

# JUDGING OF DAIRY PRODUCTS



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### *Module 2. Requirement of sensory evaluation and physiology of human senses*

#### **Lesson 3**

### **DESIGN AND REQUIREMENTS OF SENSORY EVALUATION**

#### **3.1. Introduction**

There are three major components for the successful implementation of sensory evaluation:

- a.) Adequate sensory laboratory facilities
- b.) Sensory panels and
- c.) Rigorous training programmes

#### **3.2. Sensory Laboratory Set Up and Equipment**

The physical setting must be designed so as to minimize the subject's biases, maximize their sensitizing, and eliminate variable which do not come from the product themselves. The test area should be centrally located, easy to reach and free of crowding and confusion, as well as comfortable, quite, temperature controlled and free from odour & noise.

The laboratory set up normally comprising of a reception cum briefing room, panel room and preparation room. Sensory evaluation should be carried out in quiet and well lighted room free from any odours. The dormant motive of constructional details should be to have comfort for concentrated prolong testing and ease of cleaning. Pleasing natural shades and maintenance of comfortable temperature and humidity conditions of the laboratory set up are desirable. The testing booths are located should be separated from sample preparation room and wash room and store by a complete partition. The panel test area should be readily accessible to all. A good location is one which most panel members pass on their way to lunch or morning break. If the panel of member are drawn from the outside, the area should be near the building entrance. Test room should be separated by

suitable distance from congested areas because of noise and the opportunity this would provide for unwanted socializing.

### 3.2.1 Reception and briefing room

It should be so designed as to ensure maintenance of pleasant attitudes and minimize traffic to the booths. Panel members shall assemble here, register, receive the evaluation card and be briefed about the test.

### 3.2.2 Panel booths

The booths may be arranged all side – by side, in an L – shape, or with two sets of three to four booths facing each other across the serving area. (Fig.3.1) The L – shape represents the most efficient use of the "work triangle" concept in kitchen design, resulting in a minimum of time and distance covered by technicians in serving samples. One unit of six to eight booths will accommodate a moderate test volume of 300 to 400 sittings per year of panels up to 18 to 24 members. These booths should be located between or adjacent to the reception and preparation rooms, and should consist of test booths or identical design. **Fig. 3.1** and **Fig. 3.2** Shows different types of sensory evaluation booths.

**Fig. 3.3** shows a typical booth where in each booth may be 75 to 80 cm wide having adequate space to keep samples, drinking water, receptacle and writing space. It shall be separated by partitions to screen one person from the view of other when they are seated. Space can be allowed for installation of a PC monitor and a keyboard, if required. The dividers should extend approximately 18 in. above the countertop in order to reduce visual and auditory distraction between booths. Revolving stool with back support or chairs should be provided with drinking water, cleansing towels and glasses and basins for convenient and non embracing expectorations: The lighting of booths shall be uniform and glare free and arrangement should be made to provide white or colored light.

A temperature of about 20°C and RH of 62% in the testing room is considered to be ideal. The entry and exit to the panel booth area by independent doors may be useful to avoid any communication between panel members.

Special booth features:

- a.) A small stainless steel sink and a water faucet are usually included for rinsing. Filtered water may be required if odor – free tap water is unavailable.
- b.) A signal system is sometimes included so that the panel supervisor knows when an assessor is ready for a sample or has a question. It may include an exterior light panel

which indicates to incoming subjects those booths which are available.

c.) The materials of construction in the booths and surrounding area should be odor – free and easy to clean. Formica and stainless steel are the most common surface materials.

d.) Colour and lighting. The colour and lighting in the booths should be planned to permit adequate viewing of samples while minimizing distraction. Walls should be off – white; the absence of hues of any color will prevent unwanted difference in appearance. Booths should have even, shadow – free illumination at 70 to 80 foot candles(fc) (typical of an office area.)

A common feature of many panel booths is a choice of red, green, and / or blue lighting at low intensity obtained through the use of colored bulbs or special filters. The lights are used to mask visual differences between samples in differences tests calling for the subject to determine by taste ( or by feel, if appropriate) which samples are identical.

### 3.2.3 Preparation room

It shall be suitably separated from the testing room and should be equipped for preparing and serving food samples. Typically, the preparation area includes immediate access to the following in addition to any specialized equipment dictated by the type of samples :

- A laboratory bench flush with the hatches so that samples trays will slide through. The hatch on the service counter should preferably be constructed in such a manner that there shall be no recognition of individual or either side of partition.
- Benches, kitchen range, ovens, etc. for preparation.
- Refrigerator and freezer for storage of samples.
- Storage for glassware, dishes, glasses, trays, etc.
- Dishwashers, disposers, trash compactors, wastebaskets, sinks, etc.
- Frozen storage for panel member treats, if used
- Large garbage containers for quick disposal of used product, etc.

The laboratory facility should be flexible enough to handle current and future testing activities, as well as to provide a workable environment for the staff. The use of computers has been recommended for sensory evaluation work. In that case, sensory evaluation laboratory should include space for data processing equipment.

### 3.4. Sampling Requirements / Preparations

- a. Sampling should be carried out by a trained and experienced person and it is essential that the sample should be representative of the lot.
- b. A procedure of sample preparation which is most likely to bring out the difference in the particular quality attribute under evaluation shall be selected. Care shall be taken that no loss of flavour occurs and no foreign tastes or odours are imported by the procedure during preparation, storage, serving etc. Depending upon the nature of the material and aim of the test, the need for a medium in testing auxiliary items should be decided. Foods like hot sauce, spices, vinegar, etc. may require dilution with some medium because of their intense physiological effects.
- c. The panelist should be allowed to have sufficient sample necessary to make judgement. Unless, only one sample is to be tested, full normal serving quantities shall not be served even though the material is available.
- d. The temperature of serving should be close to that recommended for the food product. The samples shall be served in utensils of the same type and appropriate size, shape and colour and they shall not import any taste or odour to the sample. The test should be carried out at least one hour before or after lunch.
- e. Use of materials which are likely to vitiate results, such as smoking, chewing pan (betel-vine) and taking intoxicants by a panelist should have a time lapse of at least half an hour before the test. Use of strong odoriferous substances such as cosmetics, flowers hair oil should be avoided.
- f. The number of samples served in any one session shall depend upon the nature of the test product and upon the evaluation method used. In case the test product exerts mild sensory effects, large number of the products exerting strong prolonged sensory effects, the number of samples may be reduced to less than 5.
- g. Since coding is necessary to obscure the identity of the sample, a multiple digit code generated from a table of random numbers should be used. Avoid constant use of certain codes or a set of codes to expedite tabulation of results.

### 3.5. Evaluation Card

The evaluation card should be clearly printed and the matter should be arranged in logical sequence for examination which is expected under each test. Appropriate terminology without ambiguity shall be used. The evaluation card should be simple, brief, easy to

follow and record what is exactly required. Due weightage should be given to all the sensory attributes.

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