NIOS lesson adaptation project

By EMBRACE Volunteers

(A community initiative of Harchan Foundation Trust)

Chapter 5

PRESERVATION OF FOOD

(Printable Version)

- **Simplified Lesson**
- **Previous Year Questions with Answers**
- **Terminal Questions**

This project is aimed at supporting children with different needs. Information provided is adapted to the best of knowledge by the volunteers. For complete information please refer to the NIOS resources in https://www.nios.ac.in/online-course-material/secondary-courses.aspx.

LESSON 5

PRESERVATION OF FOOD

Preservation of food is very important to improve the nutritional content and to have variety in diet.

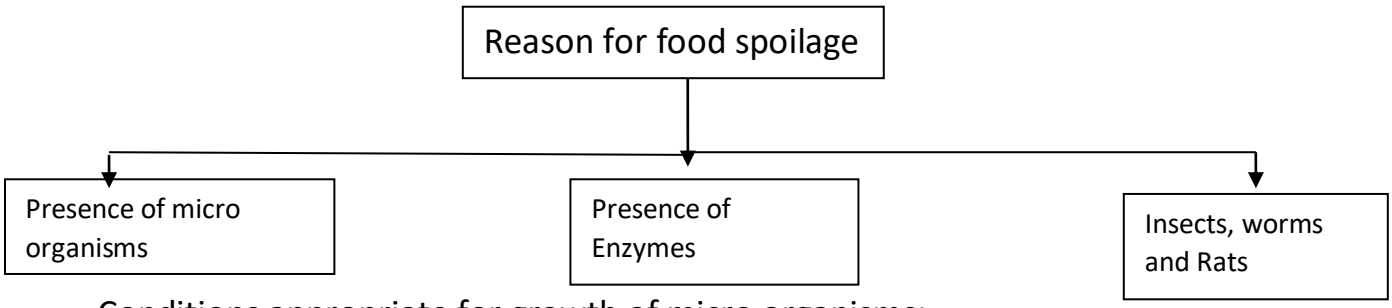
Food Spoilage and storage:

Spoilage: Food is no longer fit for eating.

Storage: Storing something for future use.

How can you say food is spoilt?

- When you see a mould growth (spongy growth on bread)
- If there is change in color and smells bad.
- On vegetable and fruits there will formation of soft spots.



Conditions appropriate for growth of micro organisms:

a. Moisture content –Tomato get spoilt faster due to its high moisture content
b. Air surrounding the food- Contains micro organisms
c. Food kept long time at room temperature-Spinach kept at room temp turns yellow and stale.
d. Food with low salt , sugar and acid content

We have to remove the above conditions to stop the growth of micro organisms.

What are Enzymes?

Enzymes are chemical substance found in all plants and animals. There will be enzyme action.

Enzymes help in ripening of fruits. Continues enzyme action results in decaying of same fruits and vegetables.

Ex: Enzyme helps raw mango to ripen mango and same enzyme action causes decaying too.

Insects, worms and rats: Insects makes small holes and turns the grain to fine powder which is not suitable for consumption.

Rats may eat through storage bags.

Food Storage:

Food storage means keeping food in a special place until it is needed for consumption.

Shelf Life:

Time for which a food can be kept fresh.

CLASSIFICATION OF FOOD ACCORDING TO SHELF LIFE:

Non Perishable Food	**Semi Perishable Food**	**Perishable Food**
Food items which will not get decayed. Ex: Whole grain Cereals , Nuts, oil seeds , sugar and jaggery	Does not require refrigeration but still have limited shelf life. Ex: Processed Cereals, eggs , potatoes, Onions, biscuits and cake	Likely to decay or go bad quickly. Ex: Green leafy vegetables, peas, beans, tomatoes, apple, bread, bananas, bread, butter , and cream.

Food Preservation:

