

## Module: Seeking the Sugar Solution: Chemistry and Nutrition Curriculum

Topics: Chemistry, scientific method, standards, reagents, nutrition, obesity.

Seattle Children's Research Institute

**SCIENCE  
ADVENTURE  
LAB**

**Overview:** This lesson is designed to take place onboard the Seattle Children's *Science Adventure Lab*. In this module students conduct an experiment to determine how much sugar is in a simulated beverage using a chemical reagent (Benedict's reagent), which produces a visible red precipitate when it reacts with sugar.

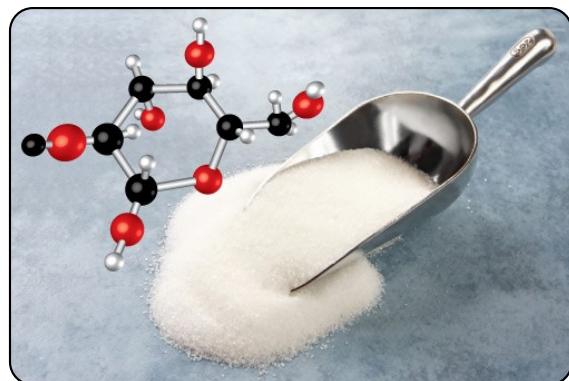
Students determine the amount of sugar in the beverage by comparing the color change to that of standards containing a known concentration of glucose. They also see a visual representation of just how much sugar is in a standard serving of common drinks, reflect on their own sugar consumption, and learn nutrition and health facts that support making healthy decisions about the beverages they consume.

**Grade Levels:** This module is appropriate for students in Grades 4-6.

**Time Required:** Minimum time required to complete this module is 60 minutes.

**Lab Equipment Used:** Transfer pipettes or micropipets, vortex mixers, heat blocks, Benedict's reagent.

**Health Issue:** This module uses a chemistry experiment to encourage students to think about the connection between nutrition and health and to make healthy decisions about what drinks children and teens should consume.



### Objectives:

- To conduct an experiment to measure the relative concentration of sugar in various beverages through comparisons of standards of known glucose concentration.
- To increase awareness about the amount of sugar in common beverages.
- To develop the laboratory skills and knowledge required to conduct an experiment and test hypotheses.
- To expose students to authentic equipment and tools used by scientists.
- To empower students with the confidence that they can be successful in science and encourage them to pursue careers in science and healthcare.

**General Information:** All activities done onboard the *Science Adventure Lab* are for educational purposes only. No personal or health-related information is collected from students and no materials are retained by Seattle Children's.



# Seeking the Sugar Solution Supports the Following Next Generation Science Standards and Common Core State Standards



## Science and Engineering Practices

Asking Questions and Defining Problems  
Planning and Carrying Out Investigations  
Constructing Explanations and Designing Solutions  
Obtaining, Evaluating, and Communicating Information  
Developing and Using Models  
Engaging in Argument from Evidence  
Analyzing and Interpreting Data  
Using Mathematics and Computational Thinking

## Disciplinary Core Ideas

Definitions of Energy  
Conservation of Energy and Energy Transfer  
Energy in Chemical Processes and Everyday Life  
Developing Possible Solutions  
Optimizing the Design Solution  
Information Technologies and Instrumentation  
Structure and Properties of Matter  
Chemical Reactions

## Crosscutting Concepts

Cause and Effect  
Energy and Matter  
Science is a Human Endeavor  
Patterns  
Scale, Proportion, and Quantity  
Influence of Science, Engineering, and Technology on Society and the Natural World



## Mathematics

Measurement and Data  
Operations and Algebraic Thinking  
Number and Operations in Base Ten

## Language and Literacy

Comprehension and Collaboration  
Presentation of Knowledge and Ideas  
Research to Build and Present Knowledge

For detailed explanations of the standards, please visit:

[Next Generation Science Standards] - <http://www.nextgenscience.org/next-generation-science-standards>

[Common Core State Standards] - <http://www.k12.wa.us/CoreStandards/Resources.aspx>

