

CONSUMER PREFERENCES FOR ARTIFICIAL SWEETENERS AND SUGAR ALTERNATIVES

DELAN SERGIU-CONSTANTIN¹, NEAGU-CORICI FABIO ALEXANDRU¹,
GHERHEȘ MIHAI-STEFAN¹, PEȚ ELENA¹, GORDAN MARIUS-IONUȚ^{1*}

¹University of Life Sciences “King Mihai I” from Timișoara,
Faculty of Management and Rural Tourism, Romania

*Corresponding author’s e-mail: mariusgordan@usvt.ro

Abstract: This study investigates how taste, health perceptions, naturalness, price, and label trust shape preferences for artificial sweeteners and other sugar replacements. Using stated-preference data, we map trade-offs consumers make between perceived health benefits and sensory performance. Findings indicate that acceptance hinges on taste and labeling, with natural claims influencing choice.

Key words: consumer preferences, artificial sweeteners, sugar substitutes, perceived health benefits.

INTRODUCTION

Efforts to reduce added sugar intake in response to obesity, diabetes, and cardiovascular disease have led to a rapid expansion of foods and beverages formulated with artificial sweeteners and other sugar alternatives. Narrative reviews of the food supply show that non-nutritive sweeteners are now widely incorporated into carbonated drinks, dairy products, confectionery, tabletop sweeteners, and fruit beverages, and that a substantial share of adults in high- and middle-income countries consume such products regularly [2,10,13-15].

Existing consumer research points to a complex pattern of awareness, risk perception, and behaviour. Surveys in Europe and the Middle East report that many consumers can correctly identify artificial sweeteners as sugar substitutes, but knowledge of specific compounds and regulatory safety assessments is often limited; risk perceptions are frequently high and are associated with lower use of sweetener-containing products [5].

Recent work focusing specifically on artificial sweeteners in food products finds that negative attitudes coexist with relatively low levels of label reading and modest understanding of where these ingredients occur in the diet, suggesting a gap between perceived and actual exposure [7].

A recurring theme in this literature is the importance of naturalness and label trust. Studies of non-nutritive sweeteners show that terms such as “artificial sweeteners” tend to elicit negative associations, whereas “natural” or plant-based sweeteners are viewed more favourably, even when lay consumers are uncertain about their physiological effects [9].

Experimental work comparing natural and artificial sweeteners in specific products, such as protein beverages, ice cream, or yogurt, finds that formulations perceived as more natural or clean-label often enjoy higher acceptance, but only when taste is not compromised [1,4,6,12].

At the same time, several discrete-choice and conjoint studies of sweeteners and sweetened products conclude that taste remains the dominant driver of choice, typically explaining the largest share of preference heterogeneity, while health-related or “sugar-free” claims influence selection primarily through their interaction with perceived taste and naturalness [8,11].

These findings point to a set of trade-offs that consumers must navigate when choosing between sugar and its substitutes. On the one hand, artificial and other low- or no-calorie sweeteners promise reduced caloric intake and lower glycaemic impact; on the

other hand, they can trigger concerns about safety, long-term health risks, and the “unnatural” character of processed foods.

Label information and claims—such as “sugar-free,” “no added sugar,” or “naturally sweetened”—may either reassure or alarm, depending on prior beliefs and trust in regulators and brands. Recent work validating instruments to measure sweetener perceptions suggests that perceived risks and benefits, and trust in regulatory oversight, are key mediators between information and intended consumption [3].

However, relatively few studies explicitly quantify how consumers trade off sensory performance, health perceptions, naturalness, price, and label credibility across everyday sweetened foods and drinks, using stated-preference methods that can reveal the structure of these trade-offs.

