



FOOD



Concepts Covered

- Food poisoning
- Food Preservation and Microbial growth on food.

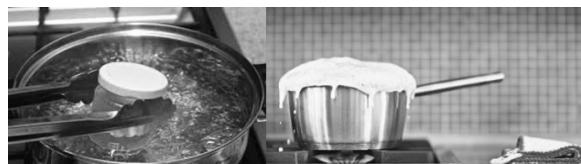
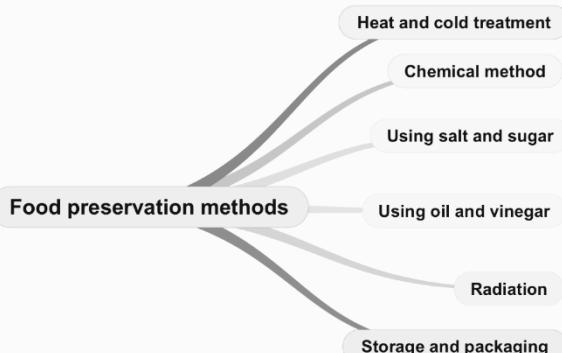
Food Poisoning

The contamination of food by microorganisms results in food spoilage. The consumption of this spoiled food by humans or animals results in food poisoning.

- Microorganisms like bacteria and fungi are responsible for food poisoning.
- These microbes when grown on food substances, produce toxins. These make the food poisonous causing vomiting, serious illness, and even death.

Food Preservation

- The process of preventing the spoilage of food items by the action of microbes is called food preservation.



Heat treatment



Low temperature storage

(1) Heat and Cold Treatment:

- The boiling of milk and liquid food products kills many microorganisms. Similarly, low temperature inhibits the growth of microbes.
- (i) Pasteurization: Pasteurization is a method to preserve milk, in which the milk is heated to about 70°C for 15 to 30 seconds and then suddenly chilled and stored. By doing so, it prevents the growth of microbes. This process was discovered by Louis Pasteur. It is called pasteurization.

(ii) **Low-temperature Storage:** Microorganisms present in food products cannot be destroyed by low temperature but their metabolic activities can be arrested. So that they can't act on food products at -10°C to -18°C temperature. Fruits, eggs, and meat can be stored for a long time.

(iii) **Refrigeration:** Refrigerators have very low temperatures. Since microbes do not get the optimum temperature they need for growth, their growth is inhibited. Fresh fruits, vegetables, fish, meat, eggs, etc. can be stored by keeping the temperature below 5°C.

(2) Chemical Method:

Chemicals that are used to check the growth of microbes are called preservatives. The commonly used preservatives are sodium benzoate, sodium metabisulphite, benzoic acid, nitrates, sulfites, sodium sorbate, potassium sorbate, and potassium metabisulphite. This method is employed in the preservation of fruit juices. Jams, squashes, fruits, etc.

(3) Preservation by Common Salt:

Salting is done by using common salt. Sodium chloride used as common salt absorbs moisture from food, making it dry and uninhabitable for microbes. Common salt has been used to preserve meat and fish for ages. Concentrated solutions of common salt can kill microorganisms due to dehydration. Salting is also used to preserve smoked salmon, amla (Indian gooseberry), and raw mangoes.



Adding common salt to fish and amla

(4) Preservation by Sugar: Preservation by sugar is done by adding sugar which reduces moisture in food. It also inhibits the growth of microbes that spoil food. Jams, jellies, and squashes are preserved by sugar.



Adding sugar to jellies

(5) Preservation by Oil and Vinegar: The use of oil and vinegar prevents the spoilage of pickles because bacteria cannot live in this environment. Vegetables, fruits, fish, and meat are often preserved by this method.



Preservation by oil and vinegar

(6) Preservation by Radiation: In this method air tight packed food substances, are passed through a radiation beam, and microorganisms present in the substances get destroyed due to radiation. This method is new and cheaper.

(7) Storage and Packing: Dry fruits and vegetables are sold in sealed air tight packets to prevent the attack of microbe. Bottling and canning is a method of preserving drinks, colas, beverages, and other products which are to be stored under low temperatures. Carbon dioxide is added as a preservative in some cool drinks. Some edible foods like fish, meat is canned in air tight containers for preservation.



Preservation by air tight packaging

Exercise

OBJECTIVE TYPE QUESTIONS

Answer Key

OBJECTIVE TYPE QUESTIONS

- | | | | |
|-----|-----|-----|-----|
| (1) | (C) | (6) | (C) |
| (2) | (B) | (7) | (B) |
| (3) | (B) | (8) | (D) |
| (4) | (D) | | |
| (5) | (C) | | |