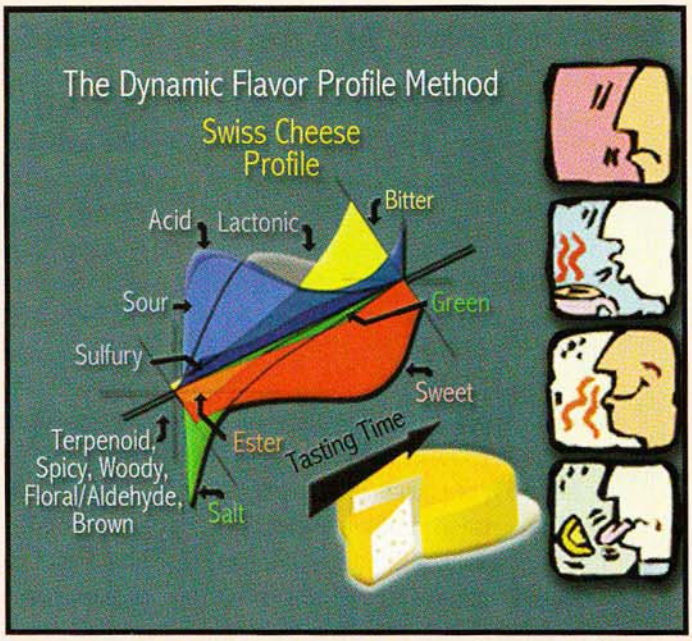
The Dynamics of Flavor Profiling

Flavor perception is a complex, dynamic process involving a progression of chemical changes from foreground to middle to background notes, with specific taste attributes exhibiting diverse intensities over time. Flavor Dynamics Inc. has developed the Dynamic Flavor Profile Method (DFPM), a three-dimensional perspective of flavor perception, to assist with the development, evaluation and standardization of food products.

The method combines two previously unrelated analytical systems for flavor identification, linear time/intensity graphs and radial attribute analysis in which flavor traits are plotted on a spider-web-type diagram. Using defined chemical standards to link the two methodologies, a composite graph depicts the taste perception for every taste element as time passes. "With relatively minimal training, we can make the storage, retrieval and manipulation of crucial sensory data easy and automatic," says Dolf DeRovira, president.

Panelists are first taught to identify specific flavor components, such as acids, esters, terpenes, lactones, woody compounds, sulfurs and floral/aldehyde. Food samples are then assessed for the intensity of each taste element over a period of time. A cheese, for instance, might be evaluated for acid, green, spicy and sour notes. Data compilation is simplified with Automatic Testing Entry, which utilizes a Flavor Entry Slider. This interface enables evaluators to move the computer's mouse up and down over a line scale, resembling a household ruler, as the intensity of the various flavor elements grows and diminishes over a defined time period. Slider motions are automatically recorded as perception tests progress, with the data immediately available in numerous graphical forms for analysis and manipulation. Manual Testing Entry is also an option, allowing users to enter and manage data in numerical form.



At the core of the system is the Graphics and Attribute Wheel screen, which enables the user to view and manipulate the data in both linear and radial graphical forms. Linear time/intensity graphs depict results in the standard x- and y-axis construct. The radial graphical view, when used in conjunction with the Time Slider, shows the taste perception for every flavor element over time. The Time Slider can be held stationary at a single point for a momentary glimpse of the taste sensation, or it can be moved back and forth, depicting the dynamic flavor profile.

"This system provides a quantifiable and user-friendly method for simplifying product development and evaluation," says DeRovira. "If duplicating a barbecue sauce, for instance, the three-dimensional graphs can help identify where in the taste perception a certain spice is lacking or if a strong, up-front vinegar note is being covered by another flavor attribute." ■

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