

Paper No.: 07

Paper Title: TECHNOLOGY OF MILK AND MILK PRODUCTS

Module – 34: Sensory Evaluation of Dairy Products

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.

DEFINITION, OBJECTIVES, IMPORTANCE AND APPLICATIONS OF SENSORY EVALUATION

DEFINITION: Sensory Evaluation has been defined as "A scientific discipline used to evoke, measure, analyze and interpret reactions to those properties of foods and materials as they are perceived by senses of sight, smell, taste, touch, and hearing."

OBJECTIVES: Different components which form a foundation for an effective sensory evaluation programme are approved goals and objective, well defined programme strategy, professional staff, suitable test facilities and qualified test subject. The objectives of sensory evaluation are as under:

1. To study the sensory evaluation of dairy products for use of research
2. To provide useful and timely information and recommendation about sensory evaluation of the dairy products.

3. To develop methods and procedure relating sensory and analytical information for use in research, quality control and quality assurance.
4. To demonstrate the methods used for sensory evaluation of dairy products.
5. To describe correct procedures for sensory evaluation of dairy products.
6. To maintain awareness of new product development in product evaluation and their application.
7. To find out most cost effective and efficient method to obtain most sensory information.

IMPORTANCE: The role of sensory evaluation is to provide valid and reliable information to the research department, production and marketing in order for management to make sound business decisions about the perceived sensory properties of the product. Cost saving may be realized by correlating sensory properties with instrumental, physical or chemical analysis. Moreover, following points are equally important in sensory evaluation:

1. Man has well-developed like and dislikes for dairy products depending on their palatability.
2. Sensory evaluation will become paramount importance with increasing consumer awareness towards nutrition and quality.
3. Sensory evaluation assists in measuring the eating qualities of any food.
4. Optimal information can be obtained only through co-ordination of instrumental and sensory measurements.
5. Where no signal appears our senses may still perceive an odour or taste.
6. Senses give us a total impression of quality.

APPLICATIONS: Sensory evaluation can be applied in the following areas in dairy industry

1. Inspection of raw materials
2. New product development or improvement of existing product by modifying or changing the ingredients
3. Comparison with competitor's product
4. Cost reduction
5. Monitoring quality control
6. Detect differences between products from different runs or batches
7. Selection of packaging material
8. Demonstrate new products to marketing team
9. Promote new or reformulated products to consumers
10. Shelf life studies

11. Establishing analytical/ instrumental/ sensory relationships

SENSORY EVALUATION OF DAIRY PRODUCTS

Dairy product sensory evaluation includes the critical examination and interpretation of important sensory attributes of the given product.

Three different methods are available for tracing causes of sensory defects in dairy foods: (1) chemical procedures; (2) microbiological tests; and (3) sensory evaluation. The simplest, most rapid and direct approach is sensory evaluation.

Correct diagnosis of the type and cause(s) of sensory defects is a prerequisite to application of remedial measures in production, processing and distribution stages.

Judging and grading dairy products normally involve assigning quality scores to products by one or two trained “experts”. Attributes scored include appearance, flavor, and texture, based on the presence or absence of predetermined defects.

Bureau of Indian Standards has specified guidelines for judging & grading of some dairy products. The sensory evaluation of dairy products has become an important research component in the development of new products and process.

The sensory attributes of food products can be either intrinsic or extrinsic. Intrinsic attributes are concrete product characteristics that can be perceived by a consumer and, in many situations, can serve as a quality cue that can be observed, without actual consumption or use. It is related to the appearance, color, shape, size, and structure, all of them extremely important for milk products. Intrinsic attributes are always related to the physical aspects of the product. Extrinsic quality cues refer to product characteristics that are used to evaluate a product but are not physically part of it, such as price, brand, production and nutritional information packaging design, country of origin, store, and convenience.

ROLE OF PRIMARY SENSES IN JUDGING DAIRY PRODUCTS

The sensory properties of dairy products are mainly related to flavour, body and texture, colour and appearance. These properties of foods are perceived through human senses. The main senses involved in sensory perception are sight (eyes), smell (nose), taste (tongue), touch (skin) and sound (ear). Humans possess and utilize five primary senses for perceiving stimuli: sight, hearing, touch, taste and smell. Of these human senses, taste, smell and chemical/pain sense respond to chemical stimuli, with taste and smell considered to be the most primitive. Other human senses include temperature sensation (heat and cold), pain, visceral hunger, thirst, fatigue and balance.

Sight: The characteristics of a dairy product that can be evaluated by sense of sight are: Neatness & cleanliness of package & finish, protection afforded by seal of pouch or bottle

closures. It has relatively low numerical rating on the scorecard. Sight as a sensory parameter is used to correlate defects in visible items with flavour.

Smell (Aroma): This sense plays paramount role in evaluation of quality of dairy products. The role of olfactory perception is greater in overall flavour than the taste. Milk and dairy products are smelled for aroma perception immediately after the opening of closure/ package and earlier than the taste.

Taste: It is a companion sense with aroma in establishing the overall flavour of dairy products. There are four fundamentals taste (Sweet, Sour, Salty and Bitter) which are of paramount importance in sensory evaluation of any food product. With very few exceptions, the food product must be tasted. The role of taste is more complex, as tasting also involves tactual & olfactory sensations.

Touch: Tactual and mouth feel play an important role in examining the body and texture characteristics. Pressure between teeth determines the presence of undissolved salt in butter or of crystallized lactose in sweetened condensed milk. Fingertip and thumb may be used to substantiate findings of organs of mouth. Fingers play important role in examining body and texture of butter and cheese. Ease and difficulty in chewing/rolling/dissolving the food is recorded by tongue and/or floor and roof of palate.

Sound: It is used sometimes in the judging of the dairy products. The evaluator can detect the presence of ice crystals while drawing a ice cream sample with spoon. The relative size and distribution of holes in Swiss cheese can be felt by the gentle tapping of the outside of the cheese.

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