Temporal Dominance of Sensation (TDS) to Enhance Descriptive Sensory Profiling

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Introduction

- To successfully develop new products, it is critical to understand the sensory perception of products in mouth during the eating experience. This may include techniques beyond standard descriptive profiling
- Temporal Dominance of Sensations (TDS) considers the dynamic aspect of flavor perception, while traditional descriptive profiling provides an overall flavor profile at a static time point
- **The objective of this study was to describe and compare sensory nuances of products by using a combination of descriptive profiling and TDS methods**
- This information may be leveraged in a variety of situations and may be particularly helpful to understand products in a broader sense from descriptive analysis and at a more granular level from TDS.

Materials & Methods

Products

- Three strawberry-flavored dairy products

Descriptive Profiling

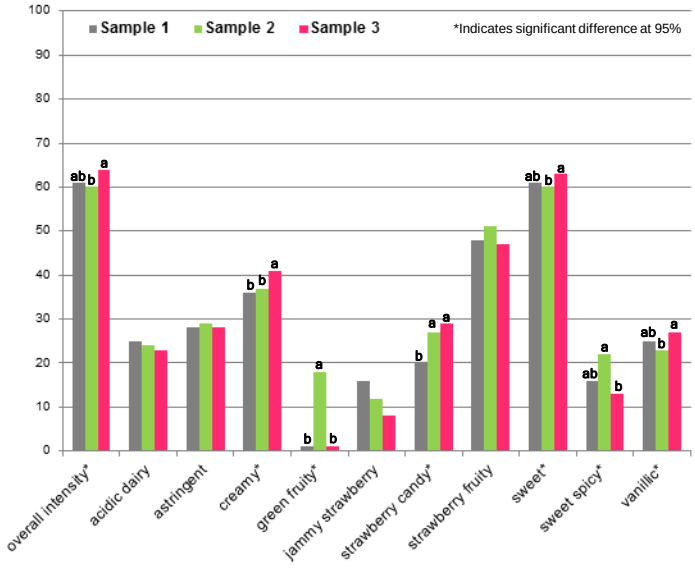
- Quantitative Flavor Profiling (QFP) methodology
- A Givaudan trained panel (n = 15) profiled the products using a 100-pt line scale that ranged from 0 = none to 100 = intense
- Evaluated flavor attributes only using Givaudan's global Sense It™ language
- Data were analyzed using ANOVA and Tukey's Post Hoc test at the 95% confidence level

Temporal Dominance of Sensation (TDS)

- Givaudan expert panel selected six key flavor attributes, and identified the dominant one along a time continuum from 0 to 60 seconds
- Data collection began when the sample was first placed in mouth and up to 55s after swallow
- Product was manipulated for 5 seconds before swallowing
- Two replications were performed
- Data were collected in FIZZ (v. 2.41b) and analyzed at the 95% confidence level

Descriptive Results

Figure 1 . Descriptive Profiles of Dairy Products



Descriptive profiling indicated significant differences between the samples for many flavor attributes

Base notes (Acidic Dairy, Astringent), Jammy Strawberry and Strawberry Fruity were not perceived to be significantly different

Intensity differences were greatest in the perception of Strawberry Candy and Creamy flavors

Translating Attributes

Descriptive Attribute		TDS Bucket
Acidic Dairy	→	Acidic Dairy
Astringent	→	Astringent
Creamy, Vanilla	→	Creamy
Jammy Strawberry, Strawberry Candy, Strawberry Fruity	→	Strawberry
Sweet	→	Sweet
Green Fruity, Sweet Spicy	→	Other Fruit

TDS Results

Figure 2 . TDS Profile of Sample 1

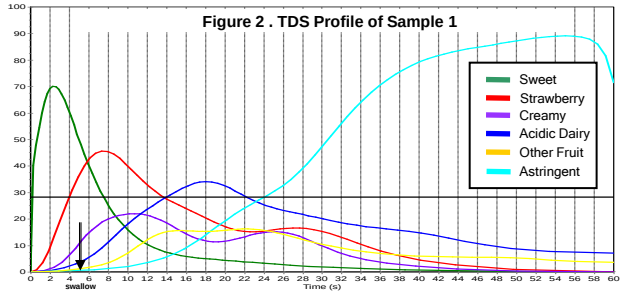


Figure 3 . TDS Profile of Sample 2

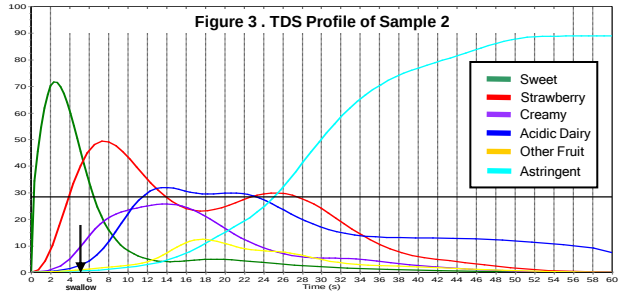
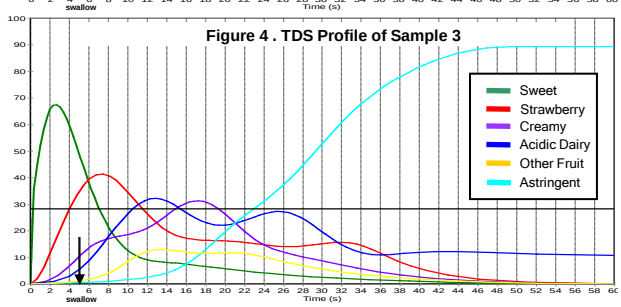


Figure 4 . TDS Profile of Sample 3



Results and Conclusions

- Descriptive analysis (DA) indicated significant differences in intensity of most flavor attributes
- Differences in dominance were most notable for Strawberry, Creamy and Acidic Dairy
- Strawberry decreased in dominance for Samples 1 and 3, but re-emerged in Sample 2
- Creamy was important in terms of dominance for TDS and was significant in DA
- Acidic Dairy was not perceived to be significantly different in DA, but TDS indicated it was an important distinction between the samples
- **The static time point evaluation from descriptive analysis provided an overall intensity profile, but in combination with TDS further understanding was obtained about the important attributes in terms of dominance perception in a dynamic evaluation**
- This study provided focus to attributes that normally would not have been deemed as important in the sensory profile