MATERIALS AND METHODS

A short questionnaire recorded: main consumption context (home, out-of-home), sweeteners most used (e.g., white/brown sugar, honey, stevia), choice factors (taste, natural origin, reduced calories, price, brand/pack, medical/online recommendations), purchase channel, frequency of consuming sugar-replacement products, product category (beverages, pastries, etc.), taste rating vs. regular sugar (1–5), and self-reported motive (e.g., weight control, medical reasons, healthy lifestyle, curiosity). Analysis is descriptive; nonresponses were left blank and no weighting was applied.

RESEARCH RESULTS

Within the surveyed sample, sweetened foods and drinks are consumed most often in restaurants, cafés or pastry shops (50.0 %), followed by at home in self-prepared form (29.4 %) and at home prepared by someone else (11.8 %). A smaller share report consuming such products mainly at work or school (5.9 %), and an even smaller group indicate that they consume them in many places without a single dominant context (2.9 %).

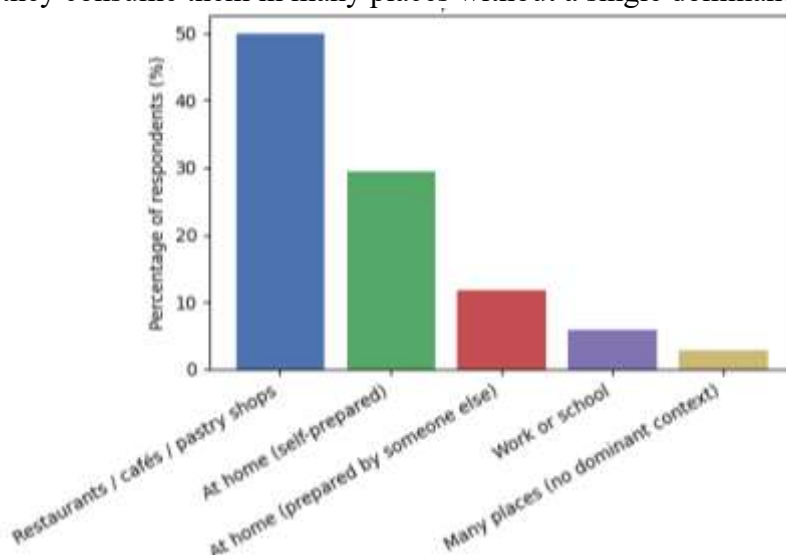


Figure 1. Main contexts of consumption of sweetened foods and drinks

When asked which sweeteners they use most frequently, respondents overwhelmingly mention caloric sweeteners. White sugar is used by 82.4 % of the sample and brown sugar by 41.2 %, while honey is named by 38.2 %. Only 5.9 % explicitly mention stevia, and 2.9 % give an open answer referring to unspecified sugar used in desserts. Grouping the reported combinations, about 55.9 % use only sugar (white and/or

brown), 29.4 % combine sugar and honey, 5.9 % use only honey, 2.9 % use only a non-caloric sweetener (stevia), 2.9 % use sugar and honey together with stevia (or sugar plus stevia), and 2.9 % refer to unspecified dessert sugar.

