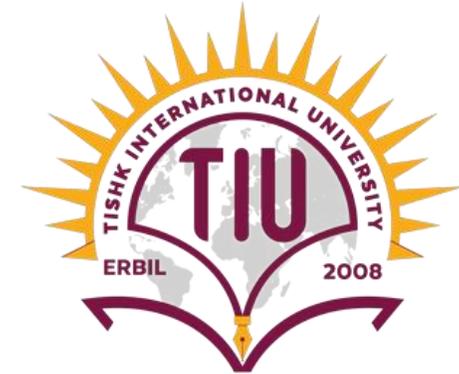Tishk International University
Faculty of Applied Science
Nutrition and Dietetics Department
Principles of Food Science – PRE LAB
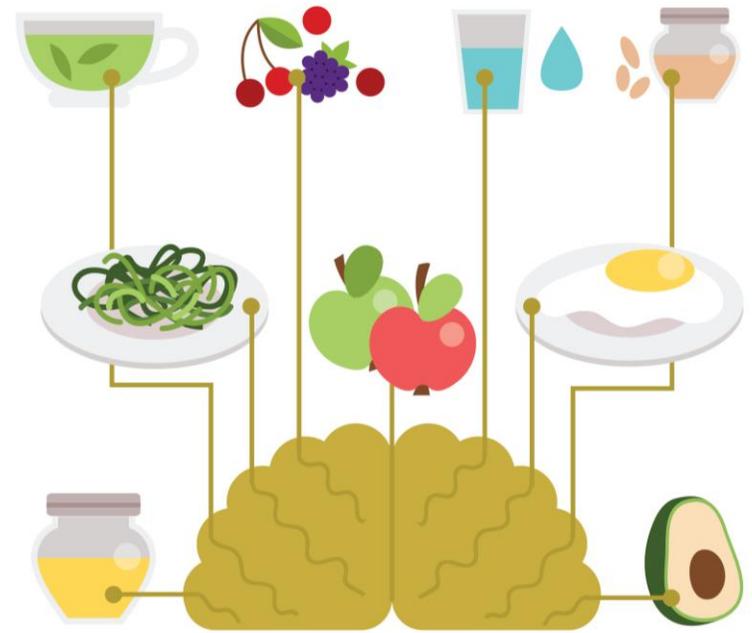
Sensory Evaluation of Food

After completing this practical, students will be able to:

Understand basic sensory evaluation principles

Use standard sensory scales correctly

Evaluate food products objectively

Appreciate the role of sensory analysis in food quality and consumer acceptance
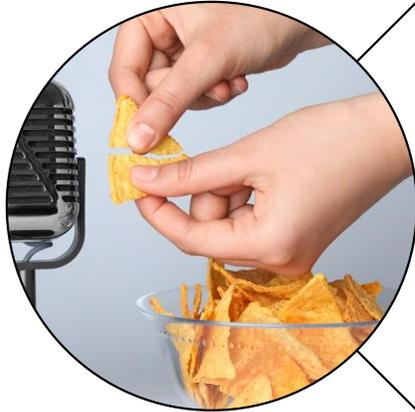
1. Aim of the Pre-Lab

The purpose of this pre-lab is to prepare students for conducting a basic sensory evaluation experiment by understanding key sensory concepts, evaluation methods, and laboratory rules to ensure reliable and unbiased results

2. Background (Brief Theory)

Sensory evaluation is a scientific method used to measure, analyze, and interpret reactions to food products as perceived by the human senses of **sight, smell, taste, touch, and hearing**. It plays a vital role in food quality control, product development, and consumer acceptance studies.

