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Principles of
**Food
Science**

Fourth Edition

Janet D. Ward



Presentations for PowerPoint

Principles of
**Food
Science**

by Janet D. Ward

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Chapter 3

Sensory Evaluation: The Human Factor

Objectives

- **Compare** reasons for evaluating food products subjectively and objectively.
- **List** physical, psychological, cultural, and environmental influences on food likes and dislikes.
- **Explain** how taste and aroma combine to give foods their flavors.
- **Conduct** a taste test panel.

Sensory Evaluation

- Opinions about food are affected by personal views and backgrounds
- Food scientists evaluate the human factors affecting consumer food choices
 - **Sensory evaluation** is the analysis of the taste, smell, sound, feel, and appearance of food

Influences on Food Likes and Dislikes

- Physical
 - Body chemistry, number of taste buds, age, and gender affect the ability to detect flavors
- Psychological
 - **Taste bias** is a like or dislike that is linked to past positive or negative experiences
 - Label terms, brand names, advertising, peers, and setting also cause taste bias

continued

Influences on Food Likes and Dislikes

- Cultural
 - Beliefs and behaviors strongly influence exposures to food and resulting food preferences
- Environmental
 - People are more likely to eat what is available and economical
 - Immediate surroundings affect food preferences

Sensory Characteristics of Food Products

- **Appearance** refers to the shape, size, condition, and color of a product
 - A **colorimeter** is a device that measures the color of foods in terms of hue, value, and chroma
 - Colored lights may be used in a sensory evaluation to prevent color from influencing a taste panel

continued

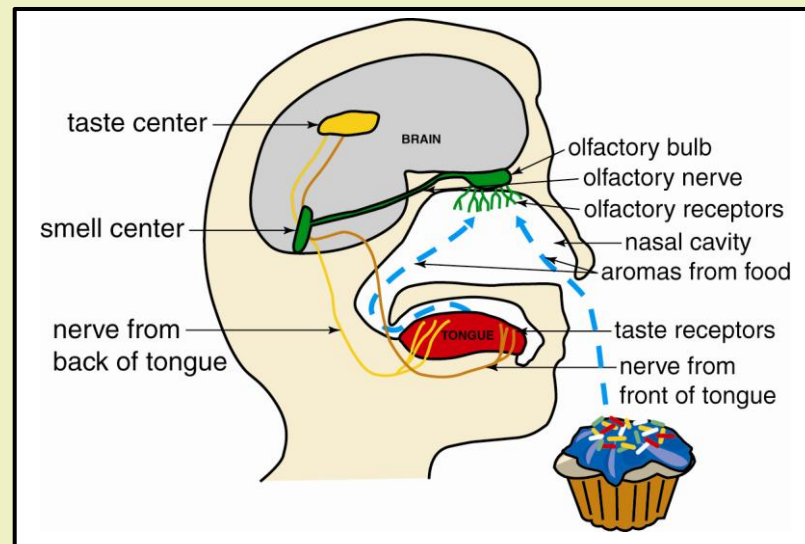
Sensory Characteristics of Food Products

- **Flavor** is the combined effect of taste and aroma
 - Taste is recognized through the taste buds
 - The 5 basic tastes are bitter, salty, sour, savory, and sweet
 - Foods such as lemons, tea, and sourballs are evaluated in terms of **astringency**
 - The temperature of food may affect its flavor
 - **Aroma** is the odor of food

continued

Sensory Characteristics of Food Products

- Odor results from **volatile** particles coming in contact with the **olfactory bulb**
- The brain links various nerve stimulations with specific foods and experiences



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continued

Sensory Characteristics of Food Products

- **Texture** is how a food product feels to the fingers, tongue, teeth, and palate
 - **chewiness**—the ability to slide without breaking
 - **graininess**—the size of the particles
 - **brittleness**—how easily a food breaks apart
 - **firmness**—food's resistance to pressure
 - **consistency**—the thinness or thickness

Taste Test Panels

- A **taste test panel** evaluates food flavor, texture, appearance, and aroma
 - Trained panelists discern subtle sensory differences, as when developing new products



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continued

Taste Test Panels

- **Consumer test panels** help determine products the average consumer will prefer
- These untrained panelists represent the buying public by
 - comparing a new product to one on the market
 - evaluating new types of products
- Factors that could sway results must be controlled

Control of Influencing Factors

- Influence from other testers
 - Products may be tested by one person at a time or by testers in separate booths to prevent seeing facial expressions
 - Panelists receive strict instructions to remain quiet during the evaluation

continued

Control of Influencing Factors

- Environmental factors
 - Light levels in testing rooms are the same
 - Tests take place in a room separate from the food preparation room
 - Testers sip warm water between each sample taste to prevent lingering flavors
 - All product samples are served at the same temperature

continued

Control of Influencing Factors

- Psychological biases
 - Scientists identify samples with 3-digit codes to prevent a bias for the lowest number (1) and the letter that starts the alphabet (A)
 - Research indicates tasters can reliably judge only 4 or 5 samples at one time

Creating an Evaluation Form

- Participants fill out an evaluation form that may be a
 - numerical scoring system form that allows the ranking of the food items
 - verbal label form that describes various attributes of each food item
 - universal form that uses simple images to convey how a person feels about the food

Recap

- Food scientists conduct sensory evaluations to determine factors affecting consumer food choices
- Food likes and dislikes are prompted by
 - physical influences
 - psychological influences
 - cultural influences
 - environmental influences

continued

Recap

- The 3 main sensory characteristics of food products are
 - appearance, flavor, and texture
- Researchers conducting taste test panels must remove factors that could sway testers such as
 - influences from other testers
 - environmental factors
 - psychological biases