NIOS lesson adaptation project

by Embrace volunteers

(A community initiative of Harchan Foundation Trust)

CHAPTER -5

PRESERVATION OF FOOD

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.

K - What does the child KNOW	W - What does the child WANT to know	L - What has the child LEARNT
	About food spoilage and food storage	
	Categorize food on their shelf life	
	Food preservation and its importance	
	Principles of food preservation	
	Methods of preserving food	

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Keywords and meanings

KEYWORD	MEANING
Micro organisms	An organism that can be seen only through microscope
Enzymes	A substance produce by organism which is reason for biochemical reaction
Fermentation	The chemical breakdown of a substance by bacteria
Preservatives	Chemicals used to prevent growth of micro organisms
Blanching	Before canning vegetables are dipped in hot water or exposed to steam for few minutes.

Food spoilage and storage

Spoilage : Food is no longer fit for eating

Storage : Storing something for future use

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How can you say food is spoilt

When you see mould growth

If there is change in color or smells bad due to fermentation

On Vegetables and fruits their will be soft spots

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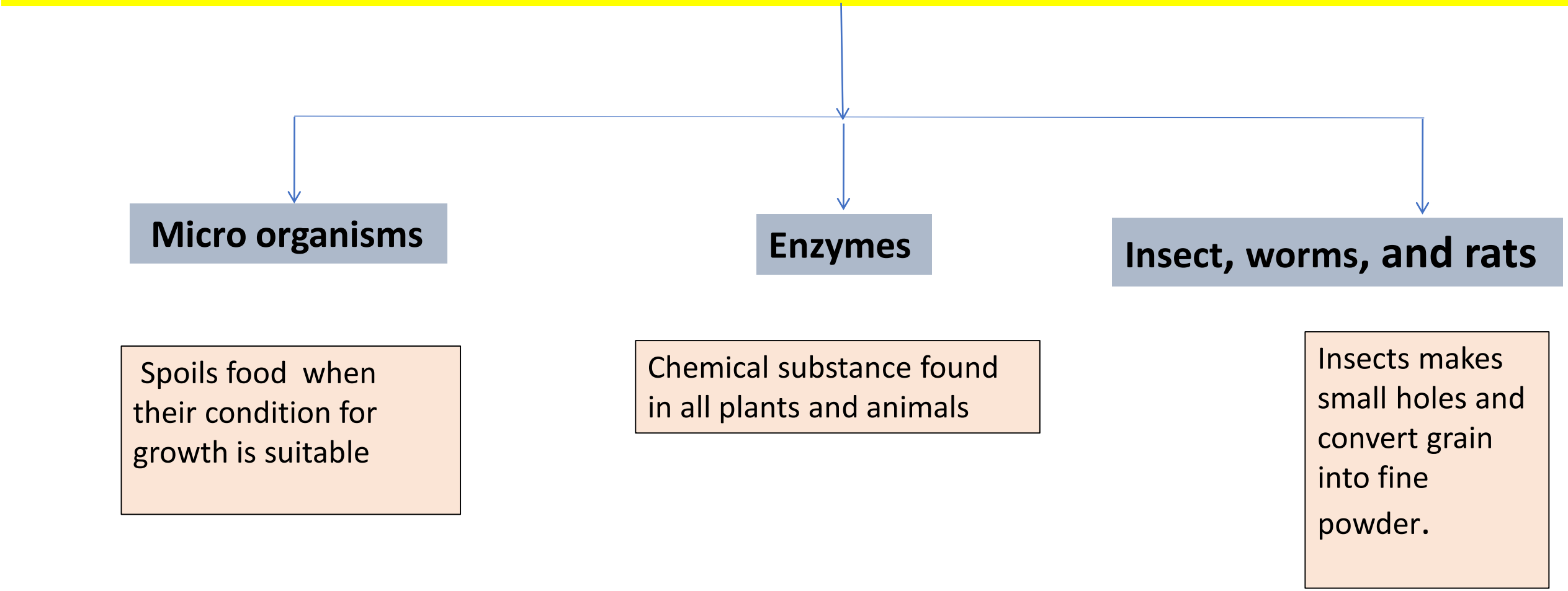
Reasons for food spoilage



Presence of micro organisms

Conditions suitable for growth

1. High moisture content	Tomato has high moisture content 
2. Air surrounding the food	
3. Food at room temperature .	Spinach kept at room Temperature 
4.Skin of fruits and vegetables .	When exposed to micro organisms 
5. Food with low sugar, salt and acid content	Spoiled Jam and pickle  

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Presence of enzymes

Enzyme action

✓Helps in ripening of fruits and vegetables .

