Food Manufacture

Product Quality Analysis

Lesson 3

This course is ideal for people working or have the potential to work in the quality or technical departments. The course describes the ways that product quality analysis is performed.

Sensory evaluation also known as organoleptic testing is the response and analysis of the composition of a food or drink in relation to taste, temperature, odour, appearance and texture.

In a factory the sensory evaluation of a product is essential to ensure a customer will buy a product and making sure the product quality is acceptable.

Sensory evaluation is used for:

- Identifying differences in products.
- Evaluating products sale potential.
- Identifying improvements.
- Evaluating if products meet specification.
- Making decisions on specific ingredients e.g. new supplier of ingredients.

Sensory evaluation can be performed at different stages in the production process:

- Used during new product development.
- Quality control (ongoing regular checks).
- Part of a positive release system.
- Different stages through shelf life e.g. end of life testing.

Some factories have a team of trained taste panel operatives who have a clear idea of how the product should be evaluated.

Some factories employ an specialised external company to perform the sensory analysis.

The sensory evaluation operatives must be trained and have no bias agenda.

Sensory evaluation should always take place in an appropriate environment without distraction.

The product to be evaluated should be prepared in the exact way that is indicated on the products packaging e.g. follow all cooking instructions correctly.

When performing sensory evaluation the number of products being evaluated will be considered. Too many products could affect the validity of results.

There area three main types of sensory evaluation test:

1. Discrimination or different tests
2. Descriptive test
3. Acceptance test

Discrimination or difference tests is the difference between two or more samples. Example tests are:

- Paired comparison (difference)
- Duo-trio test
- Difference from control test
- Triangle test
- Two out of five test
- Ranking test
- Magnitude estimation

Descriptive tests analyse the perceived sensory traits of food and identify the impact on them from processing and packing. Examples are:

- Consensus profiling
- Descriptive profiling
- Free-choice profiling

Acceptance tests identify consumer preferences e.g. if they like or dislike. Examples are:

- Hedonic rating
- Paired comparison test
- Repeat paired comparison test
- Multi-sample ranking for preference

The most common sensory evaluation test carried out in food factories is known as a taste panel quality check.

This is where finished product is tested using descriptive tests to ensure the product is of the required quality.

During a taste panel quality check a number of factors are assessed:

- Compare the product to the specification
- Sensory evaluation
- Acceptability/rating determined

Comparing the product to the specification will involve analysis of:

- Colour of the product and any damage to the product
- Size and shape of the product
- Weight of the product
- Appearance of the pack e.g. alignment and positioning in packaging
- Presence of any burn or raw patches
- Distribution of ingredients and correct ingredients
- Visual check for foreign bodies

Sensory evaluation will involve using four attributes to make a decision about the product. These four attributes are:

- Taste
- Texture
- Odour
- Appearance

There are five basic tastes detected by the tongue:

- Bitter
- Salt
- Sweet
- Sour
- Umami (savoury taste)

Texture is assessed through touch using mouthfeel. Resistance to chewing (e.g. chewiness or springiness) and viscosity (runny or thick) are usually assessed.

Odour is the smell which can be detected from the product. Odour and taste work together to produce flavour.

Appearance is the way the product looks, this can affect the bodies first reaction to the product.

The acceptability or unacceptability of the product is determined from the specification comparison and sensory evaluation data. Some factories use a number, traffic light system or percentage rating system to determine the product outcome.

If a product is rated as unacceptable or potentially unacceptable further samples will need to be tested and if necessary a full investigation will be carried out by the appropriate people to determine the problem and corrective action.

Products may be stopped from being dispatched and product recalls could be carried out.

All product sensory evaluation tests will be documented and data analysis checks will be performed to identify any trends and can be used for any investigations.

Revision Activity 3

What are the five basic tastes detected by the tongue?