

CODEX ALIMENTARIUS COMMISSION



Food and Agriculture
Organization of the
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Agenda Items 9

CRD31

JOINT FAO/WHO FOOD STANDARDS PROGRAMME CODEX COMMITTEE ON NUTRITION AND FOODS FOR SPECIAL DIETARY USES

Forty-fourth Session

Dresden, Germany

(Comments by IFT)

AGENDA ITEM 9 DISCUSSION PAPER ON METHODS OF ASSESSING THE SWEETNESS OF CARBOHYDRATE SOURCES IN THE STANDARD FOR FOLLOW-UP FORMULA (CXS 156-1987)

The Institute of Food Technologists (IFT) would like to submit to the CCNFSDU 44 our response to the EWG discussion paper on the topic of assessing the sweetness of carbohydrate sources, as well as re-submit our response to this topic from CCNFSDU 43 for the record. IFT does not believe the use of sensory testing as a measurement tool for approving a FUF product as meeting the requirements stipulated in the CCNFSDU standard for FUF is appropriate for Codex enforcement per our prior comments to CCNFSDU 43 and 42 and does not believe this sensory methodology to be appropriate for countries to make determinations.

Therefore, our response to the discussion paper question regarding the proposed method DIN EN ISO 5495:2016 – Sensory analysis – Methodology – Paired-comparison for the comparative assessment, to measure the relative sweetness of the carbohydrate ingredient against lactose as a reference material is that we do not support its use (EWG Question #1). We do not support the proposed method and therefore do not align with the preparation protocol (EWG Question #2). We do not agree with the proposed reference value for α -risk, β -risk and p_d (EWG Question 3). We do not believe the proposed method has merit for use with FUF at Codex per our prior CRD comments to CCNFSDU 42 and 43 (EWG Question 4). IFT is aligned with CCMAS, that assessing sweetness of carbohydrate sources in comparison to lactose has no scientifically validated methods that are useful for enforcement implementation on FUF for Codex members (EWG Question #5).

We attach below again our CRD comments from CCNFSDU 43, which are still pertinent to this topic.

IFT would like to request that the committee reconsider the priority of this due to the lack of scientific consensus and in light of the many other critical nutrition issues that would benefit from consideration by CCNFSDU.

Appendix:

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Agenda Item 4

NFSDU/43 CRD 18

JOINT FAO/WHO FOOD STANDARDS PROGRAMME
CODEX COMMITTEE ON NUTRITION AND FOODS FOR SPECIAL DIETARY USES
Forty-third Session
Düsseldorf, Germany
7 – 10 March with report adoption by virtual mode on 15 March 2023
Comments by IFT

AGENDA ITEM 4: Review of the Standard for Follow-up Formula (CXS 156-1987)

During CCNFSDU 42, the members agreed to retain the provision on sweet taste in the proposed draft of the revised Standard for Follow-up Formula (FUF) for Older Infants and Drink/Product for Young Children with Added Nutrients or Drink for Young Children (DFYC), in particular, Section B: Footnote 5 (Available Carbohydrates): “for products based on non-milk protein, carbohydrate sources that have no contribution to sweet taste should be preferred and in no case be sweeter than lactose”, and to consider appropriate methods for assessing conformity to the provision and possible endorsement by CCMAS at its next session.

IFT would like to remind CCNFSDU 43 of the position that IFT shared in a CRD at CCNFSDU 42 regarding the use of sensory tools for the measurement of sweet taste for the purpose of assessing if a product meets the standard as defined in the revision:

“In 2021, during its 41st session, CCMAS agreed to inform CCNFSDU that **there are no known validated methods to measure the sweetness of carbohydrate sources and therefore no way to determine compliance for such a provision.** This discussion addressed both analytical and sensory methods.

IFT agrees with the findings of CCMAS41 that there currently are no validated analytical methods to determine sweet taste of carbohydrate sources relative to lactose for regulatory compliance of FUF or DFYC.

Although there are several official methods/standards for analyzing the content of individual carbohydrates or carbohydrate profile in foods, these methods determine carbohydrate composition and not sweet taste.

Sweet taste can be detected by standard sensory analysis methods [1,2]. Sensory tools are important tools used by the industry for the optimization of food and beverage products for consumers, including assessment of sweet taste of products. However, there are two limitations to using standard sensory analysis methods for the purpose desired by CCNFSDU on FUF. Taste panels are typically trained using single ingredient solutions of increasing concentrations such as sucrose or table salt. Once trained, taste panels can be highly reproducible in detecting a particular taste in a simple solution (high precision). However, moving that tasting precision to complex beverage formulations is uncertain. To date methods for sensory testing has been unable to set universal sensory intensity reference values for sweetness across the complex compositions of food and beverage product systems. A second, critically important limitation is that a sensory specification is not directly related to compositional specifications. Formulated beverages can differ in source materials (e.g., protein source) and methods of manufacture, including the further effects of processing methodology (e.g., thermal treatment) on the chemical and physical nature of ingredients within formulated beverages such as FUF and DFYC.