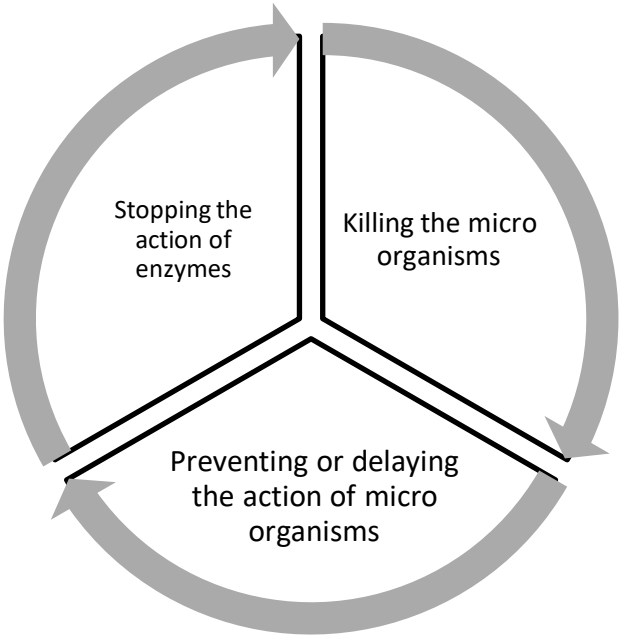
Preservation is a process by which food items are prevented from getting spoilt for a short or longer period of time.

The color, taste and nutritive value of food are also preserved as far as possible.

Why Preservation should be done:

1. Preservation takes care of excess produce and helps in availability of food throughout year for consumption.
2. Adds variety to our meals-example like pickle papad and chutney brings variety in our meals.
3. Sent to places where they are not grown- fruits and vegetables cannot be grown in desert and snow areas.
4. Makes transportation and storage of food easier- Reduces the bulkiness and make transportation easier.

THREE MAIN PRINCIPLES OF FOOD PRESERVATION:



Enzyme action can be preserved by giving mild heat treatment.
Blanching can be done.

- ✓ Boiling the milk kills micro organisms.
- ✓ Canning of food which is done by increase of temperature

1. Food packed in polythene bags.
2. Lowering temperature or freezing.
3. Using chemicals (sodium benzoate/Potassium metabisulphite.

1. Killing the micro organisms:
   Boiling of milk, cooking at home, canning (heated to high temperature) is use to kill and prevent the growth of micro organisms.
2. Preventing or delaying the action of micro organisms:

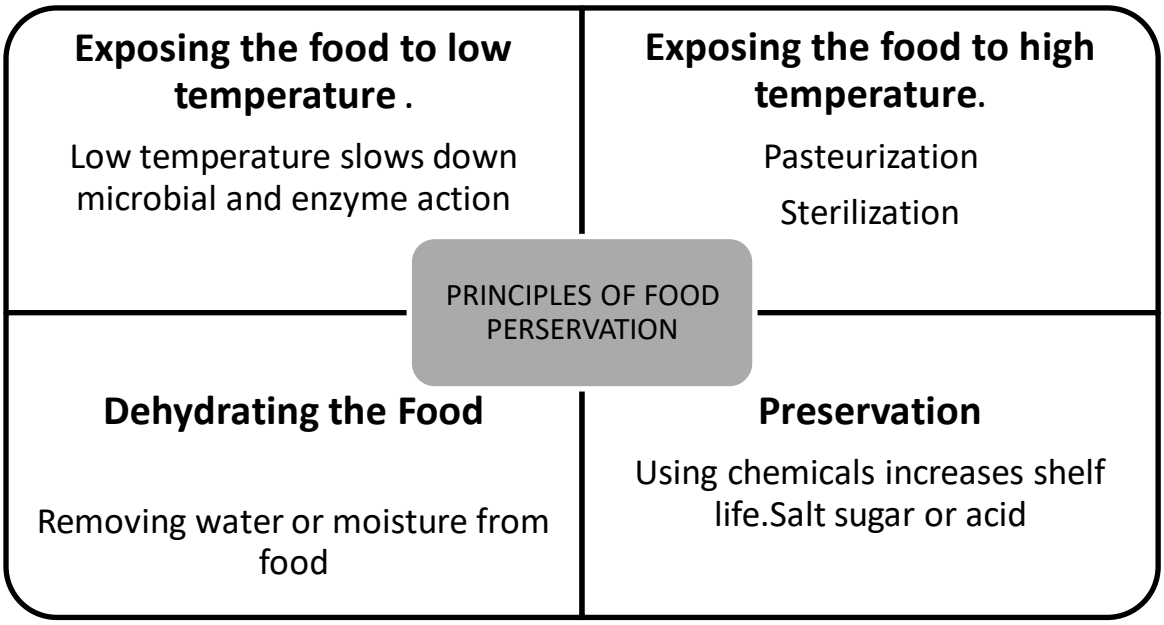
   a) Providing the protective covering
      i) Natural covering : Like shells of nut, egg, fruit and vegetable skin
      ii) Artificial covering: Polythene bags and aluminum foil packing.
   b) Raising the temperature: Like boiling, cooking and etc.
   c) Lowering the temperature or freezing: Micro organisms cannot act in low temperature.
   d) Adding chemicals: Chemicals like sodium benzoate and potassium metabisulphite helps in preventing the action of micro organisms.

