

COMMENT OPEN



Sugar substitutes and taste enhancers need more science, sensitivity- and allergy-guided labeling

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There is new attention to food safety resulting from the second White House Conference on Hunger, Nutrition, and Health, as well as new advisories from the World Health Organization calling for more research on sugar substitutes because of possible cancer risks. Together they point to a need for rethinking how we study sugar substitutes and taste enhancers as potentially contributing to adverse health changes. In addition to the need for more research on sweeteners and taste enhancers, including the use of sensitive bioassays, and epidemiological and human clinical trial studies, there should be a call for better truth in labeling, especially including single names for such dietary elements that would afford easier recognition and potential avoidance by those with sensitivities and allergies.

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On the heels of the second, some 50 years after the first, “White House Conference on Hunger, Nutrition and Health”, along with the “Biden-Harris Administration National Strategy on Hunger, Nutrition and Health”, food safety is an important area of focus. The World Health Organization cancer agency’s recent advisory on the artificial sweetener, aspartame, and its potential cancer risk, in addition to their new guideline on not using non-sugar sweeteners for body weight control, all together signal a need to revisit how to best study sugar substitutes and other food additives for their potential negative physiological actions as their presence grows in our food supply. This also follows two studies of the NutriNet-Santé population-based cohort that have linked both “artificial sweeteners” as well as “sugar consumption” itself with potentially elevated cancer risks^{1,2}. Two more recent studies on aspartame³ and erythritol⁴ have brought additional interest in food safety and better product labeling of sweeteners (with most of the field and practitioners recognizing the availability of these sugar substitutes as being needed for those with certain health issues including obesity, diabetes, and heart disease) and flavor enhancers. Of course, sugar itself is contraindicated for these health issues, and should also be studied in all of the paradigms and models discussed here, but like sugar, enhancing the umami taste with additives can also lead to obesity, metabolic syndrome, and brain, e.g., hypothalamic, inflammation which has been described as, “...mediated by nucleotide degradation and uric acid generation...”.⁵ The 1969 White House Conference on Food, Nutrition, and Health was organized by Dr. Jean Mayer, for whom the previous institution of food and nutrition science where I was privileged to work was named. Professor Mayer also studied a controversial, umami taste-enhancing food additive, monosodium glutamate (“MSG”), in animal models⁶, and it is still controversial today. Kanarek et al.’s⁷ findings on deficits in caloric restriction and juvenile-onset obesity, along with Mayer’s advocacy and similar reports from other groups, ultimately led to baby food manufacturers suspending MSG use after Congressional Hearings questioned its safety. A conclusion will be reached here that more research and thoughtful product labeling will help the cause of food safety in general, as new consumables and warnings are

introduced. In a constantly changing landscape from both new product introductions and new research findings, an open mind is warranted when it comes to supporting or challenging regulation.

There are many critical questions with both the Jones et al.⁸ and Witkowski et al.⁴ studies, but together they provide a powerful impetus for industry and government to come together to help remove stigma over debate of adverse health effects of food additives. This is needed in the meantime until we have better modeling and studying of the distinct human omics, including metabolomics, of food sensitivities within a heterogeneous population offering better stratification of at-risk populations with sensitivities and allergies. This ultimately will lead to easier scrutiny of substances that can trigger adverse health events in certain susceptible individuals who now rely almost totally on truth in labeling, or more accurately, sensitivity- and allergy-guided labeling (since current labeling usually does include names for food components that are truthful, but because of the pervasive use of pseudonyms for many of these additives, it is not obvious or clear enough for easy recognition of any food component that may be undesirable for those with health issues, allergies or sensitivities). All of us are at risk for unrecognized dietary elements that could contribute to potentially serious allergies and sensitivities⁹. Building on the needed use of highly sensitive models and bioassays, and comparisons with carefully run patient studies to determine the actions of dietary components, this Comment hopes to expand the awareness of the significance of studies like these that aim to uncover pathophysiological changes from the consumption of certain food additives. This issue has now been brought to light again from the findings in these new studies on the dietary consumption of artificial sweeteners, aspartame, and erythritol^{3,4}, and raises concern again about the safety of additives in our food supply, with potentially adverse health effects that range from neurological to cardiovascular changes. Of considerable concern, the aspartame study reported a transgenerational passage of molecular and physiological changes in the amygdala of a robust animal model, that led to altered neurotransmission and changes in behavior including anxiety in descendants of users³. Jones et al

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Sugar Substitutes And Enhancers

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Table of Contents Sugar Substitutes And Enhancers

1. Understanding the eBook Sugar Substitutes And Enhancers
 - The Rise of Digital Reading Sugar Substitutes And Enhancers
 - Advantages of eBooks Over Traditional Books
2. Identifying Sugar Substitutes And Enhancers
 - Exploring Different Genres
 - Considering Fiction vs. Non-Fiction
 - Determining Your Reading Goals
3. Choosing the Right eBook Platform
 - Popular eBook Platforms
 - Features to Look for in an Sugar Substitutes And Enhancers
 - User-Friendly Interface
4. Exploring eBook Recommendations from Sugar Substitutes And Enhancers
 - Personalized Recommendations
 - Sugar Substitutes And Enhancers User Reviews and Ratings
 - Sugar Substitutes And Enhancers and Bestseller Lists

5. Accessing Sugar Substitutes And Enhancers Free and Paid eBooks
 - Sugar Substitutes And Enhancers Public Domain eBooks
 - Sugar Substitutes And Enhancers eBook Subscription Services
 - Sugar Substitutes And Enhancers Budget-Friendly Options
6. Navigating Sugar Substitutes And Enhancers eBook Formats
 - ePub, PDF, MOBI, and More
 - Sugar Substitutes And Enhancers Compatibility with Devices
 - Sugar Substitutes And Enhancers Enhanced eBook Features
7. Enhancing Your Reading Experience
 - Adjustable Fonts and Text Sizes of Sugar Substitutes And Enhancers
 - Highlighting and Note-Taking Sugar Substitutes And Enhancers
 - Interactive Elements Sugar Substitutes And Enhancers
8. Staying Engaged with Sugar Substitutes And Enhancers
 - Joining Online Reading Communities
 - Participating in Virtual Book Clubs
 - Following Authors and Publishers Sugar Substitutes And Enhancers
9. Balancing eBooks and Physical Books Sugar Substitutes And Enhancers
 - Benefits of a Digital Library
 - Creating a Diverse Reading Collection Sugar Substitutes And Enhancers
10. Overcoming Reading Challenges
 - Dealing with Digital Eye Strain
 - Minimizing Distractions
 - Managing Screen Time
11. Cultivating a Reading Routine Sugar Substitutes And Enhancers
 - Setting Reading Goals Sugar Substitutes And Enhancers
 - Carving Out Dedicated Reading Time
12. Sourcing Reliable Information of Sugar Substitutes And Enhancers
 - Fact-Checking eBook Content of Sugar Substitutes And Enhancers
 - Distinguishing Credible Sources
13. Promoting Lifelong Learning

- Utilizing eBooks for Skill Development
- Exploring Educational eBooks

14. Embracing eBook Trends

- Integration of Multimedia Elements
- Interactive and Gamified eBooks

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