✓Continued action of enzymes leads to over ripe and spoilage

Example: Raw green mango turns into ripe yellow mango due to presence of enzymes.

Due to enzyme action

Continued enzyme action

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Insects, worms and rats

Insects turns grains into powder	
Rats eat through stored bags	

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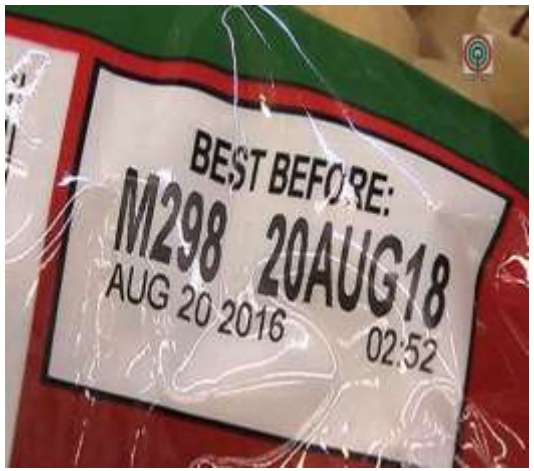
Classification of food (Shelf Life)

Shelf Life :

Time for which a food can be kept fresh.

Best before/consume before/ Date of expiry label on food items shows shelf life



Based on shelf life food is classified into three groups :

- ✓ Non-perishable .
- ✓ Semi Perishable .
- ✓ Perishable

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Non perishable food items

Food items which will not get decayed

Whole grain
Cereals

Oils seeds

Sugar and
Jaggery

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Semi perishable food items

Do not require refrigeration but still have limited shelf life

Processed Cereals

Eggs

Onions and potatoes

Cakes and Biscuits

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Perishable food items

Likely to spoil or decay if not refrigerated

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Food preservation

Preservation is a process by which food items are

- ✓ Prevented by getting spoilt.
- ✓ Increase in shelf life .
- ✓ Color, taste and nutritive value is preserved

Importance of food preservation

1. Excess food items produced are preserved	**Mango is preserved as pickle squash and dry mango**   
2. Preserved food add variety to the meals	Mango Chutney, papad and pickle add variety to meals   

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Importance of food preservation

3. Items sent to places where they are not grown	**Crops cannot be grown in desert or snow area** 
4. Makes transportation and storage easier	Reduces the bulk of food item 