3. Stopping the action of enzymes: Enzyme action can be prevented by giving mild heat treatment.

Blanching: Before canning or freezing vegetables are dipped in hot water or exposed to steam for few minutes.

Thawing: Is the process of removal of ice from process of food.

PRINCIPLES OF FOOD PRESERVATION AT HOME:



1. Exposing the food to low temperature:

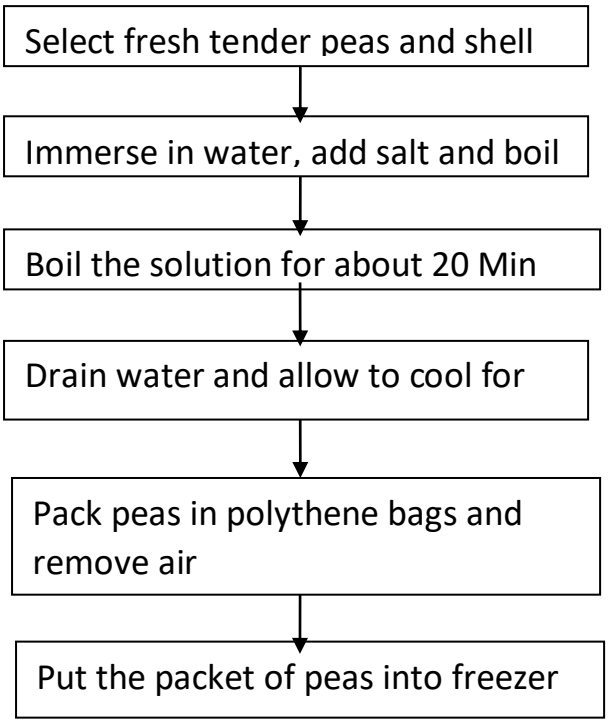
Food stays longer at lower temperature.

Refrigeration - keeping food between 40 to 70 degree celsius

Cold storage-keeping food between 10 to 40 degree celsius.

Freezing –keeping food between 180 degree celsius below.

STEPS INVOLVED IN FREEZING OF PEAS:



Using frozen vegetables:

1. Take out the frozen packet before one or two hour.
2. Thaw at room temperature.
3. Put vegetable in sieve and keep it under tap water for few minutes.
4. Drain and use.

Precautions while freezing fruits and vegetables:

1. Polythene bag should be strong enough to withstand expansion of food on freezing.
2. The food brought to room temperature should not be re frozen.
3. Prepare small packets.
4. Take out air completely from packing before sealing.
5. Freezer should not be opened frequently.

2. High Temperature:

Micro organisms and enzymes are destroyed at high temperature.
The two methods of preserving food by using high temperature are
Pasteurization: Heated to high temperature and cooled suddenly
Sterilization: Heated to high temperature under pressure.

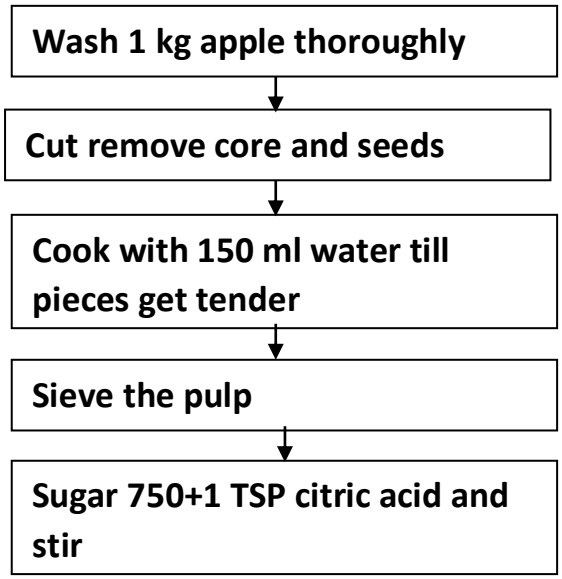
3. Use of preservatives:

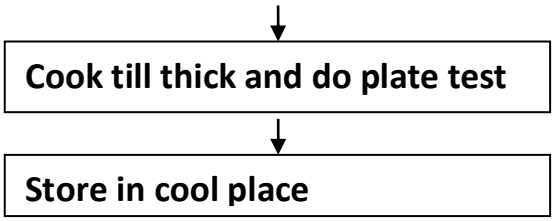
Chemicals which can be used to increase the shelf life of processed food are called preservatives.

