

JUDGING OF DAIRY PRODUCTS



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Module 3. Fundamental rules, score card and sensory taste

Lesson 13

PANEL SELECTION, SCREENING AND TRAINING OF JUDGES

13.1 Introduction

Sensory evaluation of dairy products are required to provide information in relation to: product improvement, quality maintenance, new product development and market analysis. In general following three purposes are suitable for lab panels/highly trained experts:

1. Select qualified judges and study human perception of food attributes.
2. Correlate sensory with chemical and physical measurement.
3. Study processing effects, maintain quality, evaluate raw materials, establish storage stability or reduce cost.

For Large consumer groups , following purposes are most suitable

1. Evaluate quality
2. Determine consumer preference.

Lab panels are of following types:

- 1.Those which determine simple differences between treated samples, and
- 2.Those which determine directional differences.

13.2 Tests for Panel Selection

13.2.1 Difference tests

The tests which are used for panel selection include:

1. Single stimulus,
2. Paired stimuli.
3. Duo – trio and
4. Triangle and multi–sample tests.

Those tests which do not reveal statistically significant differences between treatments. No further evaluation is needed. When differences are found, directional difference tests are used to establish the nature and magnitude of difference. After a significant difference has been established by a lab panel. Consumers may be asked to express preference.

a. In general Single sample is used for consumer studies. In fact, in product like products several samples are tested and compared, with previous established standard (MEMORY STANDARD). Occasionally a method called A is not A, is used, in which a standard A is presented first followed by one or more coded samples. This is classified as PAIRED comparison.

b. Paired - Stimuli: In this test, judges have to specify two samples. This is used for comparing new with old processing procedures in quality control and in preference testing at the consumer level.

c. Due – Trio: It is modified paired presentation in which one sample and is presented first, followed by two coded samples one of which is identical with standard. The judge has to identify which of the two is identical to the standard. This procedure is used in quality control and for selection of judges of superior discrimination.

d. Triangle test: Two identical and one different samples are presented simultaneously and the judge is asked to indicate the odd sample. Triangle test is also used to select judges.

13.2.2 Rank order

Ranking is used to determine how several samples differ on the basis of a single property (i.e. sweetness). A group of coded samples (which may contain a standard) are presented and the judges is asked to rank them in order of intensity of a specified property. This method is suitable for comparing sensitivity of panelists. This test useful for lab judges in R & D work, experts for selecting the best sample and consumer panels for relative acceptability

13.2.3 Other methods

There are several other test / procedures line scoring, hedonic rating and acceptance or preference test, dilution test, threshold test etc available and can be use in panel selection depending on the objective of the panel testing.

13.3 Panel Selection and Testing Environment

Analysis of sensory properties of foods involves the use of human subjects in the lab environment. The sensitivity and reproducibility of the judge influences the validity of results. The environment under which the data has been obtained also influences the results.

13.3.1 Panel selection

By selecting the most stable and sensitivity members and training them, one might expect to obtain a small but efficient panel. Selection is important since individuals differ in sensitivity, interest, motivation and ability to judge difference. Discriminating skills may not be general; a good wine taste may not be a good judge of chocolates. Seldom is a judge equally proficient in tasting all qualities and all flavours of foods. The methods of selection include a preliminary training period designed to acquaint the tasters with the quality factor involved in the product to be tested.

13.4 Screening Procedure for Selection of Panel Members

In screening procedure for selection of panel members, following points are to be considered :

- Discriminating differences between solutions or substances of known chemical composition.
- Ability to recognize flavours and odours.
- Performance in comparison with other panel members or
- Ability to discriminate different samples to be used later in the test.

13.4.1 Approach for screening

- Use as test materials the same products which will be tested later
- Prepare samples with variations that are likely to be encountered later
- Adjust the deficiencies so that most will be able to discriminate but some will fail
- Use score card similar to the ones that will be used later
- Start with a large number of candidates, with simple selection test
- Screen on the basis of relative achievement continuing until top ranking group of the desired size is reliably selected
- Reject at each stage those that are not reliable but select more than actually needed.

A person with previous experience might utilize some of the skills he has developed. He may be able to note and detect differences which are not detected by inexperienced judges. He can often describe the sensory impressions more fully and usually has a better understanding of the terminology employed.

13.5 Sensitivity Tests

For general panel selection the candidates can be eliminated on the basis of lack of sensitivity to the senses, attributes, because of poor memory, slow recovery from stimulation and failure to understand the test. Sensitivity to taste or odour appears to be only one of the factors influencing discrimination.