Unlike instrumental analysis, sensory evaluation depends on human perception; therefore, standardized methods and controlled conditions are essential to reduce bias and variability. Common sensory tests include **hedonic tests (preference)**, **discrimination tests (difference detection)**, and **descriptive tests (attribute intensity)**.
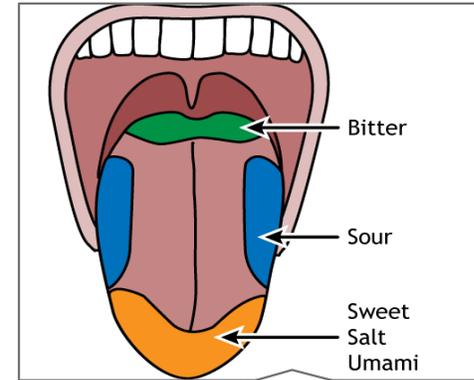
3. Sensory Attributes to Be Evaluated

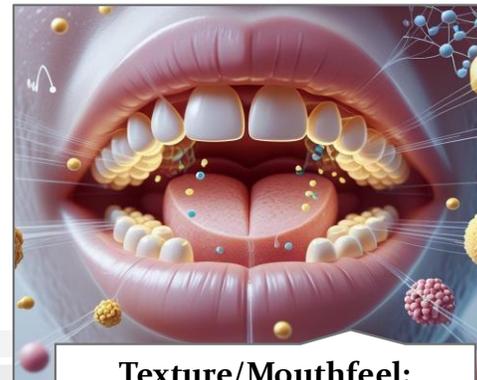Before coming to the lab, students should be familiar with the following attributes:
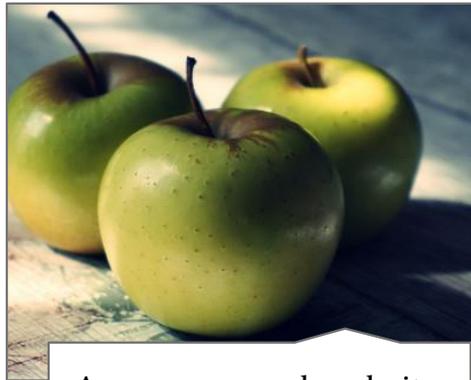
Appearance: color, clarity, size, shape
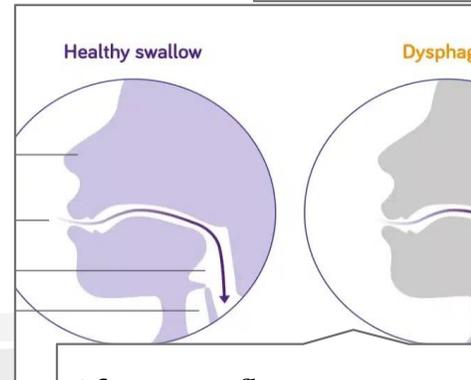

Aroma: smell intensity and quality

Bitter

Sour

Sweet
Salt
Umami

Taste: sweetness, saltiness, sourness, bitterness, umami

Texture/Mouthfeel: hardness, crispness, chewiness, smoothness

Healthy swallow   Dysphagia
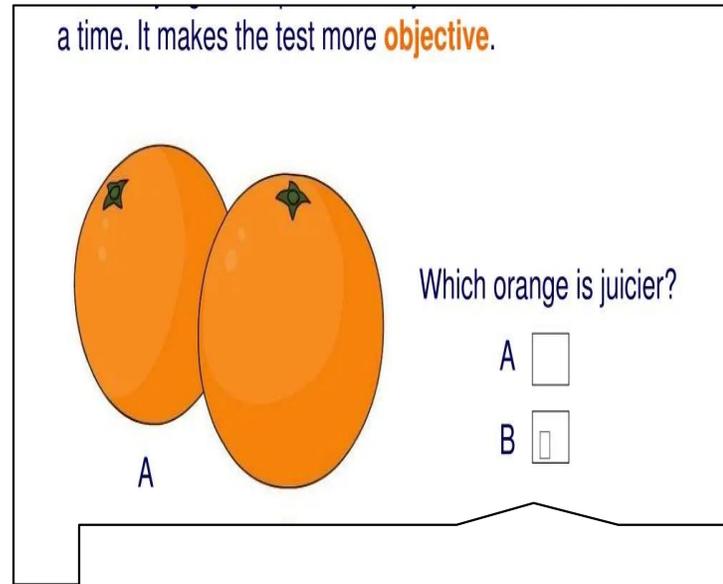
Aftertaste: flavor remaining after swallowing