Types of preservatives:

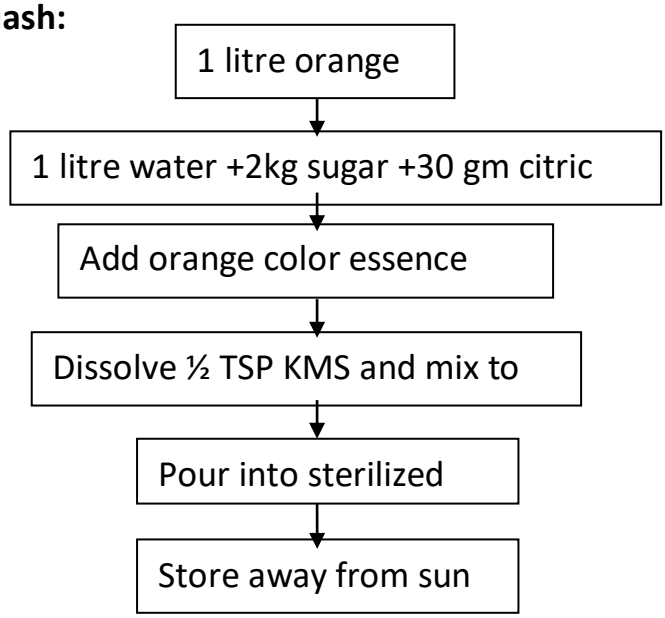
Natural preservatives:
i) Salt: Osmosis takes place, water comes out of the food, with less water micro organisms are not able to grow
ii) Sugar: It dissolves in water so there will be less water available for growth of micro organisms.
iii) Acids: Helps in increase the acid content of food which will prevent the growth and activity of micro organisms.
vi) Oil and spices: It prevents the contact of micro organisms with the food.

Method of making apple Jam:





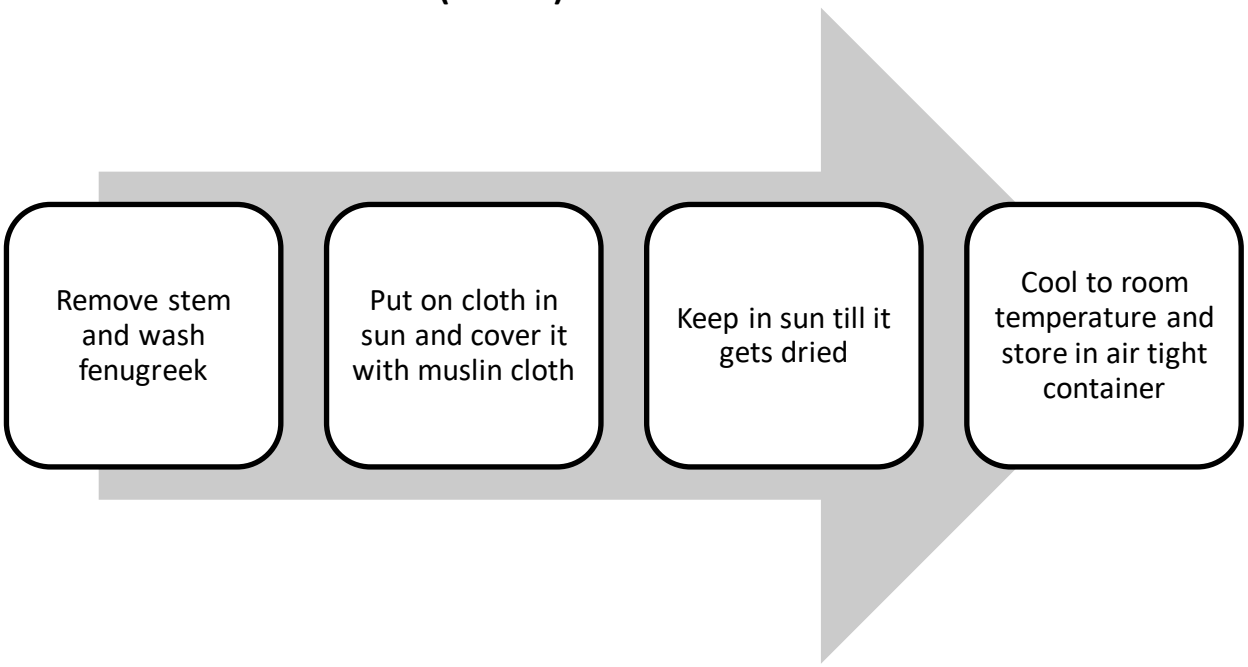
Making orange squash:



