Formulating with Sense

by Linda Milo Ohr
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Sensory analysis is increasingly becoming an integral part of the product development process.

When it comes to sensory testing, "Do it early, do it often, and get expert input into the process. It is not just 'taste testing,'" says John Prescott, University of Otago.

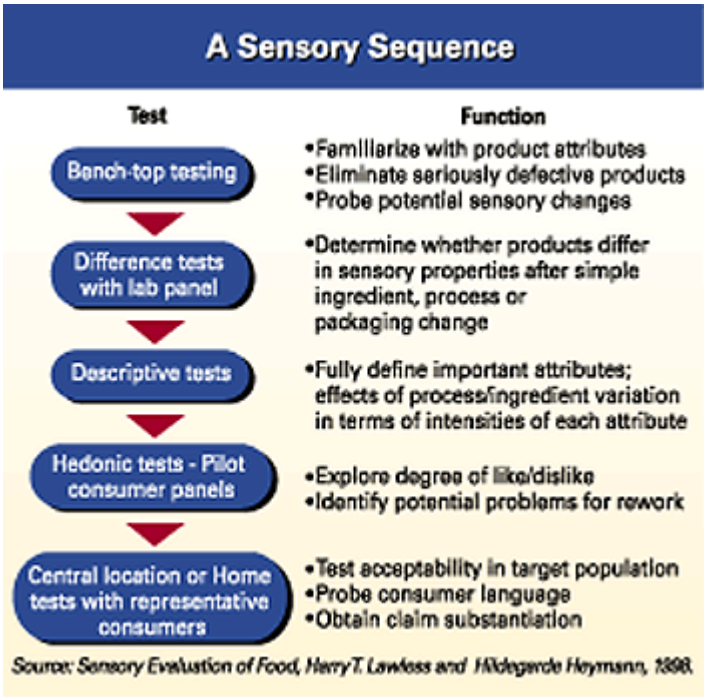
It's a simple concept: if a product does not taste good, consumers will not make repeat purchases. Advertising and marketing can get a consumer to try the product, but if it does not deliver in taste, texture or other expectations, chances are the product will fail in the marketplace.

This concept illustrates the importance of sensory evaluation in the product development process. Sensory can determine acceptability of a finished product in the marketplace or determine sensory shelf life of a product. But when it comes to developing a new product, sensory evaluation helps guide development to a more precise goal and can result in cost savings.

"The number one purpose of sensory evaluation in product development is to minimize the chance of putting a product in the market that is not going to be well-liked," says Herbert Stone, Ph.D., co-founder and president of Tragon Corp., Redwood City, Calif. "Sensory ensures that a product will not fail

because of its sensory characteristics." Secondly, sensory steers formulators in the direction of what marketing has requested, adds Stone.

Adding Sense to Development



"How do you know when you've reached an acceptable product? How can you decide to use one ingredient rather than another (e.g., sucrose vs. aspartame or low vs. regular fat) unless you can measure the sensory consequences?" questions John Prescott, Ph.D., University of Otago, Sensory Science Research Centre, New Zealand.

Using sensory in your product development cycle answers these questions and more. But what tests achieve the best results in the development cycle?

"I view sensory testing as falling in two categories, either analytical in nature or affective," says Stone. On the analytical side, difference tests and descriptive analysis are the two basic types of tests.

In difference testing, sensory analysts ask panelists if they perceive products as different. Descriptive analysis is far more informative. It tells what characteristics are different and the magnitudes of the differences.

The main difference between the two, says Stone, is time and end results. Difference testing is much quicker. Descriptive analysis takes longer because it provides developers with more focus. "For example, with descriptive, a product development team may find that their product has significantly less fruit flavor than another and the magnitude of difference between the two. Sensory can then ask what formulation was used and recommend how to modify the formula," says Stone.

Analytical tests such as difference and descriptive are often conducted in the beginning and middle of the product development cycle. They can be part of a bigger series of tests to give developers a more precise target to shoot for.

For example, Ann Behen, senior account manager of sensory, Shuster Laboratories, Canton, Mass., notes that the company conducts several types of testing, depending on the project and its stage of development.

"For example, if we are trying to evaluate some concept ideas, we might first begin with focus groups to determine what aspects of a product are important to the consumer," she explains. This generates more qualitative data than quantitative. "We use a couple of consumer groups who would most likely buy the product and place them in a round-table discussion while product developers observe and listen."

Another form of sensory testing involves doing a category appraisal. "For example," says Behen, "a client may want to develop a nutrition bar, but they currently do not make any. We might do an assessment of the top three to five brands and recruit consumers who are users of the product and use acceptance questions to determine what attributes they would like to see more or less of. That gives us guidance as to what to focus development on."

Descriptive panels are used in these types of tests and through the development phase. "We turn to these groups to validate attributes about the product. If it's a development project where we are substantiating the

use of an ingredient, we look to see if a descriptive panel is picking up the difference between the two. This also guides the product developers," notes Behen.

Product optimization also provides direction. "Developers create 10 to 15 formulas with varying key attributes. Consumers taste these and through sensory and statistics, we can come out with a more specific picture of what the consumer wants. This may be done in the beginning or mid-point of development to figure out what direction to take next," explains Behen.

Affective tests are used towards the end of the development cycle. Affective testing consists of liking and preference tests. Towards the end of the product development cycle, developers have usually narrowed the alternative product prototypes down to a manageable subset through the use of analytical sensory tests. They are now interested in whether the consumer likes the product, prefers it over another product, or finds the product acceptable based on its sensory characteristics.

Typical sensory affective tests are blind product tests. Affective tests prevent coming out of product development work and not having any idea how the consumer likes the product, comments Stone.