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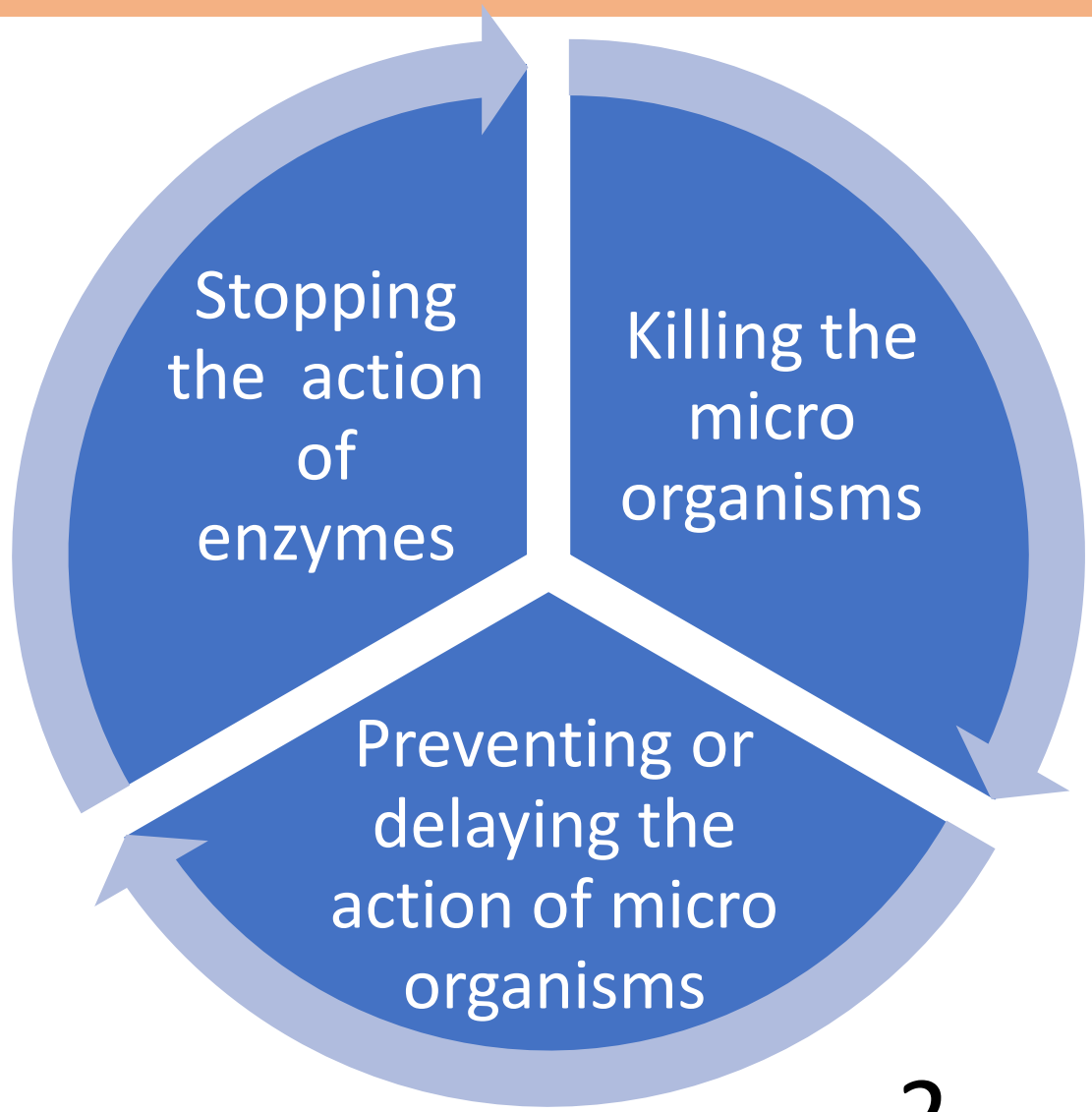
Main principles of food preservation



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1.Killing of micro organisms

By raising the temperature

- ✓ Cooking kills micro organisms.
- ✓ Boiling of milk kills micro organisms.(Pasteurizing)
- ✓ Canning (Sealing in tins)food is heated to high temperature

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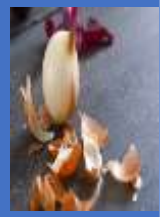
2.Delaying the action of micro organisms

1. Protective covering helps in delaying the action	**✓Natural covering** **Shells of egg, nuts and skin of fruits and vegetables** **✓Artificial covering** **Packed in polythene and aluminium foil (absence of air and water)**
2. Lowering the temperature or freezing	Micro organisms cannot grow at lower temperature





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3. By adding chemical	**Prevents the action of micro organisms**	 
4. By raising the temperature	Boiling the milk can delay the action of micro organisms	

3. Stopping the action of enzymes

1. By giving mild heat treatment	**Prevents the action of enzymes**	
2. By Blanching	Before freezing or canning vegetables dipped in hot water or steam	

Methods of preserving food at home

1.Low Temperature	• Low temperature slows down enzyme and microbial action
2 High Temperature	• Exposing food to very high temperature
3. Use of Preservatives	• Using chemicals to increase shelf life
4. Dehydration	Removing water or moisture from food