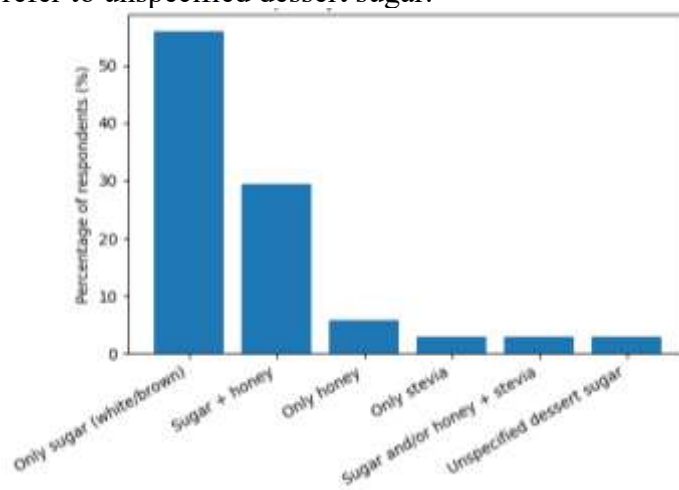


Figure 2. Main types of sugar or sugar replacements consumed

Despite this strong anchoring in sugar for direct sweetening, products containing sugar substitutes are widely consumed. About 17.6 % of respondents consume such products daily, 26.5 % several times per week, and 5.9 % once per week, meaning that 50.0 % consume them at least weekly. A further 44.1 % consume them occasionally, and only 5.9 % say they never consume products with sugar substitutes. Among those who rely exclusively on sugar as their most frequently used sweetener, around 52.6 % still consume products with sugar substitutes at least weekly, 42.1 % only occasionally, and 5.3 % never, indicating that exposure to sugar substitutes often occurs through packaged products rather than through deliberate replacement of table sugar.

Sugar substitutes are consumed predominantly in beverages. When asked in which types of products they most often consume such sweeteners, 76.5 % point to beverages (such as tea, coffee, or sugar-free soft drinks), 20.6 % to bakery products and desserts, and 2.9 % to chewing gum or candies.

In choosing a sugar substitute, taste clearly dominates other attributes. Taste is cited as an important factor by 67.6 % of respondents. Natural origin is mentioned by 29.4 %, price by 23.5 %, and reduced caloric value by 11.8 %. Packaging or brand is considered important by 8.8 %, recommendations from friends or online sources by 5.9 %, and recommendations from a doctor or nutritionist by 2.9 %. Thus, while sensory performance is central, nearly one-third of respondents also explicitly value natural origin, and around one quarter report paying attention to price.

Sugar substitutes are obtained almost entirely through mainstream retail channels. Supermarkets are the main purchasing source for 91.2 % of respondents. Each of the remaining options—obtaining sweeteners from acquaintances, pharmacies, or not purchasing them at all—is chosen by 2.9 %.

Taste evaluations of products containing sugar substitutes, compared with similar products made with regular sugar, are mixed but centre on “about the same.” On a five-point scale, 14.7 % rate the taste much worse than sugar (lowest category), 17.6 % somewhat worse, 47.1 % about the same, 8.8 % somewhat better, and 11.8 % much better. Aggregating these, 32.4 % perceive the taste of sugar-substitute products as worse than that of sugar-sweetened products, 47.1 % perceive it as similar, and 20.6 % perceive it as better.

Motivations for using sugar substitutes are primarily health- and lifestyle-oriented. Across the whole sample, 35.3 % identify a healthy lifestyle as their main motive, 23.5 % mention curiosity or taste, and 20.6 % cite weight control. Medical problems are mentioned by 8.8 %, and explicit medical recommendations by 5.9 %. A small share report not using sugar substitutes (2.9 %), and for another 2.9 % the motive is not specified. Restricting attention to those who report at least one positive motive for use, a healthy lifestyle accounts for 37.5 % of answers, curiosity or taste for 25.0 %, weight control for 21.9 %, medical problems for 9.4 %, and medical recommendations for 6.2 %.

CONCLUSIONS

Acceptance of sugar alternatives in this sample clearly hinges on sensory parity with sugar and credible labelling, rather than on price. Although around half of respondents consume products with sugar substitutes at least weekly, everyday sweetening practices remain dominated by sugar and honey, and few participants report routinely using non-caloric sweeteners directly. Taste is the primary decision criterion, with natural origin and health motivations supporting choice, while price, packaging, and formal recommendations play a secondary role.

Under these conditions, any strategy to expand the use of sugar alternatives should prioritise matching or improving taste, and providing verifiable, easy-to-understand claims (e.g. documented calorie reduction, clear ingredient origin, and trustworthy endorsements), rather than relying on small price differentials or technical formulations alone.

