) and aspartame (90.3%, artificial). Furthermore, 59.1% of respondents agreed that there is not enough information available about naturally derived low-calorie sweeteners.

To answer RQ3, the findings suggest that consumers hold predominantly negative perceptions toward LCSs, largely driven by health-related concerns. First, most consumers associate high sugar intake with obesity (88.4%), diabetes (91.3%), and tooth decay (82%), indicating they are aware of the health cost of excessive sugar intake. As a benchmark, we first assessed participants' perception of artificial sugar. A substantial majority agreed that artificial sugars are unsafe (71.1%), and associated them with poor taste (63.2%) and less healthy (58.4%). In contrast, fewer consumers perceived LCSs as unsafe (15.2%), while a similar percentage of consumers viewed LCSs as poor taste (60.2%). As for health impact, the majority of consumers perceived LCSs as either unhealthy (42.1%) or felt unclear (35.4%), with only 22.5% regarding LCSs as healthy.

Conclusions/Implications/Recommendations

Overall, the descriptive findings in the present study revealed consumers' limited knowledge of LCSs. Many respondents equated "zero-calorie" with "artificial," reflecting low awareness of naturally derived sweeteners such as stevia and monk fruit. This misconception may contribute to generally negative health perceptions of LCSs, which are still influenced by concerns associated with artificial sweeteners. Consumers' uncertainty and limited information about the safety and benefits of LCSs appear to constrain their acceptance. These knowledge and perception gaps highlight the need for clearer communication and public education regarding the nature and health implications of different types of sweeteners.

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