

Chapter
8**Osmosis and the Case of the Sad Salad****Real World BioApplications**

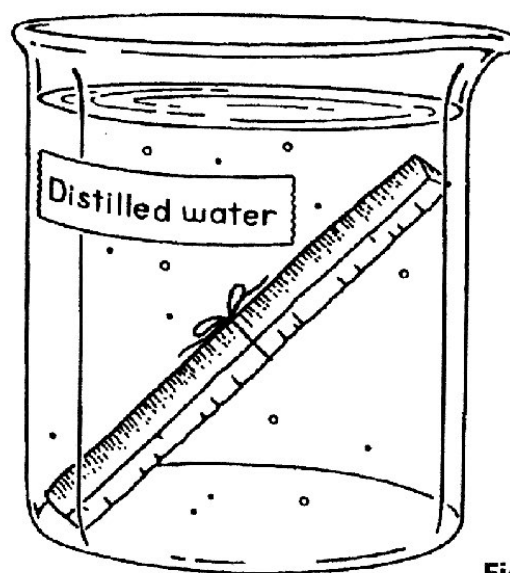
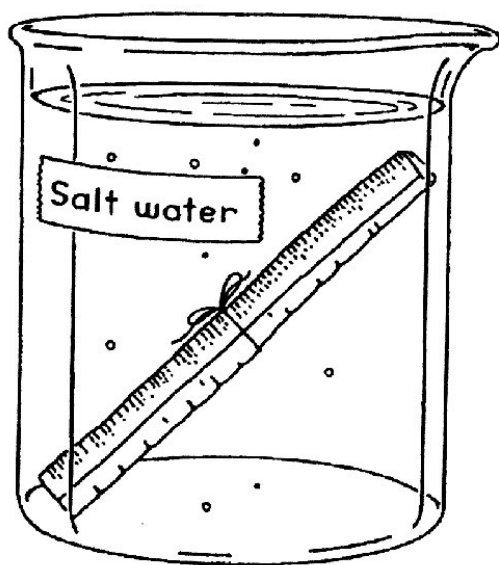
Imagine opening up the refrigerator to take out carrots, lettuce, cucumbers, tomatoes, and other vegetables in order to prepare a delicious, crisp salad for your family's dinner. You rinse off the vegetables, slice them up, place them in a big bowl, and lightly season them with salt, pepper, and salad dressing. Finally, you place the bowl of salad in the refrigerator, finish some homework, and listen to a few CDs until it is time to eat. At dinner, as you prepare to enjoy your crunchy creation, you suddenly realize that your once

delicious-looking salad isn't so desirable anymore—the carrots feel like rubber coins, the cucumbers are dry and limp, and the lettuce is wilted. What has happened to your salad?

Wilting houseplants, rubbery carrots, and limp lettuce all illustrate the same important biological principle—osmosis, the diffusion of water. In this activity, you'll investigate how the process of osmosis affects plant cells, and learn some ways to prevent a sad salad.

PROCEDURE

1. Fill two 250-mL beakers three-fourths full with distilled water.
2. Add five teaspoons of table salt to one beaker, stir thoroughly, and label it "salt water." Label the other beaker "distilled water."
3. Obtain two similar carrot sticks. Tie thread or string tightly around each carrot, as shown in Figure 1. Be sure the thread is tight around each piece.
4. Submerge one carrot stick in the beaker of salt water and the other carrot stick in the beaker of distilled water.
5. Allow the beakers to stand undisturbed for 24 hours.
6. Remove the carrot sticks. Observe the tightness of the threads. Squeeze and bend each carrot stick to determine its texture.
7. Complete the table based on your results and observations from the experiment.

**Figure 1**