Exposing food to lower temperature

- It slows down microbial and enzyme action .
- Refrigeration- Keeping food between 40 to 70 degree celsius

- Clod storage-keeping food between 10 to 40 degree celsius

- Freezing –keeping food between 180 degree or below

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Steps involved in freezing of peas

Tender peas ½ kg

Add 1 TSP salt+ ½ liter of water and boil

Drain water and cool 10 to 15 min

Pack in polythene bag

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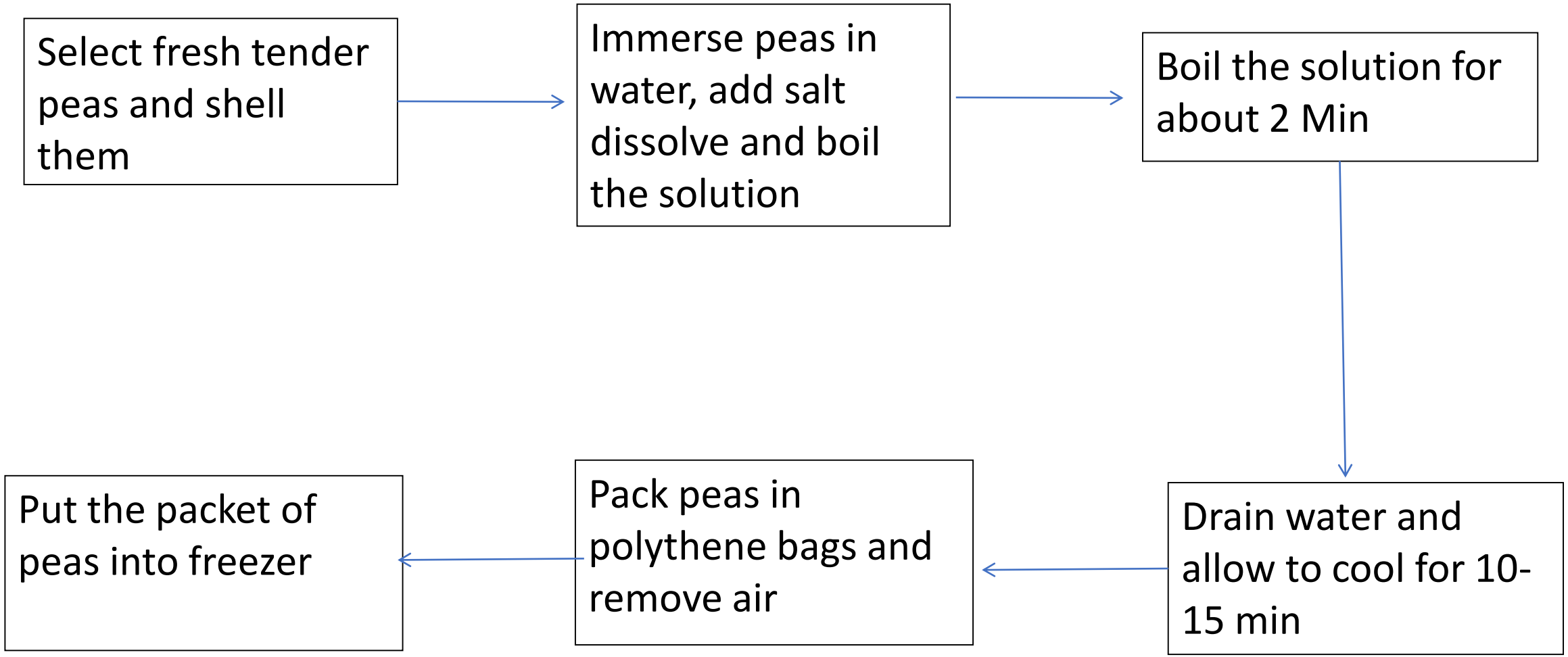
Steps involved in freezing of peas



Using frozen vegetables

- Frozen packet should be taken out 1 or 2 hour before use.
- Let it thaw at room temperature.
- Keep under tap water for few minutes .
- Drain and use

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Precautions while freezing

- Packing material should be strong enough.
- Once taken out from freezer should not be re frozen.
- Food must be thawed once taken out and then use.
  (Process of removal of ice from processed food is Thawing)
- Air should be taken out completely from package.
- Freezer should not be opened frequently.

