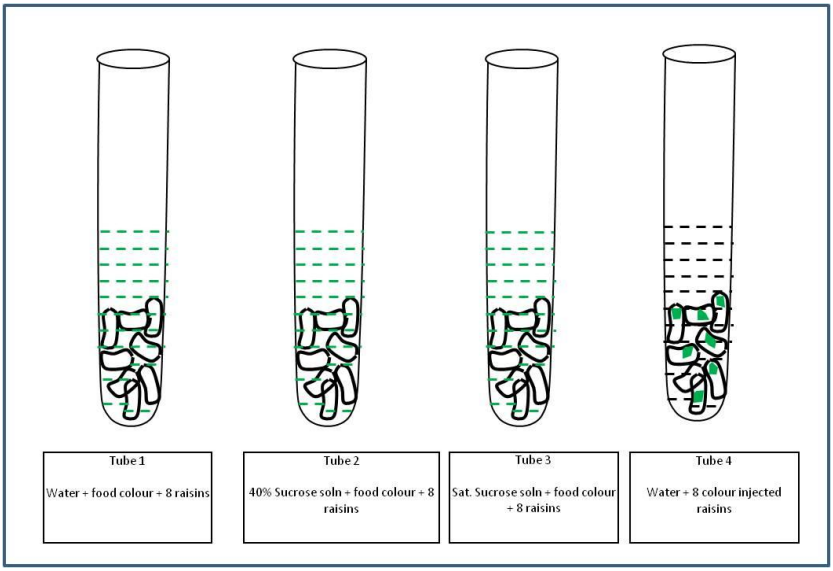
OSMOSIS IN RAISINS (*Instructions)*

Aim:
To study the process of osmosis using raisins.

Materials:
- Raisins (dry)
- Water (Clean potable water)
- Sugar or Sucrose
- Glass tubes of 20 mL capacity
- Measuring cylinder (10 mL capacity)
- Measuring balance
- 100 ml beaker
- Food colour
- Insulin syringe (It has fine needle to make very small prick in raisins)

Procedure:
- Before starting the activity, Prepare 10 ml of 40% sucrose solution and 10 ml of saturated sucrose solution.
- Take 4 glass tubes of 15 ml capacity or 50 ml beakers. Label them with numbers 1 to 4. (One can use small paper cups, glasses, any small containers instead of tubes.)
- Weigh about 7-8 raisins (use full ones without breaking their stalks) and record the weight in table. Put them in tube no. 1. Repeat it for tube no. 2 and 3.
- Make approx. 5 ml of food colour solution in water. Take sufficient quantity of powder to make concentrated solution.
- Now use insulin syringe to inject few drops of this colour in 7-8 raisins.
  (Inject the colour slowly and carefully. Do not try to inject excessive dye forcefully.)
- Weigh these dye injected raisins and put them in tube no. 4
- Add 10 mL of water in tube no. 1 and 4 .
- Add 10 ml of 40% sucrose solution in tube no. 2 and 10 ml of saturated sucrose solution in tube no. 3.
- Now put 2 - 3 drops of food colour in tube no. 1, 2 and 3. Mix it well by shaking the tubes. Add 2-3 drops of water in tube 4 instead of food colour.
- Summarize your activity in table 1.1 given in activity sheet.
- Keep all the tubes undisturbed on a stand. Note the time.
- After about 45 minutes, carefully remove raisins from tube no. 1. Observe if you find any change in raisins.
- Blot them on tissue paper and weigh them.
- Measure the amount of water in tube. Note down your observation.

- Repeat it for rest of the tubes.
- Note down the changes that has happened.
- Note your observations in a table.



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OSMOSIS IN RAISINS *(Students activity sheet)*

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To study the process of osmosis using raisins.

Table 1.1

Summarise the activity by writing the contents of each tube in the table below.

Tube no.	Raisins (Dry/ dye injected)	10 ml Water (+/-)	10 ml Sucrose Soln. (+/-)	Food colour in water (+/-)
1				
2				
3				
4				

Table 1.2

Tube No.	Shape of raisins at the beginning	Shape of raisins at the end of time period	Weight (before) W^b	Weight (After) W^a	$W^a - W^b$	liquid measured (Before) L^b	Liquid measured (After) L^a	$L^b - L^a$
1.						10 ml		
2.						10 ml		

3.						10 ml		
4.						10 ml		

Rate the shape change (Swollen +++/Less Swollen++/ No change -)

Inference:

- Is the weight difference same in all tubes? How will you calculate? (per gram? Percentage?)
- Which tube shows the maximum rate of osmosis?
- Which tube has minimum rate of osmosis? Why?

Enquiry Questions:

- Why did raisins change in shape?
- What according to you was going in and what was moving out of raisins?
- Why different concentrations of sucrose used? What happens in tube no. 3?
- Why it is not simple diffusion? Which tube can be used to demonstrate?
- We added 2-3 drops of water in tube 4 instead of food colour. Why it was necessary?

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