Sensorial analysis in cosmetics
An overview

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ABSTRACT: Sensorial analysis is the examination of a product through the evaluation of the attributes perceptible by the five sense organs (organoleptic attributes) such as colour, odor, taste, touch, texture and noise. It is used in diverse fields like cosmetics, food, personal care products, textiles etc. The Consumer Acceptance Tests, Difference Tests and Descriptive Tests are the three types of sensory analysis. The analysis is carried out in two phases: the first test uses common naïve assessors followed by the second phase employing well trained assessors. In the cosmetic industry sensory evaluation data has been used as a part of marketing decision. It is acknowledged to be a powerful approach in optimizing product preference. Sensory analysis is used to evaluate the consumer acceptance of the cosmetic; especially for products of general topical use. Sensorial analysis data plays an integral role in the marketing decision. The results are reproducible but the complexity and high costs limit their use in the field of research and development of new products rather than the routine use in monitoring processes and quality control.

HISTORY

“Gail Vance Civille” (born 1943) is a pioneer in advanced sensory evaluation approaches for industry, academia and government (1). She has been fundamental in the development of Flavour, Texture, Fragrance, Skin feel and Fabric feel Spectrum Descriptive Analysis Methodology and her protocols, reference scales and methodologies provide the groundwork for sound analytical tools used by many in sensory science.

INTRODUCTION

Sensorial analysis is the method of analysis for the examination of the product by evaluation of the properties which are detected by the five sense organs such as colour, odour, taste, touch, texture and noise (2). They are being used in many fields such as foods, cosmetics, pharmaceuticals, textiles and household products. In the cosmetic industry, sensory evaluation data has been used as a part of marketing decision. It has been used to identify and quantitatively model the key drivers for a product’s acceptance. It is acknowledged to be a powerful approach in optimizing product preference. The customer’s sensorial properties identification as well as product testing is important. These aspects are also of increasing importance for evaluation of product for general topical use including topical drugs and topical devices in the second half of 20th century. Prior to the development of sensorial analysis, “at home test” method was prominently used which examined how getting used to the product works by employing regular customers and noting their feedback about their experience regarding the use of the cosmetic product (3). But the basic drawback of this method was the lack of the ability to obtain uniform and formidable results due to the inexperience of the assessors. Hence, new and improved sensorial evaluation methods were developed using panels of assessors, well defined and controlled experimental protocols and statistical techniques for processing the results.

WORKING OF SENSORIAL ANALYSIS

Sensorial analysis is used to evaluate the consumer acceptance of the cosmetic; especially for products of general topical use. Sensorial analysis data plays an integral role in the marketing decision. The results are reproducible but the complexity and high costs limit their use in the field of research and development of new products rather than the routine use in monitoring processes and quality control. Characterization of texture commonly falls into two main groups based on sensory and instrumental methods of analysis. Sensorial analysis includes use of the senses of smell, taste, sound and touch. Evaluation of cosmetic texture by touch includes the use of the fingers as well as the lips and tongue. The sensory panelists are trained to describe their sensory experiences using words they generate in previous training sessions. The words are more detailed than those used by the consumers. Linking data from Sensory panel and Consumer tests for common sets of products and by statistically linking i.e. mapping the expert description and consumer liking we can optimize the product to meet the consumer needs.

Sensorial analysis consists of three subsections.

- Effective testing: It is concerned with obtaining “objective facts” about the products which could range from basic discrimination testing to descriptive profiling. It requires a trained panel.
- Affective testing: Also known as “consumer testing” and deals with obtaining subjective data. It employs a panel of untrained personnel.
- Perception: It involves the biochemical and psychological theories related to animal and human sensations which help to explain why certain characteristics are preferred over others.

The study methodology consists of two phases:
Phase 1: After having used the product under study, a questionnaire is being completed by each trained panelist and includes parameters for evaluation of product sensory characteristics and for the “subjective evaluation of skin characteristics” after application (redness, itching etc.)
Phase 2: In this phase, normal untrained consumers are asked to use the product and answer the questionnaire based on the same parameters as described above (1).

Based on the feedback after phase 1, suitable formulation adjustments are made and phase-1b is subsequently carried out wherein the modified formulation is again tested on the same panel
Sensory panels can be used as a part of product development program to:
- develop a new product from gaps in existing market maps
- determine if it is possible for consumers to notice changes
- understand the magnitude of changes that will get a particular consumer reaction
- determine which products and concepts in a range of new ones are the most promising
- substantiate advertising propositions and label claims

Sensory panels can also be utilized in the quality management process and it is more appropriate for repeated assessments.

Advantages of sensory panels:
- Sensory panels help manufacturers, scientists, food technologists etc. gain a clear perception of what ordinary consumers may experience
- Sensory panel testing can be much more rapid than most non-sensory methods
- Sensory panelists use more than one sense, making them more flexible instruments
- Sensory panelists can be very sensitive and good at detecting minute differences in product characteristics
- Sensory panels are acceptable for writing into specifications for quality
- Laboratory facilities are not required to conduct the descriptive analysis of a product. This makes sensory panels a feasible proposition to study products.

Disadvantages:
- Sensory panelists can become fatigued with the entire process of testing and assessing descriptive data.
- Assessors may be partial or biased due to loss of interest.
- To ensure precision in the analysis and interpretation of the descriptive data, several assessors may be required making it an expensive proposition
- The entire process of recruiting and training sensory panelists can be time-consuming and costly process
- It may not be easy to replace assessors quickly as the incoming assessor will have to be given intensive training to develop requisite expertise of the job
- The sensory panel method can be more expensive than some non-sensory methods
- The panelists may not be good at quantifying perceptions
- Interpretation of results may get problematic and be open to dispute.

As would be expected, sensory methods of analysis are subject to wide variability though this variability can be reduced by using trained assessors. Therefore the main goal of many texture studies is to devise one or more mechanical tests with the capacity to replace human sensory evaluation as a tool to evaluate texture.

EVALUATION OF SENSORY ANALYSIS

“Sensorial evaluation is a scientific discipline used to evoke measure, analyse and interpret reactions to those characteristics of products or materials as they are perceived by the sense of sight, smell, taste, touch and hearing” (7). Any decision related to sensory evaluation begins with identifying what the researcher wants to accomplish. The most common objectives pertain to product development and quality. The specific functions could include product matching, enhancement of ingredient specifications, shelf-life determinations and cost optimization. Every panelist must be competent in using the sensory method, terminology, rating scales, and evaluation ballots or programs. Descriptive tests reveal background flavours and textures as well as intensities that explain consumer choices. Combined analysis of consumer and descriptive data reveals key drivers of consumer liking and how to make a product that meets acceptance standards. The sensory panels give important tools in many groups use as an evaluating number of samples. The sensory panels are different than a consumer testing panel. Sensory panels guide product development while consumers help with market acceptability (8, 9).

CONCLUSION

Sensory quality is the ultimate measure of product quality and success. Sensory analysis comprises a variety of powerful and sensitive tools to measure human responses to foods and other products. Selection of the appropriate test, test conditions, and data analysis result in reproducible, powerful and relevant results. Sensory analysis is an invaluable set of methods for research and marketing. Knowledge of product variability, stability, comparison to competitor product, relationships to instrumental analyses and consumer understanding are all requirements for a successful product. Sensory analysis techniques alone can provide the answers to all of these questions. Many of the tests employed are simple and easy to apply whereas others are more complex and require training and experience. Selection of the appropriate sensory test and testing conditions provides powerful results (10).

REFERENCES AND NOTES

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