Gummy Bears: Tonicity (Activity)

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Activity: What makes my Gummy Bear swell faster?

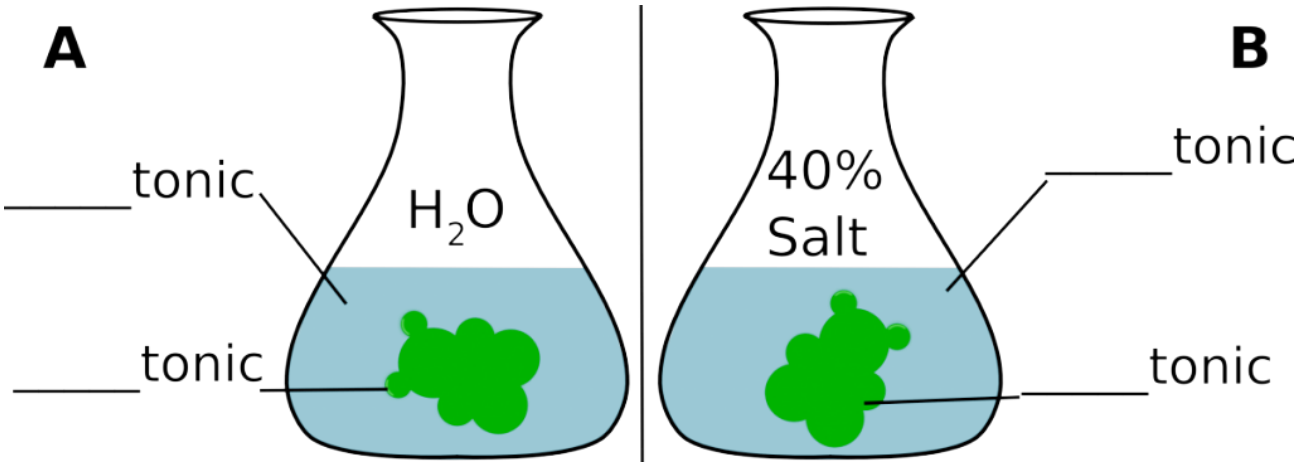
We're all familiar with gelatin (like the Jello brand). Gummy candies are are made of gelatin. Gelatin is a protein that exists as long fibers. When gelatin is dissolved in a liquid and cooled, the gelatin fibers tangle together in a mesh-like network. The space in between the gelatin molecules is filled with the fluid it was dissolved in. Gummy candies are considerably more firm than the gelatin molds we have as desserts because they contain a lot less fluid. Nonetheless, gummy candies are filled with a sugary solution with coloring. Like a cell, a gummy candy placed in solution will be affected by the properties of osmosis when submerged in different solutions.

Stop and think

- Is distilled water hypertonic, hypotonic or isotonic compared to the sugar solution inside a gummy candy?
- Based on your answer, hypothesize if a gummy candy submerged in distilled water or 40% salt solution will swell faster? Label the diagram below with your hypothesis.

Procedures

1. Obtain 2 gummy bears and place them in 2 different small flasks.
2. Drown 1 bear in distilled water and drown the other in 40% salt solution.
3. At the end of the lab session, remove the bears from solution and document the size difference with your mobile phone.



Hypothesized swelling of the bear based on tonicity

Condition	Tonicity Inside Bear Relative to the Solution	Tonicity Outside relative to the Bear	Hypothesis about swelling
A			
B			

Tags: inquiry, visual communication, guided inquiry