

Determining the concentrations of red dye in sodas essay



The use of red dye #40 is common in various soft drinks today. The labels on these beverages do not specify how much dye we are consuming. We did this experiment to find out which soda uses the most dye.

Using a spectrophotometer, we measured how much light is absorbed by various known concentrations of red dye. After collecting this data, a standard curve was made that correlated the concentration of red dye #40 to its absorbance rate. Our results showed that the sample of strawberry crush had the highest concentration of red dye #40 when compared to grape soda, diet cherry, and big red. After doing this experiment, one knows how much red dye #40 he or she is consuming when drinking these products.

Methods Making a Standard Curve In order to create a standard curve we created 5 dilutions of solutions containing red dye #40.

Concentrations of . 666 ug/mL, 1. 667ug/mL, 3. 333ug/mL, 13.

333ug/mL, and 20. 000 were measured in a spectrophotometer set to a wavelength of 504 nm to find the amount of light they absorbed. Using Microsoft Excel, we entered the absorbance values as the Y coordinates and the concentrations as the X coordinates to make a line of best fit and that was our standard curve.

Measuring Red Dye #40 in Drinks We then measured the absorbance of samples of grape soda, diet cherry, strawberry crush, and big red soda using the same spectrophotometer set at the same wavelength. Our standard curve correlating concentrations to absorbance values only went to an absorbance of 1 nm. So, for three of the four drinks, it was necessary to dilute the substance to get an absorbance rate within our standard curve.

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After the absorbance rates of these drinks were found, we used the standard curve to determine the concentration of red dye #40 in each drink. To do this, we looked to see which concentration matched with each measured absorbance.