

INTRODUCTION

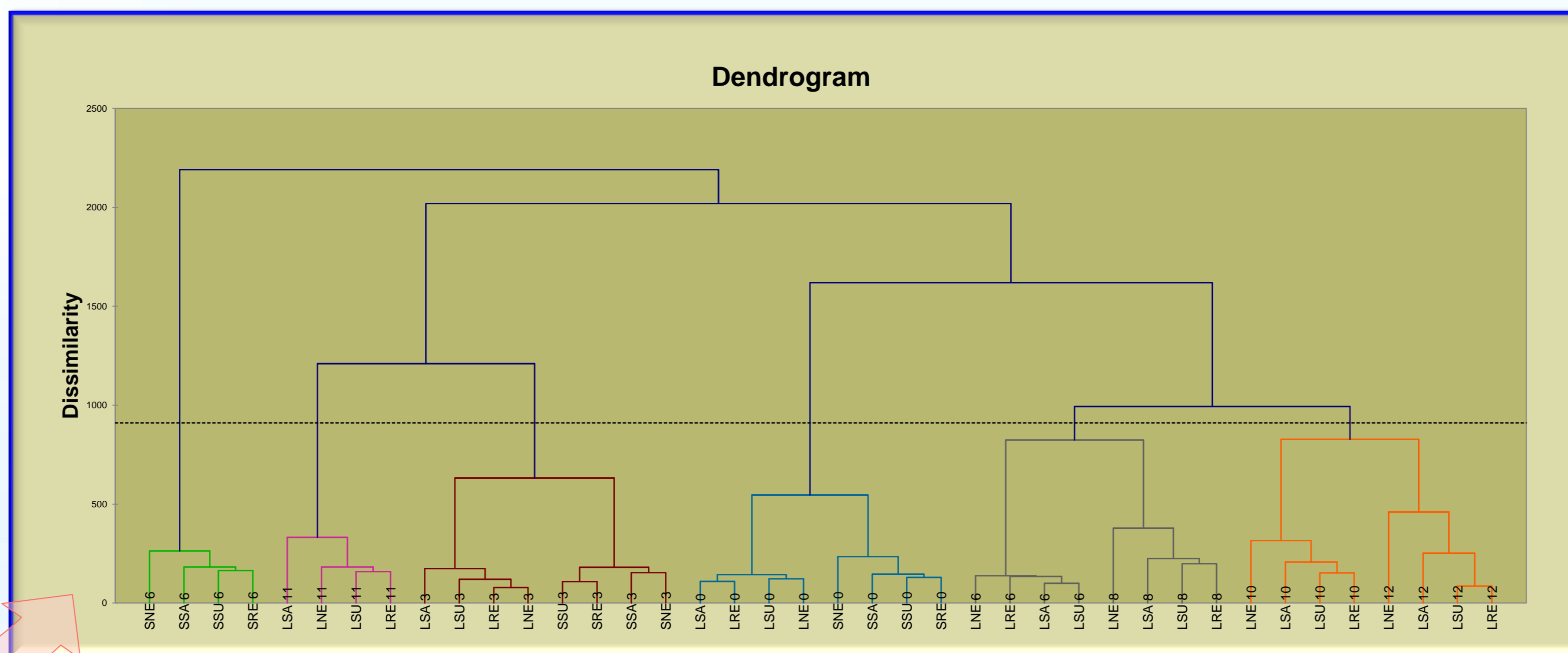
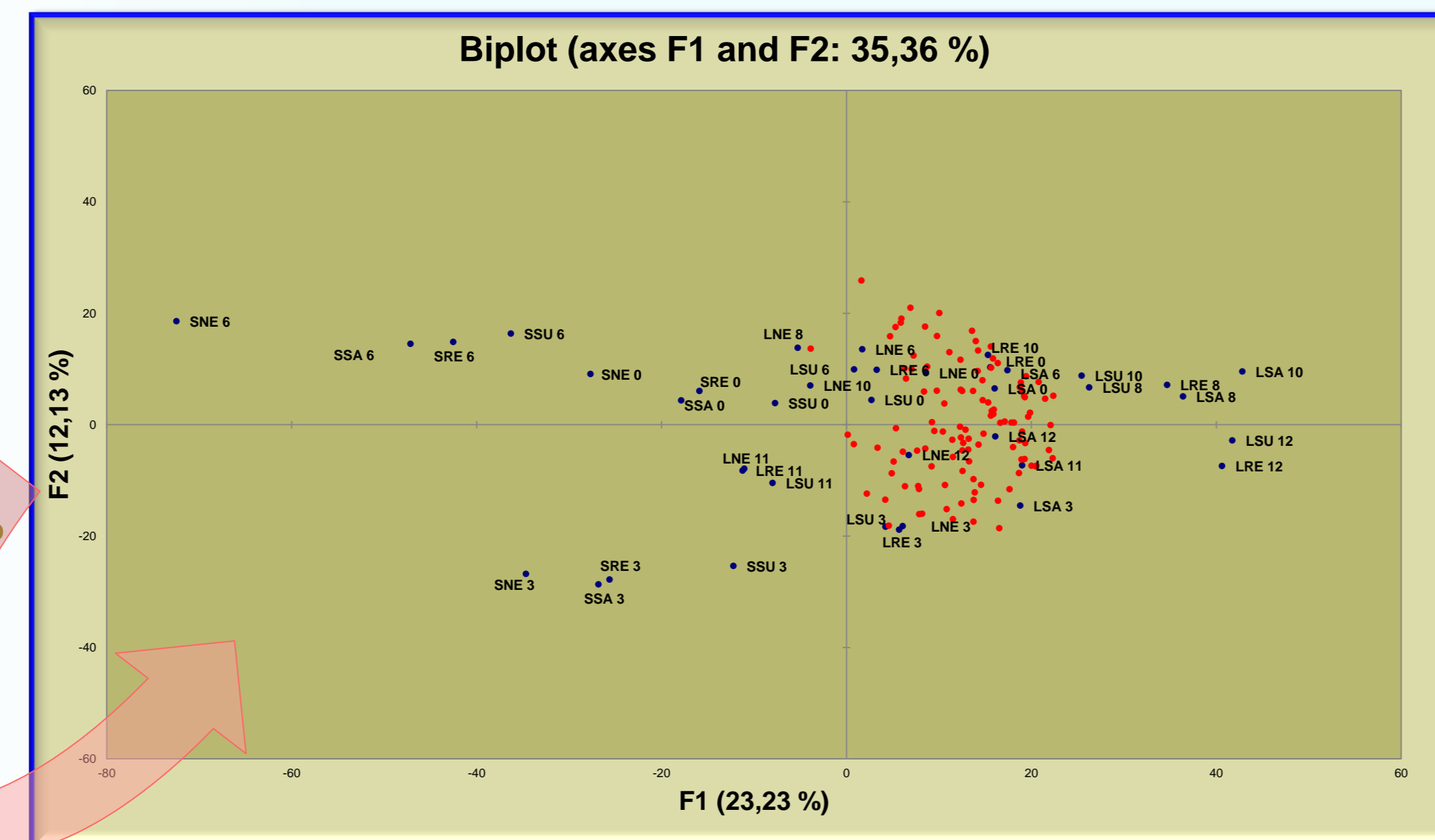
A sensory study based on sucrose and milk substitution in chocolate was conducted based on the actual demand for health and nutrition food without losing the sensory perception. In addition, soymilk and sweeteners in several products actually consumed have increased and could provide similar sensory profile to traditional versions. The shelf-life analysis was performed on eight different samples of soy milk chocolate varying the type of sweetener: **SUCRALOSE**, **NEOTAME**, **REBAUDIOSIDE**, and **SUCROSE CONTROL**.