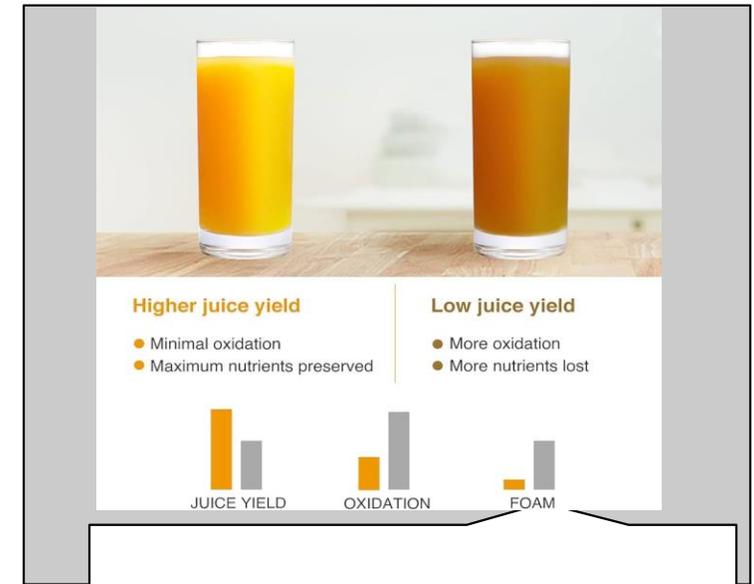# 4. Types of Sensory Tests (Overview)

- In this practical session, students may perform one or more of the following:
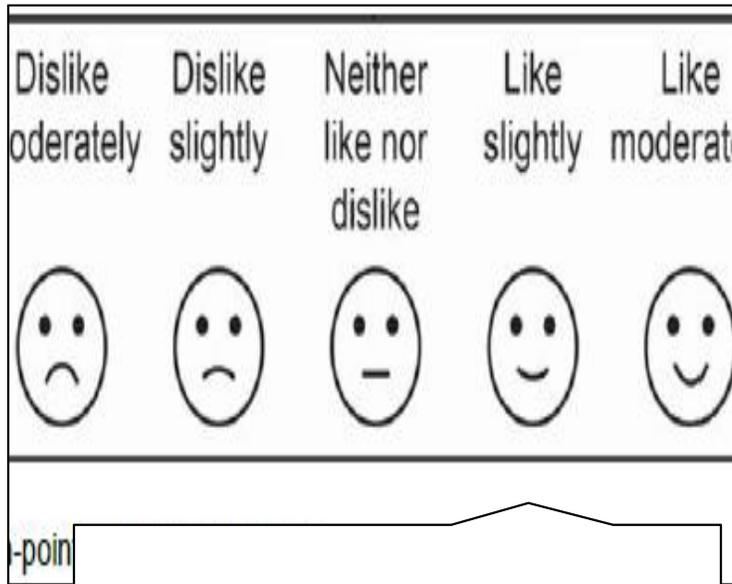
Hedonic Test: measures degree of liking or acceptance

Paired Comparison Test: determines which sample has more of a specific attribute

Ranking Test: orders samples based on intensity of a characteristic

Examples of Hedonic Tests (Preference / Liking Tests)

- Hedonic tests focus on **how much a product is liked or disliked** by consumers.

- **Examples:**

- Evaluating consumer liking of **three brands of yogurt** using a 9-point hedonic scale.

- Measuring acceptance of a **new reduced-sugar juice** compared with a regular juice.

- Assessing overall liking of **biscuits with different fat levels**.

- Testing preference for **different flavors of ice cream** (vanilla, chocolate, strawberry).

- Comparing consumer liking of **baked vs fried snacks**.

Examples of Difference Tests (Discrimination Tests)

- Difference tests determine **whether panelists can detect a sensory difference** between samples, not which one they prefer.

- **Examples:**

- **Triangle test:** Three samples of milk are presented; two are the same (full-fat) and one is different (low-fat). Panelists identify the odd sample.

