



**SNS COLLEGE OF TECHNOLOGY**

**FOOD SAFETY AND QUALITY  
REGULATION**

**UNIT 3 : QUALITY CONTROL**

## INTRODUCTION

Quality control is the standards which maintain the quality of the food products according to the customer's acceptability. Physical, chemical, microbiological, nutritional, and sensory parameters are used for the maintenance of nutritious food. These quality factors depend on specific attributes such as sensory properties, based on flavor, color, aroma, taste, texture and quantitative properties, namely, percentage of sugar, protein, fiber and so on as well as hidden attributes such as peroxides, free fatty acids, enzyme. Although quality attributes are many, yet not all need to be considered at every point in time for every particular product. It is important to always determine how far relatively a factor is related to the total quality of the product. The quality attribute of a particular product is based on the composition of the product, expected deteriorative reactions, packaging used, shelf-life required, and the type of consumers. The most important element and ultimate goal in food quality control is protecting the consumer. To ensure standardization of these procedures, food laws and regulations cover the related acts affecting the marketing, production, labeling, food additive used, dietary supplements, enforcement of good manufacturing practice (GMP), hazard analysis and critical control point (HACCP), federal laws and regulations, factory inspections, and import/export inspections.

## FOOD QUALITY

### QUALITY PARAMETERS

In order to ensure the right quality of various food products, several parameters are evaluated by different methods:

- Physicochemical and rheological parameters (Table 10.1).
- Phytochemical parameters (Table 10.2).
- Packaging materials (Table 10.3).

TABLE 10.1 Physicochemical and Rheological Parameters for Quality of Selected Food Products.

<b>Parameter name</b>	<b>Evaluation method</b>	<b>Products</b>
Admixture	Visual observation	Cereals, pulses
Bellier turbidity temperature	Visual	Oils
Bulk density	Calibrated graduated cylinder	Cereal, fruits, and vegetables and other products
Color on Lovibond scale	Lovibond Tintometer	Oil, fat
Crude fiber	Chemical	Most of the fruits and vegetables and cereal products
Fat or oil	Chemical and soxhlet method	Most of the food products, animal feeds
Insect infestation	Visual observation	Cereals, pulses

Moisture	Hot-air oven Vacuum oven Karl Fischer titer Dean and Stark	Most of the food products, animal feeds
Oil-holding	Centrifuge	Cereal products, other powder products
Optical rotation	Polarimeter	Sugar, syrup, oil and fat
Protein	Chemical and Kjeldahl method	Most of the food products, animal feeds

Total carotenoids and $\beta$ -carotene	Chemical and spectrophotometer	Yellow color rich food Products
Total phenols	Chemical and spectrophotometer	Most of the fruits and vegetable products

**TABLE 10.2 Phytochemical Parameters for Quality of Selected Food Products.**

<b>Parameter name</b>	<b>Evaluation Method</b>	<b>Products</b>
Anthocyanins	Chemical and spectrophotometer	Red color-rich fruits and vegetables and other food products
Antioxidant activity	Chemical and spectrophotometer	Most of the fruits and vegetable products
Ascorbic acid	Chemical and titration method	Most of the fruits and vegetable products
Lycopene	Chemical and spectrophotometer	Colored fruits and vegetables and other products

## **BENEFITS OF FOOD ANALYSIS**

Food analyses are used for the removal of toxic substances from the food products. It increases the shelf-life of the foods during storage and deteriorates the quality of the food products. Foods are safe to spoilage and microorganisms by the analyses. It improves the quality of life for people with allergies, diabetics, and other people, who cannot consume some common food elements. It adds extra nutrients such as vitamins.

## **DRAWBACKS OF FOOD QUALITY MEASURES**

- To affect its nutritional density, the amount of nutrients lost depending on the food and method of processing.
- By the heat treatment, vitamin C is destroyed. Fresh fruit juices have high content of vitamin C than processed fruit juice.
- Large mixing, grinding, chopping and emulsifying equipment, inherently introduce a number of contamination risks.
- Large food processors will utilize many metal within the processing stream, metals may be dangerous for our health.

## **QUALITY CONTROL**

To make high profit and market share, food manufacturers are continuously trying to have products of higher quality, and less expensive than the other competitive products. Analytical techniques to analyze food are required to meet these standards during and after manufacturing of food products. In a food factory, one starts with a number of different raw materials, processes them in a certain manner (e.g., heat, cool, mix, dry), packages them for consumption and then stores them. The food is then transported to a warehouse or retailer where it is sold for consumption. The important concern of the food manufacturers is to produce a final product that has all acceptable properties such as appearance, texture, flavor and shelf-life. When we purchase a product, we expect it to have same properties whenever we buy it. However, the raw materials for manufacturing of product vary from time to time, which can cause the properties of the final product to vary, often in an unpredictable way. First, they have to understand that different food ingredients and processing operations are important in determining the final properties of food so that they can be controlled during the manufacturing process of final product. This type of information can be established through research and development work. Second, they can monitor the properties of foods during production to ensure that they are meeting the

specified requirements, and if a problem is detected during the production process, appropriate actions can be taken to maintain final product quality

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