CALIFORNIA STATE SCIENCE FAIR
2002 PROJECT SUMMARY

Name(s)
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Project Number
S0517

Project Title
Chromatography: A Separating Process

Abstract

Objectives/Goals
The purpose of this experiment is to analyze the substances within the shells of candies. After determining which FD&C dyes are used and considering the known side effects to certain dyes, it brings up the possible dagers of eating these candies.

Methods/Materials
I. Materials: 6 unknown candies, 1 Bunsen burner, 1 graduated cylilnder, 4-5 beakers, 6 test tubes(for each candy), chromatography papers, scissors, toothpicks, chopsticks, paper clips, household ammonia, and 1 large transparent plastic box
II. Methods:
a. Remove the food colors by melting candy shells in boiling water.
b. The solution was applied to chromatography paper to create the color pattern known as a chromatogram.
c. Measure the distances that the solute and the solvent travel.
d. Find the flow rates for each food dye by dividing the distance solute travels by the distance solvent travels.
e. The variable was the different solutions.
f. My sample size was 6 (6 different candies), and I got 2 trials for each candy.
g. I measured each distance to 0.1 cm.
h. Finally, use the chart that contains known flow rates for FD&C dyes to determine which food dyes are used in candy shells.

Results
Most candies contained FD&C dyes Red #3 and Yellow #5; however, they consisted of a mixture of other dyes as well.

Conclusions/Discussion
There is more than 1 component in most food colors; therefore, most food colors are mixtures. Chromatography is a useful process to separate solutions and determine their identities based on known flow rates.

Summary Statement
This experiment is designed to analyze the substances within the shells of candies by useing chromatography.

Help Received
My chemistry teacher Mrs. Petro devoted class time to help us work on papers and background research, supplied laboratory devices, and gave advices for correctly conducting the experiment. My mom helped my colect essential materials. My younger sister, Lisa, helped guide my in writing endnotes and the