

Gummy Bear Osmosis: Exploring Tonicity

NAME _____

INTRODUCTION: All living cells have an outer layer known as the cell membrane. The cell membrane is an organelle that strictly controls what molecules can enter and leave the cell. Some molecules like sugar are too big to cross on their own, and some molecules like oxygen are tiny enough to squeeze through. This characteristic of the cell membrane is known as selective permeability. When the cell membrane is placed in uneven concentrations of molecules (or solute), it attempts to balance those molecules out to reach an equilibrium. This automatic evening out of molecules from high to low concentrations is known as diffusion. For example, if the cell membrane has too many water molecules outside of its cell, then water will move inside the cell in hopes of reaching an equilibrium. This specific type of diffusion is known as osmosis, or the movement of water. In this 2-day lab, a Gummy Bear will serve as a model of a cell and its cell membrane. The bears will be placed in various liquid solutions, forcing molecules to diffuse inside and outside of the bear, depending on the type of solution.

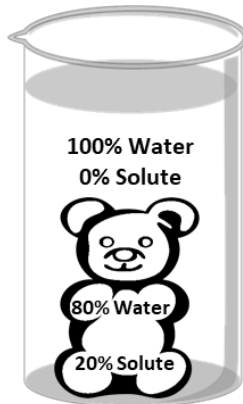


Exploring Tonicity w/ Gummie Bears!

SOLUTION	Mass Before (g)	Mass After (g)	Change in Mass (g)	Observations
Distilled Water				
Saltwater				
Tap Water				

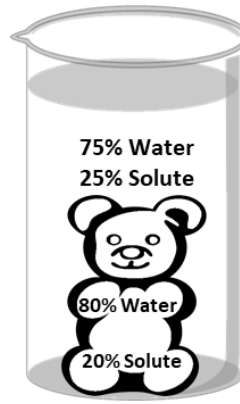
PROCEDURE:

1. Get three gummy bears and record the mass of each
2. Put one in distilled water, saltwater, and tap water
3. Leave Overnight
4. Observe, carefully remove & record their masses



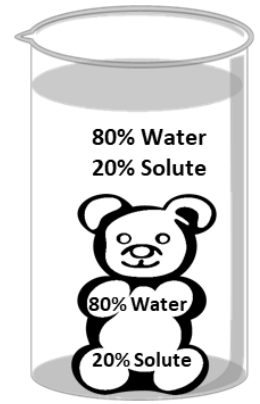
DISTILLED WATER

Tonicity?



SALTWATER

Tonicity?



TAP WATER

Tonicity?

LET'S APPLY

- 1) Determine the tonicities (hypo-, hyper, iso-) of the solutions to the right:
- 2) Draw arrows on the diagram above showing WHERE water would move in each solution.
- 3) Describe what physical result this would have on each bear and explain why (shrinking, swelling, etc)

Dist:	Salt:	Tap
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- 4) Your blood cells contain many different solutes inside. If you needed an IV of fluids. WHY would it be a bad idea to give you distilled water in the IV?