REFERENCES

- [1]. ARSHAD SHIZA, REHMAN TAHNIAT, SAIF SUMMAYA, RAJOKA MUHAMMAD SHAHID RIAZ, RANJHA MUHAMMAD MODASSAR ALI NAWAZ, HASSOUN ABDO, CROPOTOVA JANNA, TRIF MONICA, YOUNAS AQSA, AADIL RANA MUHAMMAD, 2022, Replacement of refined sugar by natural sweeteners: Focus on potential health benefits, Heliyon.
- [2]. CHATTOPADHYAY SANCHARI, RAYCHAUDHURI UTPAL, CHAKRABORTY RUNU, 2014, Artificial sweeteners—a review, Journal of food science and technology, 611-621.
- [3]. CHRISTIANSEN PAUL, ROBERTS CARL, RADU CRISTINA, HARDMAN CHARLOTTE, 2023, A validation of a questionnaire to assess consumer attitudes towards artificial sweeteners, Food Quality and Preference, 104707.
- [4]. CROWN E., ROVAI D., RACETTE C. M., BARBANO D. M., DRAKE M. A., 2024, Consumer perception of sweeteners in yogurt, Journal of Dairy Science, 10552-10570.
- [5]. FARHAT GRACE, DEWISON FLEUR, STEVENSON LEO, 2021, Knowledge and perceptions of non-nutritive sweeteners within the uk adult population, Nutrients, 444.
- [6]. GREMBECKA MAŁGORZATA, 2015, Natural sweeteners in a human diet, Roczniki Państwowego Zakładu Higieny.
- [7]. JURCEVIC ZIDAR BRANKA, KNEZOVIC ZLATKA, PRIBISALIC AJKA, LUETIC SANJA, JURCIC KATARINA, KNEZOVIC NINA, SUTLOVIC DAVORKA, 2025, Consumer perceptions of artificial sweeteners in food products, consumption frequency, and body mass index: A multivariate analysis, Nutrients, 814.

- [8]. JÜRKENBECK KRISTIN, HAARHOFF THERESA, SPILLER ACHIM and SCHULZE MAUREEN, 2022, Does allulose appeal to consumers? Results from a discrete choice experiment in germany, *Nutrients*, 3350.
- [9]. LACERDA RISIA C.C., ANDERSEN GLENN H., JUNGE JONAS YDE, KIDMOSE ULLA, BOLINI HELENA MA, 2024, Perception and acceptance of natural sweeteners in a plant-based cocoa-flavored ice cream: Difference between danish and brazilian consumers, *Journal of Sensory Studies*, e12890.
- [10]. PETROVICI DENISA LORENA, HULEA CRISTINA ADELINA, ȘTEFAN FLORENȚA DENISA, GORDAN MARIUS-IONUȚ, PEȚ ELENA, 2022, Study regarding the consumption of honey and related bee products, *Lucrari Stiintifice Management Agricol*, 26(3).
- [11]. PANIDI KSENIA, GREBENSCHIKOVA YAROSLAVA, KLUCHAREV VASILY, SHESTAKOVA ANNA N., 2025, Opposing effects of sugar-free claims on perceived healthiness and sweetness reduce consumers' willingness to pay for sugar-free products, *Frontiers in Nutrition*, 1644753.
- [12]. PARKER M. N., LOPETCHARAT K., DRAKE M. A., 2018, Consumer acceptance of natural sweeteners in protein beverages, *Journal of Dairy Science*, 8875-8889.
- [13]. RADENKOVIC SILVIA, 2023, Investigating the effects of artificial sweeteners, *Nature Reviews Endocrinology*, 442-442.
- [14]. RUSSELL CHERIE, GRIMES CARLEY, BAKER PHILLIP, SIEVERT KATHERINE, LAWRENCE MARK A., 2021, The drivers, trends and dietary impacts of non-nutritive sweeteners in the food supply: A narrative review, *Nutrition Research Reviews*, 185-208.
- [15]. SHARMA ARUN, AMARNATH S., THULASIMANI M., RAMASWAMY S., 2016, Artificial sweeteners as a sugar substitute: Are they really safe?, *Indian journal of pharmacology*, 237-240.