Exposing food to high temperature.

✓Pasteurization:

Heated and then cooled very quickly

✓Sterilization:

High temperature is used to kill all micro organisms

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Use of preservatives

- Natural preservative
  - Salt: Osmosis takes place where water comes out of food.

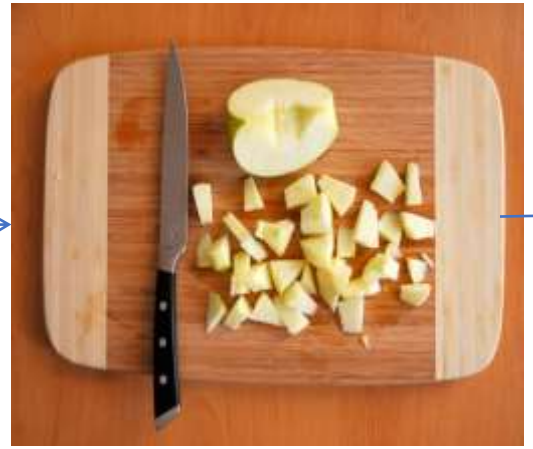
  - Sugar: Dissolves in water which results in less water content.

  - Acids: Prevents growth and activity of micro organisms.

  - Oils and spices : Prevents contact of micro organisms and air.

Method of making apple Jam

1 kg apple wash thoroughly



Cut remove core and seeds

Cook in 150 ml water till pieces are tender

Sieve the pulp

Sugar 750 gm +1 TSP citric acid and stir

Cook till thick and do plate test

Store in cool place

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Making orange squash(chemical preservative)

1 lit orange juice

1 ltr water+2 kg sugar +30 gm citric acid boil

Add orange color essence and juice

Dissolve ½ TSP of KMS and mix to squash

Pour into sterilized bottles

Store away from sun

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Dehydration

- ✓ Clean the jars and dry in sun.
- ✓ Wash the vegetables remove stem ,skin and seed.
- ✓ Blanch vegetables .
- ✓ Vegetables+ cold water+ potassium metabisulphite (KMS) for 5 to 10 min.
- ✓ Spread vegetable on clean cloth in sun.
- ✓ Allow food to dry (test hardness).
- ✓ Store in air tight jar.

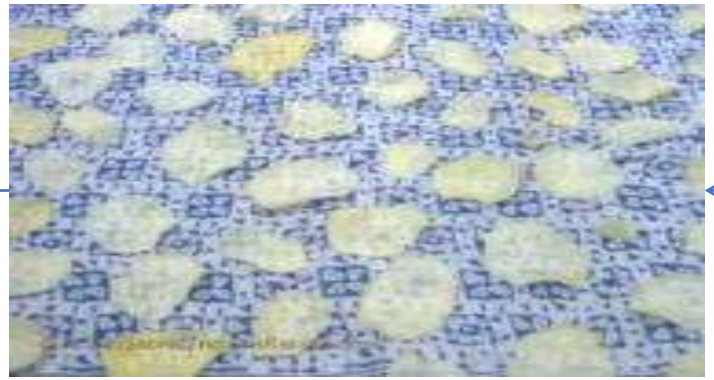
Making potato chips at home

Thin Slices

Boiling water for 3 to 4 min

Cold water +5 TSP salt+ 1TSP KMS

Blanching for 10 min



Dry in sun on thin cloth

Store

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Dehydrating fenugreek(Methi)

Fenugreek with seed

Wash the seed after separating from stem

Put on cloth to drain water

Dry in sun

Store

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List of Volunteers
Embrace-NIOS lesson adaptation project
(A community initiative of Harchan Foundation Trust)

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CREDITS

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Slide 13	https://www.hellodoctor.co.za/canned-foods-the-good-the-bad-and-the-ugly-truth/
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