- **Paired comparison test:** Two soups with different salt levels are presented; panelists indicate which one is saltier.

- **Duo–Trio test:** Panelists are given a reference sample and two coded samples and asked which one matches the reference (e.g., original juice vs reformulated juice).

- Detecting differences between **fresh and frozen–thawed vegetables**.

- Identifying changes in **flavor after storage** (fresh juice vs juice stored for 3 days).

5. Pre-Lab Instructions for Students

- Before attending the lab session, students must:

1. Avoid eating, drinking (except water), or chewing gum at least **30 minutes** before the lab.

2. Do not wear perfume, scented lotions, or strong cosmetics.

3. Read the sensory scales provided and understand how to use them.

4. Be aware of any food allergies or intolerances and inform the instructor if necessary.

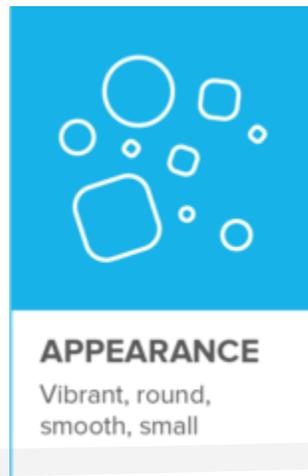5. Come prepared to evaluate samples **individually and silently**.
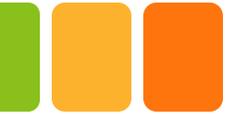
6. Sensory Evaluation Rules (Important)

- Samples will be labeled with **random three-digit codes**.

- Do not discuss samples with other students during evaluation.

- Rinse mouth with water between samples.

- Evaluate samples in the order given.

- Record responses honestly and immediately.

Why are three-digit codes used instead of product names?

- Three-digit codes are used to prevent bias and ensure objective evaluation by hiding the identity of the samples. This helps panelists judge the food based only on sensory characteristics, not brand or expectations.

APPEARANCE
Vibrant, round, smooth, small

AROMA
Floral, fruity, subtle, pungent

FLAVOR
Sweet, spicy, sour, savory, bitter

**ORAL TEXTURE**
Crunchy, soft, sticky, viscous, moist

A **panelist of food sensory evaluation** is a **trained or selected individual** who evaluates food products using their **senses** to judge quality and acceptability.

Role of a Panelist

- A panelist assesses food based on:
- **Appearance** (color, shape, texture)
- **Aroma** (smell)
- **Taste** (sweet, salty, sour, bitter, umami)
- **Texture/Mouthfeel** (crispness, softness, juiciness)
- **Overall acceptability**
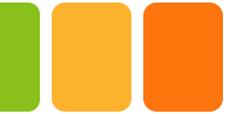
Types of Sensory Panelists:

1. **Trained panelists**
   1. Receive formal training
   2. Used for detailed and objective analysis (e.g., flavor intensity, texture attributes)

2. **Semi-trained panelists**
   1. Some basic training
   2. Common in academic or product development studies

3. **Consumer panelists (untrained)**
   1. Represent general consumers
   2. Used for preference and acceptance testing
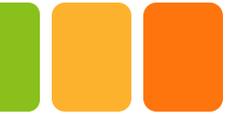
Importance of Panelists:

- Helps in **product development**

- Ensures **quality control**

- Assesses **consumer acceptance**

- Supports **research studies** in nutrition and food science

A **taste test panelist in a blind food sensory evaluation** is a person who evaluates food samples **without knowing the identity, brand, or formulation** of the product.

Purpose of Blind Sensory Testing

- Prevents **bias** from brand, label, or expectations

- Ensures **fair comparison** between products

- Improves accuracy in **research and quality control**

Where Is It Used?

- Food research studies

- Product development

- Quality control in food industries

- Nutrition and dietetics education

<u>Mention two factors that can influence sensory evaluation results:</u>

Two factors that can influence sensory evaluation results are:

Personal preferences or prior experiences with the food

Environmental conditions such as lighting, noise, or temperature

Practical Part:

- Blind Sensory Evaluation of food

Thank You