13.5.1 Factors influencing sensitivity

The most important factors which influencing in successful judging are interest, motivation, knowledge and comparison of results, adjustment to the test situation memory etc. The panel members should be given as much information as possible on the purpose and need of investigation – however when this information might influence his judgement it should be withheld. A rewards system for maintaining interest is frequently recommended. This may take the form of special pay, time off, special privileges, providing refreshments after panel sessions etc.

13.5.2 Panel size

The number of judges needed will vary according to the variability's of individuals and of the product.

Table 13.1 Panel size

Name _____

Date _____

Code No. _____

Time _____

A) Score the sample for different characteristics. Indicate the degree of defects, if any, encircling the applicable one and deduct accordingly from the attribute score.

Characteristic	Maximum	Minimum score for each attribute	Sample Score
(1)	(2)	(3)	(4)
Package appearance	5	3	
Appearance of Dry product	15	9	
Appearance of reconstituted milk	15	9	
Body and Texture of reconstituted milk	20	17	
Flavour of reconstituted milk	45	27	

NOTE: If the sample scores less than the minimum for any characteristic, it is to be rejected.

Institute of Food technologists (USA) recommends 3 to 10 for *TRAINED*; 8-25 FOR *SEMI – TRAINED* and 80 – for UN-Trained members in panel.

13.5.2 Training

Training should be distinguished from experience. Training steps which may be taken deliberately to increase the effectiveness and the rate at which the individual assimilates new knowledge or new techniques. Training is directed towards getting panel members to disregard their personal preferences. It might also be directed—to secure recognition of small differences. One of the important aims of training is to obtain homogeneity of response. Sensitivity to basic tastes and odours increases due to training. Training helps judges learn to compare flavours and flavour strengths in spite of time lag between samples.

13.5.3 Environment

Control of environment factors and samples is universally recognized for sensory evaluation of foods. The lab should be air-conditioned. well lighted comfortable seating and free from

distractions/smoking and cosmetic odours. Judges should be provided comfortable seating, a separate receptacle for expectoration, water for oral rinsing and adequate space for the samples and score card. The facilities should be thoroughly cleaned after the judge leaves and the new one comes.

13.5.4 Time of the day

Tests should be arranged when the judges feel their best. Generally a time of 10:15 to 11:45 AM and 3:00 PM have been recommended. No significance differences have been observed when the tests were conducted at 11 AM or 3 PM.

13.5.5 Sample factors

Dairy products have very milk delicate flavours. Therefore, if interest can be maintained, panel members can evaluate rather large number of samples per session particularly with bland or mild flavoured food. Normally the number of samples should be restricted to 6.

13.5.6 Masking

Masking is required for intentional minimizing of colour taste or odour properties so that the differences between samples can be evaluated with less interference from the variable which has been minimized i.e. use coloured containers, coloured light etc.

13.5.7 Preparation

The normal procedure is to test the dairy product under conditions approximately the same as found under normal consumption: bread should be dry, butter solid, vegetables whole etc. Within a set of samples the standard should also be presented as an unknown.

13.6 Serving Procedures

The samples presented must be representative of lot and exactly alike. The factors which are to be considered include visual appearance, sample size, temperature, utensils, pouring, coding order, instructions and rinsing.

13.6.1 Appearance

The Samples should be the same inform, consistency colour and appearance.

13.6.2 Sample size

The volume/ quantity of sample should be provided sufficient to taste with confidence. Sufficient sample to give a feeling of mouthfulness is recommended (30 to 50 ml for 2 mouthfuls)

13.6.3 Temperature

Uniformity of temperature is necessary. Milk should be served at 15°C, Cheese (15.5°C),

butter (7°C-13°C), and ice cream (-15°C-12.5°C)

13.6.4 Utensils

All samples should be served in the containers of the same size, shape and colour. The utensils should not impart a taste or odour to the samples. Samples should be placed in the container in a uniform\ aesthetic manner.

13.6.5 Coding

All samples presented should be coded to avoid giving information to the panel. Three digit random numbers are ideal.

13.6.6 Order of serving

Usually the first sample is assumed to be standard against which the rest of the samples are rated. Ideally strong flavoured samples should be served last as they frequently over-sensitize the taste buds and recovery is not quick.

13.7 Instruction to Judges

It may not be necessary to give instructions to a trained panel but this is not true for all panels. The best practice seems to be to allow the judges to use his preferred method but the same technique should be used by him.

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