**SENSORY EVALUATION**

**Sensory evaluation** is a scientific discipline that is used to measure and analyze people's responses to products as perceived through the 5 **senses** - sight, smell, touch, taste and sound.

There has been tremendous change in the role of sensory evaluation over the years. In partnership with research and development as well as marketing departments it helps in the formulation of profitable strategy. In the early stages of product development, sensory testing can help to pinpoint the imperative sensory characteristics driving acceptability.

**Successful Sensory Testing**

Sensory analysis involves the inspection of a product by the senses i.e. sight, smell, taste, touch and hearing for various quality attributes like appearance, flavor, aroma, texture and sound. These characteristics of a food product are briefly described below:

1. **Appearance**

Appearance is the first characteristics perceived by the human senses and play an important role in the identification and final selection of food. This is the visual perception of food comprised of color, shape, size, gloss, dullness and transparency. The look of a food or beverage impacts craveability and acceptance, before the product touches the lips. This is because we eat with our eyes before we ever smell or taste.

1. **Flavor**

It is sensory phenomenon which is used to denote the sensations of odor, taste and mouthfeel. Flavoring substances are aromatic compounds which are conceived by the combination of taste and odor and perceived by the mouth and nose. Odor improves the delight of eating e.g. aroma of freshly cooked rice and most of the baked products. Taste helps in identification, acceptance and appreciation of food. It is perceived by the taste buds on the tongue. There are four types of taste perception: sweet, salty, sour and bitter.

1. **Texture**

Texture is perceived by a combination of senses i.e. touch, mouthfeel, sight and hearing. It is one of the most imperative feature of a food. If a customer bites a soggy biscuit or eats ice cream with sandy texture, it is improbable they will be back. It also include the consistency, thickness, fragility, chewiness and the size and shape of particles in food. Texture analyzer is helpful to guarantee the target texture from the laboratory to the user’s kitchen.

1. **Sound**

 Hearing deliberates the sounds made by food during preparation and ingesting e.g. the crackle of fried food, the effervescence of drinks, the cracking of hard biscuits. So, in sensory analysis, the senses are used to measure, analyse and interpret the organoleptic or sensory properties of food.

**Sensory Perception**

**Human senses**

Sensory attributes of the food products are perceived by the sensory organs like eyes, tongue, nose, ear etc. by interacting with food components.

1. Vision

 It is first food attribute which is critical in the selection or rejection of food. The appearance of any product is accessed through the vision. The brain deduces indicators and we notice the appearance (shape, size, color, etc.) of the product.

1. Taste

It involves the perception of constituents after being dissolved in saliva by taste receptors in the taste buds found superficially on the tongue.

* Sweet: sucrose, glucose, fructose, saccharine, aspartame
* Salty: sodium chloride, potassium chloride
* Sour: phosphoric acid, citric acid
* Bitter: quinine, caffeine
* Umami: Chinese salt
1. Smell

The aroma or odor associated with food products is sensed by olfactory receptors present in nose.

1. Sound

It is detected by tiny hair cells in the ear stimulated by the sound waves. The noise produced by food during eating contributes to the perceived texture of a food, e.g. effervescence of a carbonated drink.

1. Touch

Texture is a complicated phenomenon and it can be divided into categories including mechanical (hardness and chewiness), geometric (graininess and crumbliness) and mouth-feel (oiliness and moistness). Generally these are professed during biting, chewing after swallowing.

**Factors Affecting Sensory Measurements**

Contrary to sensory gadgets, psychological or physiological factors can easily affect human decision

Some of the **Psychological error** includes

1. Expectation Error
2. Suggestion Effect
3. Attribute Dumping
4. Order Effect
5. Acclimatization
6. Motivation Error
7. Central Tendency Error

Some of the physiological error includes

1. Adaptation
2. Physical Condition

**Principles of Good Sensory Testing**

 Sensory assessment requires various kinds of controls which influence the sensitivity of the tests. The major environmental controls include elimination of psychological distraction, irrelevant odor and light stimulation. The ultimate goal is to provide conducive environment. Preferably sensory testing must be done using specially designed facilities. However, where such facilities do not exist, researchers should create comfortable environment as closely as possible.

**General Requirements and Conditions for Sensory Testing**

**Testing Facility**

The sensory facility should be situated close to potential panelists in odor and noise free area. The location should be conveniently accessible to the assessors with minimal disturbance in normal routines. Inconvenient testing facility adversely affects the motivation and performance of the judges.

A well-equipped and specially designed sensory laboratory should have the following areas:

1. Waiting room area
2. Briefing area
3. Sample preparation area
4. Evaluation area
5. Discussion area
6. **Waiting Room Area**

 This area has long lasting impact on the panelist’s perceptions about the facility. It should be comfortable and well lit. To reduce tediousness associated with waiting, this area should have some light reading.

1. **Briefing Area**

This area should be nearby to waiting room or placements can be done in the waiting room itself by making seating arrangements in rows or semi-circle. This type of organization will further be helpful for briefing the panelists about procedures, protocols and instructions before entering the test area.

1. **Sample Preparation Area**

 This area is generally meant for food preparation and is usually equipped with equipments commonly used in the preparatory operations and storage purpose. The assessors should not have physical and visual access to this vicinity. Sample preparation area usually differ depending upon the product lines being evaluated in a particular facility.

1. **Evaluation Area**

 Sensory testing can be carried out in a simple room large enough to accommodate sensory booths. If these booths are not available, facility manager should atleast arrange tables in a way that assessors may not interact with each other to avoid from any influence on sensory evaluation.

1. **Discussion Area**

 This is also called as conversation area. It should be simple and easily approachable to the assessors. The final results of the sensory testing are mainly reliant on assessors as they are sensory instruments hence foremost duty in the sensory assessment is sufficient screening and training of the assessors.