Such differences can alter the perceived taste of ingredients consumed in aggregate as a final product. Comments from AOAC/ISO and IDF detail the complexities and work required for sensory evaluations of food products as well as the lack of globally harmonized methods and assessments across food companies and government regulatory agencies or methods to evaluate whether assessments remain stable over time.

Practically speaking, sensory evaluation tools can provide results on product taste (e.g., sweetness) disconnected from the direct composition and ingredient content that is specified by physical (e.g., weight or %) and chemical analysis [3-6]. For this reason, a product evaluated by a sensory panel for the property of sweetness might be judged as appropriate per the CXS standard when it contained inappropriate ingredient amounts for FUF or DFYC, or conversely, inappropriate when it contained ingredients in the amounts specified by the CSX standard. Such a situation would create a point of contention and possible inappropriate conclusion that individual products were not in regulatory compliance, which is not consistent with the goal of CODEX. Such confusion could result in an unintended trade barrier.

A further concern is the lack of evidence-based science to support the assumption that exposure to differences in sweet intensity prompts a persistent preference for sweet tastes [6-9]. A presumption that initially prompted the suggestion for the regulation of this food property.

Since CCNFSDU 42, there has been no significant change or breakthrough in the scientific literature to suggest that the use of sensory testing as a measurement tool for approving a FUF product as meeting the requirements stipulated in the CCNFSDU standard for FUF is appropriate for Codex enforcement. Therefore, based upon the science, IFT would again recommend that CCNFSDU remove this stipulation in the standard for FUF, as it is not an objective, but subjective measure dependent upon a particular sensory panel and not enforceable globally with the repeatability and consistency required for an enforcement decision-making tool. To underscore the subjective nature of sensory evaluations consider the critical issue of how to compare to a standard compound, in this case lactose. The question of whether the “sweet taste” is sweeter or less sweet than lactose would likely be done as a forced comparison (e.g., is it or is it not sweeter than a sample of lactose at a particular concentration). The forced comparison testing scenario can create a situation where two equally sweet products would be forced to be differentiated. Indeed ISO 5495 guidance in such a situation is to have the evaluator guess! The likely outcome of such a test is each sample will be identified as the sweeter sample 50% of the time. Such a subjectivity in assessment is inappropriate for use as a Codex measurement tool to determine if a formulation is acceptable as a FUF.

Therefore, IFT continues to recommend against the use of sensory approaches for Codex standard compliance decision-making.

References

1. ISO. Sensory analysis – Methodology – General guidance. 2017; Vol. 6658.
2. ISO. Sensory Analysis – Methodology – General guidance for establishing a sensory profile. . 2016; Vol. 13299.
3. Cardello, A.V. Context effects at the level of the sip and bite. *Context: The Effects of Environment on Product Design and Evaluation* **2019**, , 39-66, doi:10.1016/B978-0-12-814495-4.00003-9.
4. Stevenson, R.J.; Prescott, J.; Boakes, R.A. Confusing tastes and smells: How odours can influence the perception of sweet and sour tastes. *Chem Senses* **1999**, *24*, 627-635, doi:10.1093/chemse/24.6.627.
5. Taylor, A.J. Release and Transport of Flavors In Vivo: Physicochemical, Physiological, and Perceptual Considerations. *Compr Rev Food Sci Food Saf* **2002**, *1*, 45-57, doi:10.1111/j.1541-4337.2002.tb00006.x.
6. Trumbo, P.R.; Appleton, K.M.; de Graaf, K.; Hayes, J.E.; Baer, D.J.; Beauchamp, G.K.; Dwyer, J.T.; Fernstrom, J.D.; Klurfeld, D.M.; Mattes, R.D., et al. Perspective: Measuring Sweetness in Foods, Beverages, and Diets: Toward Understanding the Role of Sweetness in Health. *Adv Nutr* **2021**, *12*, 343-354, doi:10.1093/advances/nmaa151.
7. Sina, E.; Buck, C.; Jilani, H.; Tornaritis, M.; Veidebaum, T.; Russo, P.; Moreno, L.A.; Molnar, D.; Eiben, G.; Marild, S., et al. Association of Infant Feeding Patterns with Taste Preferences in European Children and Adolescents: A Retrospective Latent Profile Analysis. *Nutrients* **2019**, *11*, doi:10.3390/nu11051040.
8. Appleton, K.; Tuorila, H.; Bertenshaw, E.; De Graaf, C.; Mela, D. Sweet taste exposure and the subsequent acceptance and preference for sweet taste in the diet: systematic review of the published literature. *The American Journal of clinical nutrition* **2018**, *107*, 405-419, doi: 10.1093/ajcn/nqx031.
9. Tedstone, A.; Targett, V.; Allen, R.; staff, P. Sugar reduction: the evidence for action. Public Health England 2015.