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Development of panel by selecting semi-trained participants for sensory evaluation

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ABSTRACT

Sensory evaluation focuses on the existence of difference attributes and measuring consumer likes and dislikes. It provides useful information for product developers, food scientists and food companies about the sensory aspects of their product. Sensory analysis was the group of techniques used to measure sensory attributes from the human response. Information obtained from the sensory attributes valuation of products was used by companies to support product development activities quality control and product marketing among others from a consumer's viewpoint. Sensory evaluation practices increase the chance that products reach the market in accordance with their needs and expectations.

Keywords: Sensory Evaluation, Sensory Analysis, Panel.

1. INTRODUCTION

The sensory quality of food products has been considered an important factor since the beginning of the food industrialization process due to its influence on the overall quality of the product. For the consumers, the eating quality attributes – aroma, taste, aftertaste, tactual properties, and appearance are the deciding factors in food acceptance. Thus quality is that “which the consumer likes best” and the grades of quality are understood more by the degree of desirable attributes and absence of undesirable characteristics. Thus, the primary consideration for selecting and eating a food commodity is the palatability or eating quality, and other quality parameters, such as nutrition and wholesomeness are secondary. Sensory analysis is used to characterize and measure sensory attributes of products. Sensory Analysis is the description and scientific measurement of the attributes of a product perceived by the senses: sight, sound, smell, taste, and touch. By understanding sensory data, one can offer food-product development guidelines as to which property should be emphasized when making product-development decisions. This decision process includes processing ingredient and economic considerations. Not merely food “tasting” it can involve describing food color as well as texture, flavor, aftertaste, aroma, tactile response, and even auditory response. Sometimes sensory analysis is used interchangeably with sensory evaluation.

Descriptive sensory analysis techniques have become widely adopted as an invaluable tool to aid product development. The quality of the sensory assessors' performance is a key factor for successful application of the methods. Recruitment and screening have important implications for the effectiveness of the training process and development of sensory performance.

2. METHODOLOGIES

Developing a panel for sensory evaluation was done by screening tests and give them a proper training for sensory about the attributes of flavor and texture characteristic and their intensities of the products. The experiment was conducted in Britannia Industries Limited, Bengaluru. The testing material was also procured from the local area of the Bengaluru.

2.1 Recruiting panel

A key element in the descriptive test was finding panelists who are capable of using objective terms and expressions to describe food products. Using a trained panelist does not give any identification of consumer liking, simply a descriptive profile of sensory characteristics of products. To find people good at this, I had to screen twenty-four people and therefore, recruitment is necessary. To obtain a good understanding of the consumer, minimum 10 members of panelist were required for the sensory of the product.

2.2 Screening test

When developing a sensory panel, there were several areas that need to be addressed and which include:

- The need for a panel in the organization (R&D, QA/QC)
- Organisation and management support and commitment
- Resources required a:

- A) Sensory staff
- B) Interest and availability of a potential panelists
- C) Samples and reference for screening and training
- D) Facilities for data collection and statistical analysis

❖ The screening test consists of 3 stages which include:

- Basic test and flavor identification
- Threshold test and color intensity
- Discriminative test

1st stage: To determine the abilities to identify differences using dilute solutions that may represent the basic tastes i.e. sour, bitter, salty, sweet and umami.

The odor was also commonly used for the screening test. In order to evaluate the ability of the panelist to describe the sensory response, a series of products can be presented and potential panelist was asked to describe the sensory impression.

2nd stage: After Basic and odor test out of 24 participants, the 20 participants were selected for the next round of test that was a threshold, color identification, and texture characterization.

The 2nd stage includes determination of threshold testing in which they had different concentrations for each taste sensation IS 8140-1976 (Indian Standard Institute, 1976)

After the threshold and color test, 20 panelists got selected for the next round of test that was Texture Characterization. In this test, all range of products having typical texture was given to the participants. They had to arrange these products according to the nature and level of textural properties, such as hard, elastic (spongy), adhesive (sticky/pasty), brittle, gummy, cohesive, chewy, firmness, softness etc.

3rd stage: After the 2nd stage, 15 participants got selected for the 3rd stage. In this stage, it includes a discriminative test in which a series of a triangle or duo-trio test may be completed to assess the ability of the potential panelist to detect small differences between stimuli at supra-threshold levels.

