

Sugar Content in Commercial Beverages

Determination by Density

Part A

Prepare a series of 3–4 sucrose standards by adding known masses of sucrose to known masses of water. The standards should fall in the range of approximately 1% to 15% sucrose by mass.

Part B

Determine the density of each sucrose standard by accurately pipetting 10.0 mL into a small beaker and weighing. Plot density vs. wt% sucrose and determine the least-squares best line for the plot.

Part C

Determine the density of 10.0 mL aliquots of several of the beverages in the lab. (Note: You must degas the carbonated ones before weighing). Using your plot from Part B, estimate the wt% sucrose in the beverages. Calculate, based on label data, the presumed wt% sucrose in the beverages and compare to your experimentally determined value.

Part D

Ponder the following questions:

What assumptions are used in calculating wt% sucrose based on label data?

What assumptions are made in relating density of the beverages to wt% sucrose?

Are there methods to determine sucrose in beverages that do not require any of these assumptions?