

Analysis of Food Dyes in Beverages

AP Chemistry Advanced Inquiry Lab

Introduction

Assume an investigative role and design a valid procedure using spectroscopy and graphical analysis to determine the concentration of FD&C food dyes in sports drinks. The investigation will develop and test your skills in **preparing accurate serial dilutions, understanding spectroscopic measurements, and extrapolating from graphical data.**

Concepts

- Spectroscopy
- Absorbance vs. transmittance
- Wavelength
- Consumer science
- Beer's law
- Solution concentration

Background

The **color** of a solution is an important tool used by scientists to gain information about the composition of the solution. Color is a physical property that is useful for both **qualitative** and **quantitative** analysis. A *qualitative* method yields information about the nature or type of compound in a sample, where as a *quantitative* method provides numerical data for the amount of a compound in a sample.

Spectroscopy is the study of the interaction of light and matter. A spectrophotometer is an instrument that uses electromagnetic radiation from a selected region of the electromagnetic spectrum, such as **ultraviolet, visible** or **infrared** light, to analyze the **absorption** or **transmission** of radiation by a sample. The basic function of a spectrophotometer is shown in **Figure 1**. The electromagnetic spectrum (see **Figure 2**) is the entire range of possible wavelengths or frequencies of electromagnetic radiation. In this investigation a visible spectrophotometer will be used—it scans the visible region of the electromagnetic spectrum, from **380 nm** to **750 nm**. Typical light sources for visible spectrophotometers include xenon and tungsten lamps.



Figure 1.

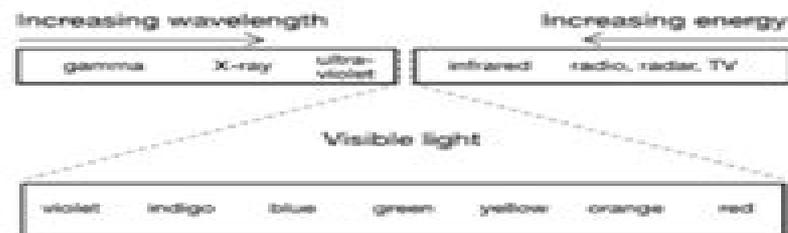


Figure 2.

Food Dye Analysis Lab Report

L. Neal Carmichael, David F. Haines



Food Dye Analysis Lab Report:

Nielsen's Food Analysis Laboratory Manual B. Pam Ismail, S. Suzanne Nielsen, 2024-06-20 This fourth edition laboratory manual was written to accompany Nielsen's Food Analysis Sixth Edition by the same authors New to this fourth edition of the laboratory manual are three new chapters that complement both the textbook chapters and the laboratory exercises The book again contains four introductory chapters that help prepare students for doing food analysis laboratory exercises The 26 laboratory exercises in the manual cover 24 of the 35 chapters in the textbook Many of the laboratory exercises have multiple sections to cover several methods of analysis for a particular food component or characteristic Most of the laboratory exercises include the following background reading assignment objective principle of method chemicals reagents precautions and waste disposal supplies equipment procedure data and calculations questions and references This laboratory manual is ideal for the laboratory portion of undergraduate courses in food analysis

Food and Drug Review United States. Food and Drug Administration, 1928

Biennial Report of the Minnesota State Dairy and Food Commissioner Minnesota. Dairy and Food Department, 1907

Report Kansas State Board of Health, 1911

Proceedings of TEEM 2024 Rafael Molina Carmona, Carlos J. Villagr Arnedo, Patricia Compa Rosique, Francisco Garca Pealvo, Alicia Garca-Holgado, 2025-08-15 This volume comprises of the proceedings of The Twelfth International Conference on Technological Ecosystems for Enhancing Multiculturality TEEM It reflects outstanding advances with a multidisciplinary perspective in the technological ecosystems that support Knowledge Society building and development This book covers broad scope research areas such as Educational Assessment and Orientation Human Computer Interaction eLearning Computers in Education Communication Media and Education Medicine and Education Learning Analytics Engineering Education Robotics in Education Diversity in Education Smart Learning and Gamification and Games for Learning TEEM is divided into fifteen thematic and highly cohesive tracks each of which is oriented to a specific community of interest including researchers professionals and students Additionally the multidisciplinary approach allows cross track interest which enhances the value of the overall volume

Biennial Report Kansas State Board of Health, 1911

Chemistry in the Laboratory James M. Postma, Julian L. Robert, J. Leland Hollenberg, 2004-03-12 This clearly written class tested manual has long given students hands on experience covering all the essential topics in general chemistry Stand alone experiments provide all the background introduction necessary to work with any general chemistry text This revised edition offers new experiments and expanded information on applications to real world situations

Biennial Report Minnesota. Dairy and Food Dept, 1913

Merrill Laboratory Chemistry L. Neal Carmichael, David F. Haines, 1990-10

Processed Foods and the Consumer Vernal S. Packard, 1976

Food and Agricultural Industries Food and Agriculture Organization of the United Nations. Documentation Center, 1970

Annual Report of the Dairy and Food Commissioner of the State of Michigan Michigan. Office of Dairy and Food Commissioner, 1905 Reports for 1898 99 1917 18 include also Laws and decisions

Some Food Products and Food Adulteration C. B. Waldron, Edwin Fremont Ladd, Henry Luke Bolley, Lawrence Root Waldron, Leunis Van Es, 1902 Journal of the Association of Official Analytical Chemists , 1989 **Some Food Products and Food Adulteration** Edwin Fremont Ladd, 1903 *New York Magazine* , 1985-01-07 New York magazine was born in 1968 after a run as an insert of the New York Herald Tribune and quickly made a place for itself as the trusted resource for readers across the country With award winning writing and photography covering everything from politics and food to theater and fashion the magazine s consistent mission has been to reflect back to its audience the energy and excitement of the city itself while celebrating New York as both a place and an idea Chemical Abstracts , 1911 Bulletin North Dakota Agricultural Experiment Station (Fargo), 1899 **Bulletin** , 1901 *Annual Report* Virginia. Dairy and Food Commissioner, 1910

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