

CLASS IX PRACTICALS FOR SUMMATIVE ASSESSMENT SA-1

Experiment 09. To determine the mass percentage of water imbibed by raisins.

Materials Required : A handful of raisins with intact stalk, a beaker (100 ml), thermometer, physical balance with weight box, a pair of forceps, petridish, blotting paper or filter paper.

Theory: When raisins are placed in water (a hypotonic solution), they absorb water by a process called osmosis and swell up. Osmosis is the net movement of solvent molecules from a region of their higher concentration to a region of their lower concentration through a semipermeable membrane. The movement of water into the cells of the raisins through their cell membranes continues until the cells become turgid.

This process is called endosmosis. If these swollen raisins are now kept in a concentrated salt or sugar solution (a hypertonic solution), water from the turgid raisins will come out of the cells and they will shrink. This process is called exosmosis.

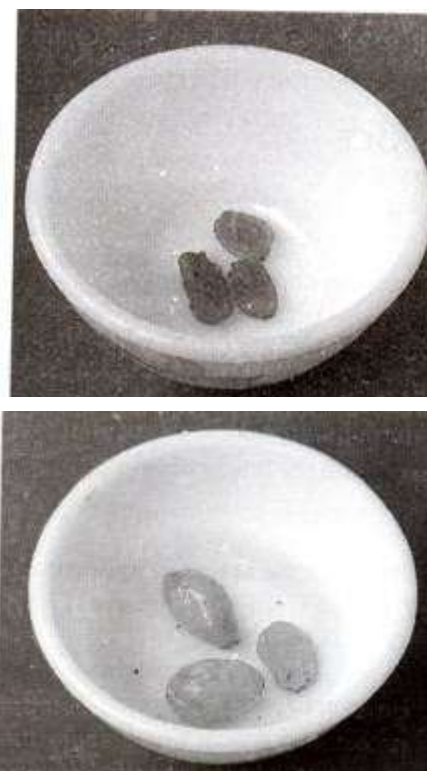
The percentage of water absorbed by the raisins due to endosmosis can be measured by knowing the difference of their initial weight and final weight.

Procedure:

1. Take three raisins and weigh them on the common balance. Let this value be W_1 .
2. Keep these raisins in a bowl containing water for 2 hours.
3. Take the raisins out of water and gently dry them with the help of blotting paper.
4. Weigh the soaked swollen raisins again on the common balance. Let this value be W_2 .

Observations:

1. Weight of dry raisins = W_1 .
2. Weight of swollen raisins = W_2 .
3. Weight of the water absorbed by raisins = $W_2 - W_1$.
4. Percentage (%) of water absorbed by raisins = $\frac{W_2 - W_1}{W_1} \times 100$.



Result: The soaked swollen raisins weigh more than the dry raisins. This is because the raisins absorbed water by the process of endosmosis.

Precautions:

1. The raisins should be weighed accurately.
2. The raisins should be immersed completely in water.
3. Before weighing the soaked raisins, these should be dried gently with the help of blotting paper.