MAKING POTATO CHIPS AT HOME:

- Wash peel and cut potatoes to thin slices.
- Put in boiling water for 3 to 4 min
- Cold water with 5 tsp of salt and 1 tsp of potassium metabisulphite
- Blanched potato chips in above solution for 10 min
- Spread each potato chip on cloth in sun.
- Cover with thin cloth.
- When dry store in cool and air tight container.

DEHYDRATING FENUGREEK (METHI)



Previous Year Question Paper

1 Mark Question:

1. **Which of the following is perishable food?**
   a) Jaggery.
   b) Milk.
   c) Potato.
   d) Eggs.

2 Mark Questions:

2. **Give two reasons why your grandparents prefer eating a steamed snack instead of fried one?**
   - Steaming will help to retain the nutritional value of food.
   - It helps in preserving water soluble vitamins.
   - Steamed food is lighter and healthier.
   - Steamed food helps to retain minerals presents in food.
3. **Name four methods by which Food can be preserved at home?**
   - Exposing food to low temperature.
   - Exposing food to high temperature.
   - Using preservatives
   - Dehydrating food.

3 Mark Questions:

1. How will you freeze peas at home? Explain in brief.

- Select the fresh tender peas
- Immerse in water add salt and boil it for 20 min
- Drain water and cool for 10 min
- Pack peas in polythene bags and remove air.
- Put peas packet into freezer.

2. Define food preservation. Mention four popular methods used for preserving foods at home.

Preservation is a process by which food items are prevented from getting spoilt for a short or longer period of time.
The color, taste and nutritive value of food are also preserved as far as possible.
Methods used for preserving food at home are:

- Exposing food to low temperature.
- Exposing food to high temperature.
- Using preservatives
- Dehydrating food.

3. Explain three reasons for food spoilage.

- Presence of Micro organisms.
- Presence of enzymes.
- Insects, worms, and rats

4. Educate your brother to make potato chips by using dehydration method.

- Wash peel and cut potatoes to thin slices.
- Put in boiling water for 3 to 4 min.
- Cold water with 5 tsp of salt and 1 tsp of potassium meta bisulphate.
- Blanched potato chips in above solution for 10 min.
- Spread each potato chip on cloth in sun.
- Cover with thin cloth.
- When dry store in cool and air tight container.

4 Mark Question:

1. List the steps you will follow to preserve fenugreek (methi) at home by dehydration method.

- Wash fenugreek leaves.
- Put on cloth in sun and cover it with muslin cloth.
- Keep it in sun until it get dried.
- Cool to room temperature and store in air tight container.

5 Mark Question:

1. **Write the steps involved in method of freezing peas at home.**
   - Select the fresh tender peas
   - Immerse in water add salt and boil it for 20 min.
   - Drain water and cool for 10 min.
   - Pack peas in polythene bags and remove air.
   - Put pea's packet into freezer.

2. **State three principles of food preservation and give one example of preservation in each case.**
   i) Killing of micro organisms Ex: Boiling the milk
   ii) Preventing or delaying the action of micro organisms Ex: Freezing , packed in polythene bags, and use of chemicals
   iii) Stopping the actions of enzymes. Ex: Blanching

TERMINAL QUESTIONS

1. Write whether the following statements are true or false: Give reasons for your answers

i) Oranges can be kept for long time without getting spoilt –False.
As is it perishable food items it cannot be kept without spoiling. Enzyme action will be there

ii) While dehydrating fenugreek(methi)leaves should be put in potassium metabisulphite for 10 to 15 min –False
Potassium metabisulphite is chemical preservative. Fenugreek seeds are dried through dehydration method and stored.

2. Write down the steps preserving pudina (Mint) leaves by dehydration.

Ans:

- Remove stem and wash pudina leaves
- Put on cloth in sun and cover it with muslin cloth
- Keep in sun till it gets dried

- Cool to room temperature and store in air tight container.

3. Match the statement in column A with those in column B

Column A	Column B
a) Natural preservative	Salt
b) Chemical preservative	Potassium metabisulphite
c) Dehydration	Sunlight
d) Increasing temperature	Removing micro organisms