TIME Profiles – a method of measuring the eating experience

{Time=Time Intensity Multi-Evaluation}
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Background

Traditionally, time intensity data is collected on only one or a few attributes selected from a full product profile. Attributes selected are determined to be the most relevant to the research and to the project's objective. Some objectives, however, require a different approach to understand the impact on the consumer eating experience. A method was developed to use a descriptive sensory panel for providing that understanding. Graphing of the data allows for visualization of the eating experience observed throughout a bite of the sample, and gives the researcher more information than is learned from traditional descriptive analysis or time intensity evaluations. The multi-dimensional profiling provides true *PRODUCT* understanding, which relates to the consumer experience. Single point intensity comparisons, attribute domination, or minimal attribute comparisons over time do not allow for the full story.

Demonstration

Below are the flavor and texture profiles of two vanilla puddings. The control is the current product, and Variable 1 is a reduced cost formulation. The profiles of the two products appear to be very similar, with only slight differences in intensities and flavor attribute appearance order. Moment orders given to the two profiles to link for a general understanding of occurrence also show little variability.

Control

Attribute	Intensity	Moment	Attribute	Intensity	Moment
Aroma			**Texture**		
Impact	5.0		Thickness/Viscosity	9.0	1
Dairy	5.0		Adhesiveness	7.0	2
Sweet	3.0		Firmness	4.5	3
Cooked	1.5		Cohesiveness	8.5	8
Vanilla	3.0		Moistness of Mouth	7.5	8
			Slickness	7.5	10
Flavor			Gumminess	7.0	10
Impact	4.5		Breakdown	15.0	11
Dairy	6.5	2	Mouthcoating	5.0	13
Cooked	5.5	2	Astringent	2.5	15
Vanilla	4.0	4			
Sweet, Overall	4.0	5	**15 Second Aftertaste**		
Caramelized	3.0	6	Dairy	4.0	17
Buttery	1.5	7	Cooked	3.0	17
Chemical	2.0	8	Vanilla	2.5	17
Salt	1.0	9	Sweet Taste	2.5	17
Bitter	1.0	12	Chemical	1.0	17
Sweet	2.5	13			

Variable 1

Attribute	Intensity	Moment	Attribute	Intensity	Moment
Aroma			**Texture**		
Impact	6.0		Thickness/Viscosity	9.0	1
Dairy	5.0		Adhesiveness	7.0	2
Cooked	3.0		Firmness	3.5	3
Vanilla	2.5		Cohesiveness	9.0	8
Sweet	3.0		Moistness of Mouth	8.0	8
			Slickness	8.0	10
Flavor			Gumminess	7.0	10
Impact	5.0		Breakdown	15.0	11
Dairy	7.5	2	Mouthcoating	5.0	13
Cooked	6.5	2	Astringent	2.0	15
Vanilla	4.5	4	Metallic Mouthfeel	2.0	16
Sweet, Overall	4.5	5			
Caramelized	2.5	6	**15 Second Aftertaste**		
Chemical	1.5	7	Dairy	5.0	17
Buttery	2.0	8	Cooked	4.0	17
Salt	1.5	9	Vanilla	2.0	17
Sweet	3.0	12	Chemical	1.0	17
Bitter	2.0	13	Sweet Taste	3.0	17
			Bitter	2.0	17

A TIME profile was established as an extension of the traditional flavor profile to better understand the eating experience. For this method, panelists are asked to focus on attribute intensities at key time points: entrance, peak, swallow, and various times after the swallow with a time notation of exit. Other times are to be evaluated if necessary for a particular attribute. Other types of attributes (e.g. texture) can also be evaluated using this procedure.

The profiles that look similar on the table of traditional descriptive sensory results are more varied in the full profile graphed over time. The initial information may have led to replacement, however, the more detailed results from the TIME method show this may not be the case. The product with Variable 1 has a spike in the peak of vanilla flavor, a delayed perception of sweet taste, caramelized flavor that fades too early and a short, uneven buttery character. Variable 1 also has a strong bitter taste and metallic feel at the end, which may not be desirable to the consumer as a finishing aspect.

