3. Study of Imbibition using dried seeds / raisins.

Date : / /

Aim : To study the imbibition using seed or raisins.

Requirments : Water, beaker, dry seeds or raisins, etc.

Principle : Imbibition is adsorption of water or any other solvent without forming a solution. The different hydrophilic substances present in plant cells or cell wall, imbibe water.

Figure :

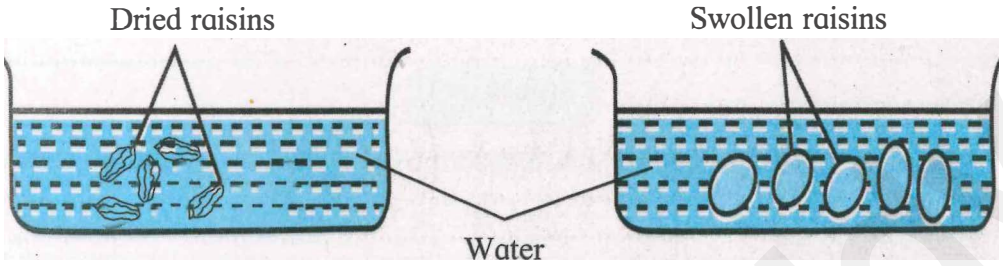

Fig : Demonstration of Imbibition by using raisins

Procedure:-

- Take some dry seeds or raisins in beaker or Petri dish or bowl.
- Add ample amount of water in it.
- Keep the set up for few hours and observe the change in seeds or raisins.

Ob ervation :

- The seeds or raisins kept or soaked in water show change in their volume showing swollen structure and seed coat/ raisins shows softening.

Conclusion :

Imbibition is the process of adsorption of water by substances without forming a solution. Swelling of seeds when immersed in water is an example of imbibition. Imbibition is the temporary increase in the volume of the cell. Imbibition is a passive transport of materials that does not require energy during the process.

The substance that imbibes water is called imbibant and the liquid which is imbibed is called adsorbent. The process of imbibition occurs mainly due to the presence of hydrophilic or lyophilic colloids. Water is imbibed through the sub microscopic capillaries present on the surface of the body. Substances such as cellulose and starch are hydrophilic and are imbibants. (Hydrophilic means ' water loving, or readily absorbing moisture' .)

Questions

Q. 1. What is imbibition?

Imbibition is a type of diffusion where the water is absorbed by the solid particles called colloids, causing an enormous increase in volume.

Q. 2. Distinguish between diffusion and imbibition.

Diffusion	Imbibition
1. It refers to the absorption of water by general surface.	1. It refers to the movement of molecules, ions of solids, liquids or gases from the region of higher concentration to lower concentration
2. It takes place both in living and dead cells.	2. It takes place in solids, liquids and gases.
3. It is a reversible process.	3. It is not a reversible process.

Q. 3. What will be the result if fresh grapes fruit are dipped for sometime in strong salt solution ?

Osmosis is the process of the movement of solvent molecules through a semipermeable membrane from a region of higher solvent concentration to the region of lower solvent concentration. The energy which drives this process is called as osmotic pressure. Osmosis is of great importance in biological processes. If grapes are placed in a salt solution that is more concentrated than cell sap, exosmosis will happen and grapes will shrink.

Q. 4. Define and or explain : a. exosmosis b. endosmosis

Osmosis - It is the process of transfer of materials in and out of the cell in context to the environmental pressure.

☆ TYPES OF OSMOSIS :-

- Endosmosis :- When the concentration is low inside a cell compared to the environment, water travels from outside to inside.
- Exosmosis :- It is the vice versa of Endosmosis. When the water concentration inside the cell is more as compared to that outside the cell, the water travels from inside to the outside of cell.

Q. 5. Give any two examples of imbibition in day to day life.

The germination and swelling of soaked seeds,
wooden doors during rains,
water absorption by roots

Remark and Signature of Teacher .....