Tishk International University
Faculty of Applied Sciences
Nutrition and Dietetics Department
Principles of Food Science

Food Processing and Preservation

Outlines

Previous Lecture

Food Processing

Food Preservation

Learning Outcome

Understand Principles of Food Processing & Preservation

Evaluate the Impact on Food Quality & Safety

Apply Preservation Methods in Food Industry

Food Preservation

Food Preservation is a process in which

Food and vegetables are prevented from getting spoilt

The color, test, and nutritive values of food is also preserved

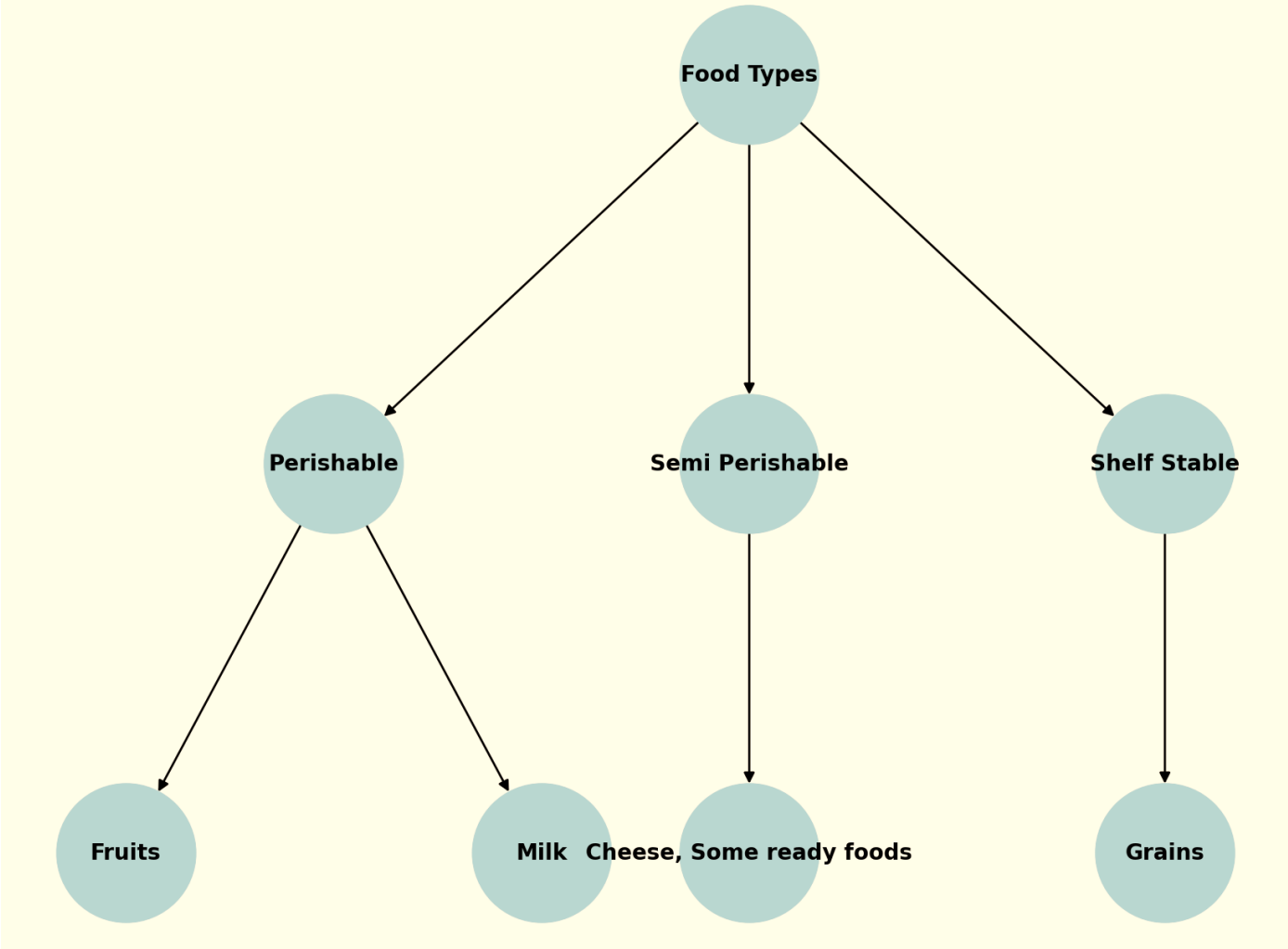
Food products last for a long period of time: Shelf life of food product is increased

So, we can define Food Preservation as:

Retaining food over a period of time without being contaminated by pathogenic organisms or chemicals and without losing its colour, texture, flavour, and nutritious value.

Food Preservation usually involves preventing the growth of bacteria, fungi, and other microorganisms, as well as retarding the oxidation of fats, which causes rancidity.

Food Types


Food Types
Perishable
Semi Perishable
Shelf Stable
Fruits
Milk
Cheese, Some ready foods
Grains

Food types

Perishable

- Lasts for a short time, about 2 days to 1 week
- Example: Fruits, milk, vegetables, meat

Semi-perishable

- Lasts for around 2 months and is processed
- Example: Ice cream, cheese, bread, cake, pastries

Shelf Stable

- Has a longer shelf life, more than 6 months
- Example: Food grains

Why Preserve Food?

If we are able to preserve foods, we enjoy any kind of food in any season.

We eat food even if it is not available in our areas.

We can store our food easily and without worries.

Principles of Food Preservation

Inhibit the growth and activity of Microorganisms

1. Asepsis (to keep out microorganisms)
2. Removal of microorganisms
3. Stopping the growth and activity of microorganisms (low temperatures, drying, or chemicals)
4. Destruction of microorganisms (heating or radiation)

Principles of Food Preservation (contd.)

Protecting against self-decomposition of food

2. Inhibit the activity of endogenous enzyme (Phenolase)
3. Delay or inhibit chemical reactions (Non-enzymatic browning)

Protection from invasion and spoilage by insects and rodents

Protection against losses by mechanical causes

Importance of Food Preservation

Food preservation is important and vital in the food industry due to a number of factors:

- **Social, psychological, and health factors**

Benefits of Food Preservation:

- ✔ Increases the shelf life of food
- ✔ Retains the quality of food – color, texture, flavor, and nutritional value
- ✔ Increases food supply
- ✔ Adds variety to the food
- ✔ Decreases wastage of food
- ✔ Makes food available throughout the year

Food Preservation Methods

Preservation methods vary according to:

- The food items
- The quantity of the items to be preserved

Principles of Food Preservation

Food preservation can be broadly classified into two types:

1. **Bactericidal methods**
2. **Bacteriostatic methods**

Bactericidal Methods

- ✔ Most of the microorganisms are killed
- ✔ **Examples include:**
  - Cooking
  - Canning
  - Pasteurization
  - Sterilization
  - Irradiation, etc.

Bacteriostatic Methods

✔ Based on the prevention of the multiplication of microorganisms

✔ **May be achieved by:**

- Removal of water
- Use of acids, oils, or spices
- Keeping the foodstuff at a low temperature

✔ **Methods based on these principles include:**

- Drying
- Freezing
- Pickling
- Salting
- Smoking

Techniques of Food Preservation

- ✔ **Physical**
  ✔ **Chemical**

Physical Methods

- **Freezing and canning** (rely on killing microorganisms or at least stopping their growth for long enough)
- **Drying, gamma irradiation, exposure to ultraviolet or high-intensity white light, ultra-high pressure, and filtration**


thank
you