



# **SNS COLLEGE OF TECHNOLOGY**

**Coimbatore-35**  
**An Autonomous Institution**



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## **DEPARTMENT OF FOOD TECHNOLOGY**

### **19FTT305-FRUIT AND VEGETABLE TECHNOLOGY**

#### **UNIT 1- INTRODUCTION TO PROCESSING OF FRUITS AND VEGETABLES**



# Overview of principles and preservation methods of fruits and vegetables

## Principles of Preservation:

- 1. Inhibition of Microbial Growth:** Microorganisms such as bacteria, mold, and yeast are responsible for spoilage. Preservation methods aim to reduce or inhibit their growth.
- 2. Enzyme Activity Control:** Enzymes naturally present in fruits and vegetables can cause browning, texture changes, and spoilage. Control of these enzymes helps maintain quality.
- 3. Water Removal:** Many spoilage processes are facilitated by the water content in fruits and vegetables. Removing or reducing water content can slow down spoilage.
- 4. Temperature Control:** Lower temperatures slow down microbial growth and enzymatic activity. Heating (pasteurization, canning) or freezing also alters enzyme activity to extend shelf life.
- 5. Oxygen Limitation:** Oxygen exposure can cause oxidation, leading to loss of flavor, color, and nutritional value. Some preservation methods focus on reducing oxygen contact.



## **Preservation Methods:**

### **1.Canning:**

Fruits and vegetables are sealed in jars or cans and heated to destroy microorganisms and deactivate enzymes.

**1.Types:** Water bath canning (for acidic fruits) and pressure canning (for low-acid foods).

**2.Benefits:** Long shelf life at room temperature; retains most nutrients if done correctly.

**3.Limitations:** Can cause some nutrient loss, especially vitamin C and B vitamins.

### **2.Freezing:**

Fruits and vegetables are frozen to slow microbial and enzymatic activity.

**1.Benefits:** Retains most of the nutrients, taste, and texture (though texture may change after thawing).

**2.Limitations:** Requires freezer space and can alter the texture of certain produce (e.g., lettuce).



### 3.Drying:

Removing moisture from fruits and vegetables through air drying, sun drying, or using a dehydrator.

**1.Benefits:** Significantly reduces weight and volume, making storage easier; retains nutrients like fiber, though some vitamins (e.g., vitamin C) are lost.

**2.Limitations:** Changes texture and appearance; may require rehydration before use.

### 4.Fermentation:

Using microorganisms (such as bacteria or yeast) to convert sugars into acids or alcohol, which preserve the food.

- Examples:** Sauerkraut (fermented cabbage), kimchi, pickles.
- Benefits:** Adds unique flavors, enhances digestibility, and increases shelf life.
- Limitations:** Fermented foods may not appeal to all taste preferences.



## 5.Pickling:

Immersing fruits or vegetables in an acidic solution (vinegar or brine) to prevent microbial growth.

- Benefits:** Adds a tangy flavor while preserving food for months.
- Limitations:** High salt content in brine may not be suitable for everyone; can alter texture.

## 6.Vacuum Sealing:

Air is removed from plastic bags or containers, and the food is sealed to reduce oxygen exposure.

- Benefits:** Extends shelf life for frozen or refrigerated produce.
- Limitations:** Requires special equipment and may still alter texture when frozen





## 7.Refrigeration:

Lowering the temperature slows down the activity of enzymes and microorganisms.

- Benefits:** Simple and effective for many fruits and vegetables (e.g., leafy greens, berries).
- Limitations:** Not all fruits and vegetables store well in the fridge (e.g., tomatoes, potatoes)

## 8.Sugaring:

Fruits are preserved by coating them in sugar or syrup, often used for jams and jellies.

- Benefits:** Adds sweetness while extending shelf life.
- Limitations:** High sugar content may not be suitable for all diets; can change the texture of the fruit.



*Thank You*