DOI: 10.20396/revpibic.

Passion fruit juice added of non-nutritive sweeteners: Sensory perception of habitual consumers of sweeteners (with or without medical recommendation) and non-habitual consumers

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Abstract
Sensory analysis of pure and sweetened passion fruit juice with stevia (0.11, 0.22 and 0.44%) or sucralose (0.09, 0.18 and 0.36%) were carried out, including acceptance and ideal of sweetness analysis and Check all that apply test (CATA) comprising 26 terms descriptors, for characterization of the samples. The participants were selected considering the consumption habits of non-nutritive sweeteners (NNS): (i) non-consumers (NC), (ii) consumers (without medical recommendation) (C) and (iii) consumers by medical recommendation (MR).

Key words:
Sensory analysis, non-nutritive sweeteners, consumer.

Introduction

The sweet taste is very desirable for humans because it actives sensations of reward and pleasure. Regular consumption of sweetened foods reduces the responsiveness of the brain reward system over time, requiring gradual increase of sweet food consumption to reach the same level of pleasure[1]. This high consumption is being associated with the occurrence of chronic noncommunicable diseases. It is possible to use NNS to reduce the consumption of sugars without reducing the sweet taste of food. It is not known if the consumption of NNS also progressively increases the required amount of these substances to activate the sensation of pleasure. This study evaluated how non-consumers and habitual consumers of NNS sensory perceive passion fruit juice sweetened with sucralose (Su) and stevia (St).

Results and Discussion

The results showed small differences in the acceptance of the samples according to the groups of participants. In general, the acceptance of the juices was increased with the increase of the concentration of the NNS and was greater for the samples added of sucralose, in comparison to those with stevia.

The ideal test showed that the ideal sweetness would be between NNS concentrations equivalent to 10-20% of sucrose (two higher concentrations of NNS tested), for most participants and with no difference between NNS.

The CATA test indicated difference in relation to the associated terms for the different samples and similarities in the evaluation of the same sample by the different groups. In general, participants made a strong association between lack of sweetness and healthiness. However, this healthy perception did not overlap with the requirement of sweet taste in the samples, being the absence of sweetness extremely penalized in sensory evaluation.

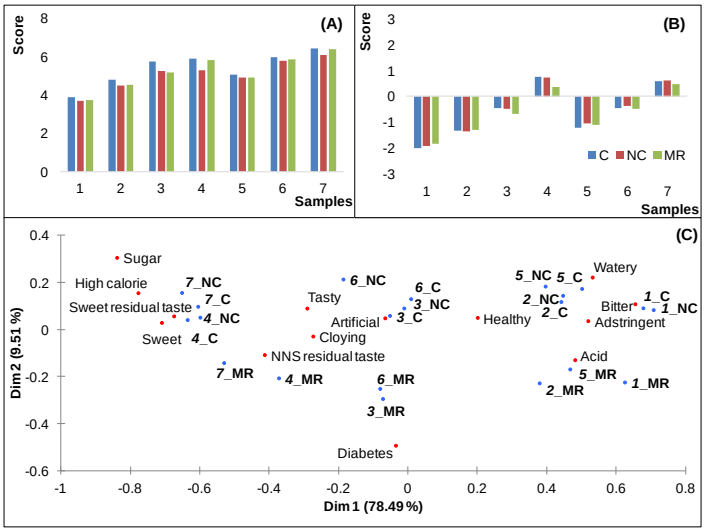

Fig 1. Global acceptation (A) ideal sweetness (B) and CATA test (C) of passion fruit juice sweetened with stevia and sucralose at different concentration
Legend of samples: (1): non sweetened; (2): 0,11% of St; (3): 0,22% of St, (4): 0,44% of St; (5): 0,09% of Su; (6): 0,18% of Su; e (7): 0,36% of Su.
Legend of consumers: (NC): not consumers of NNS, (C): habitual consumers of NNS; and (MR): habitual consumers of NNS by medical recommendations.

Conclusions

- Small differences were observed in the perception of samples among the groups of consumers evaluated;
- In general, acceptance of the juice increased proportionally to the sweetness of the samples, indicating preference of the participants for juices of high sweetness;
- Samples with sucralose were more accepted;
- Despite the association between low sweetness and healthiness, consumers prefered the sweeter samples.

Acknowledgement

To PIBIC / SAE and FAPESP (2018 / 18915-9) for grants awarded.

[1]Burger, S. **The American Journal of Clinical Nutrition**. 95: e810–e817, 2012