



# You Are What You Eat!

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	Time	Grade Level	Content Area [s]	
	90 minutes	Grades 3–5	Life Science	<b>Materials</b> <ul style="list-style-type: none"><li>• Paper towels</li><li>• White paper</li><li>• Iodine solution [and MSDS]</li><li>• Benedict's solution [and MSDS]</li><li>• Matches</li><li>• Candle</li><li>• Dissecting needle</li><li>• <i>Food and Nutrition</i> by Tara Koellhoffer</li></ul> <p><i>For each group of 2–3 students:</i></p> <ul style="list-style-type: none"><li>• 1 teaspoon cooked hamburger</li><li>• 1 cracker</li><li>• 1 half-inch slice of a potato, apple, or pear</li><li>• 1–2 potato chips</li><li>• One 1 x 1 square in. of cheese</li></ul>
<b>Objective</b> <p>Students will identify through testing which foods contain carbohydrates, fats, sugars, or proteins. These activities will help students connect the science of food makeup to the abundant variety available to them in their daily choices.</p>				
<b>Activity Outline</b> <ol style="list-style-type: none"><li>1 Have students select one of the short articles from <i>Food and Nutrition</i> and present brief explanations of the main topic of the article to the class. The articles share a common theme: selecting healthy foods. As students provide overviews of the articles, the idea that students should eat a variety of foods including grains, proteins, carbohydrates, and oils—all in moderation—becomes evident.</li><li>2 Before starting the tests, have students (individually or as a class) make predictions about the category of each food from the materials list based on their readings and presentations from the book. Additionally, review Material Safety Data Sheets (MSDS), review proper safety, and model the procedures.</li></ol>				

- 3 Distribute the food samples to each group and have them put each of the foods on a paper towel. Students should test each food sample for each category (fat, carbohydrate). To test for starch-type (complex) carbohydrates, students should add one drop of iodine to each food sample. If there is a color change to black, a starch is present in the food. If the drop remains a reddish brown (the original color of the iodine), no starch is present. To test for sugar-type (simple) carbohydrates, students should add a single drop of Benedict's solution to the sample (in a different spot) and once again watch for a color change. If there is a dark blue-green color change, sugars are present in the food. If the color is light blue-green, no sugar is present.
- 4 Using new samples of food, students should now test for fats by placing the food samples on a white sheet of paper. Using a sheet of paper on top of the samples, have them smash or mush the food samples on the paper.
- 5 Remove all of the food samples and inspect the paper for a translucent mark (the same type of mark that would be left from greasy fingers on a paper). If a translucent mark is evident, there is fat in the food. If the paper is simply wet, there is no fat present.
- 6 To test for proteins, conduct the following demonstration for the class. Collect a small amount of each food item, one at a time, on the dissecting needle, and place it over the candle flame. If the food sample begins to burn, remove it from the flame, and blow it out. Using a wafting motion with your hand, ask students to determine whether there is a rotten egg smell (sulfur) present. If so, the sample contains proteins that are being broken down by the flame. If no odor is present, proteins are not present in the food. Never place smoking materials directly under your or your students' noses.
- 7 Upon completion of the activities, students need to wash off tabletops and hands with soap and water. Be sure to properly dispose of the tested food items.

## Goals

**3-5:** These activities will help students connect the science of food makeup to the abundant variety available to them in their daily choices.

## Post Assessment

Refer back to the predictions made by the students and see how accurate they were. Were there any surprises?



## Safety

Students must wear non-latex gloves, aprons, and indirectly vented chemical-splash goggles for the following activities. Nothing in this experiment should be put in or near the mouth—food in science class is for investigation only. The solutions and dissecting needles can be obtained from your district's high school biology class. During the demonstration involving fire, you must have an A-B-C type fire extinguisher in the room.

Before students begin, share information from the MSDS, review proper safety, and model the procedure.