METHODOLOGY

- Chocolate samples: Eight samples were studied. Four milk chocolates were prepared - a traditional one (sweetened only with sucrose) and three other samples, differing only with respect to their sweetener: Sucralose (SPLENDA Micronized Powder, Johnson and Johnson), Rebaudioside (Enliten® 300000, Corn Products) and Neotame (SweetMix). The sucrose of the diet chocolates was replaced by Polydextrose (Litesse®, Danisco) and Erythritol (Zerose 16961, Cargill) (17:26) as bulking agents, and the three high intensity sweeteners. Four samples of chocolate were prepared with soy extract, to replace to dry milk. In this formulations was used soy extract (Provesol PC, Olvebra) and the sweeteners were the same.
- Judges: Groups of at least 112 potential consumers of chocolate.
- Sensory analysis: Samples were analyzed using an unstructured scale 9cm about overall liking.
- Shelf-life study: Every chocolate samples were stored at 20°C for twelve months and an acceptance analysis was performed on a three-month intervals until the samples were noticed as reject by consumers.
- Internal Preference Map multivariate statistical analysis, which allowed the generation of a multidimensional sensory affective space formed by consumers and samples, using the SAS 9.2 software (Cary, NC, U.S.A).
- The hierarchical cluster analysis (HCA) was applied to the overall liking data to identify groups of consumers with similar preferences. The Euclidean distances (dissimilarity), Ward's method (agglomeration method), and automatic truncation were used (Cruz et al., 2013) and the software XLStat version 2007.7 (XLstat, New York, NY, USA) was employed to cluster analysis.

RESULTS

- From the 6th month of storage it was noticed a decrease in the soy chocolates acceptance, then the analysis was interrupted, corresponding to the middle of the sensory evaluation time. However, the benefits provided by soy foods combined with lactose-free products intake turns out to be an alternative to consumers who normally aren't used to consume milk, chocolate or even sugar on their diet.
- The results of the initial time indicated that there was no significant difference between the soy diet chocolates in relation to its traditional version (sucrose) on overall liking. Thus, it is important to notice the successful replacement of sucrose by the three analyzed sweeteners.



DISCUSSION

- ✓The substitution of sucrose by **SUCRALOSE** was shown to be the most effective, since it was closest to that of traditional milk chocolate with sucrose (MSU) and milk chocolate with sucralose (MSL).
- ✓The shelf-life study of milk chocolate showed that **NEOTAME** was the only sweetener that didn't differ significantly during the storage. On the other hand, soy chocolates showed clear changes past 180 days.
- ✓ Considering the overall liking, the milk chocolate containing **REBAUDIOSIDE** and neotame showed as similar as the traditional. It was noticed the successful sucrose replacement by the three sweeteners on 5% significance level among the soy chocolates.
- ✓The sugar presence reduces water activity, extending the shelf-life and providing better texture and brightness properties.
- ✓In relation to the sucrose replacement in milk chocolates, the sucralose showed the best result, with closer approximation of traditional sample on 0, 240, 300 and 330 days. About neotame, the profile was more similar to sucrose sample on 90,180 and 360 days of study.

CONCLUSIONS

Replacing sucrose with other sweeteners in foods is a relevant topic in the industry, due to the prevalence of obesity issues and the health-related problems associated with poor eating habits. Besides, the lactose-free products can reach people, who are chocolate consumers. It was noticed the positive influence that milk provides of chocolate sensory characteristics during the storage, increasing shelf-life under controlled humidity and temperature conditions. It's possible to conclude that the Internal Preference Map study associated with Cluster analysis is useful for shelf-life statement. Targeting potential chocolate consumers is important to demonstrate which attributes could help positively a new product development. Sensory differences are easily detected by people whom are usually lactose-free food consumer.

ACKNOWLEDGMENT

Authors thanks CNPq