For the selection of panelist, 10% and 50% of sucrose were diluted in water where two samples of 10% diluted sucrose and one sample of 50% diluted sucrose had given to the participants where they had found out the odd one out of it.

2.3 Training

After analyzing my screening result I invited 10 selected panelist to participate in sensory training.

Training was involved as a group meeting to taste and describe of taste and flavors of various products. I worked with the panelist to create descriptors to define the food products being tested and define each descriptor. Then the panelist was provided with the examples of each descriptor and given the opportunity to evaluate various products for those descriptors.

After the training, panelists did a descriptive test on yogurt to analyze flavor and textural profiling of the products which was procured from the local city of that area of Bengaluru.

Five different brands products for yogurt were given to the panelists to analyze the flavor and texture properly.

- Epigamia
- Britannia
- Mother Dairy

- Nestle
- Milky mist

3. RESULTS AND DISCUSSION

The result is based on the pilot-study using the PCA method on semi-trained, characterizing the different brands of the yogurt product by the descriptive test.

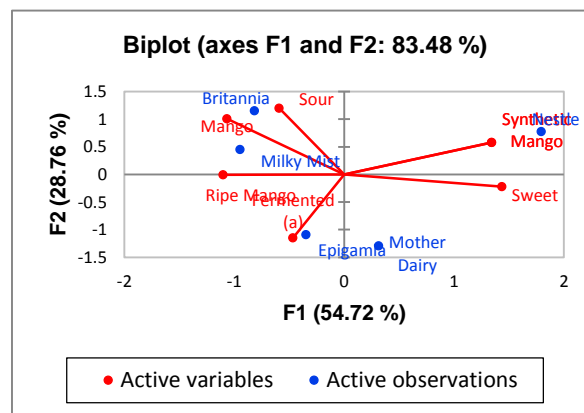


Figure 1: Flavour profiling of yogurt

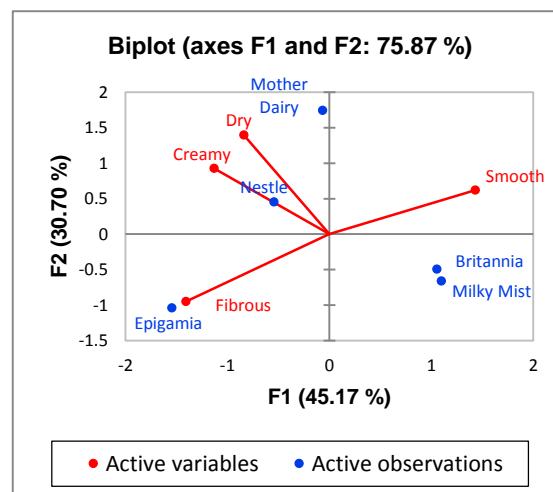


Figure 2: Texture profiling of yogurt

The purpose of this analysis step was to get a quick and general overview over how the data was structured and to identify panels that were differ greatly in regard to how they perceived differences between the tested samples. This was done by applying PCA on the merged data set. The analysis of this PCA chart shows that the overall attributes show around 10-13 attributes of the product which could easily differentiate each brand and which could explain the overall degree of liking by the panel for the products.

4. CONCLUSION

The results show that in yogurt samples, panel mostly preferred Epigamia brand among all other products as it had a good texture and flavor profiling. These results can help other brands to improve their product according to the preference of the panel and specification of the sensory properties of the products, and characterization to allow recognition in the food market. For development and marketing of the product, perceptual mapping in the consent of QDA and PCA could contribute to product positioning with correct approach or strategy.

Now in sensory evaluation, the panel and panelist will be used as an instrument which can be a key tool to obtain reliable sensory data. Assessment techniques for their performance now can provide an important approach for managing them effectively in future scope for the company.

It is important in future studies and evaluations of such sensory profiling methods to initially focus on designing suitable sample sets, find appropriate products to characterize and also have a well-defined aim correlated to a potential outcome. The Descriptive

technique can result in a great amount of data but without further implementation and aim in practice the outcome will mostly reflect on a specific amount of characterized products and tell less about either general consumer perception or product preferences.

5. ACKNOWLEDGEMENT

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