

What is in the food you eat?

Do you ever read food labels or the Nutrition Facts labels on boxes of the cereal you eat for breakfast? These labels list the names of all the ingredients, some of which are probably familiar while others may be unfamiliar. Many of these ingredients include the nutrients that supply the matter that is essential for your body to function naturally. The nutrients in food supply both the matter and the energy that your body requires for performance. How do food scientists know what nutrients are present in particular types of food?

Instructions

To begin developing your own explanation for what is in the food you eat, you will set up a series of nutrient tests. Your team will test foods for five different nutrients: proteins, starch, sugar (sucrose and fructose), vitamin C, fats and oils. You will use different indicators in the course of your tests, and you will use positive and negative controls to check your results.

Create a table for recording your data. You should include columns for your predictions about the nutrients each food contains, for the actual test results, and for what nutrients each food contains. Make sure you have space for all your controls (also make sure you have positive and negative controls!) and for food from 4 other people.

Enter your predictions about which of the nutrients you will find in each of the foods available to test. Record your predictions in your table. Then discuss them with your team members.

Complete your tests as shown below. Record your observations about the result for each test.

When you are done, **wash your hands thoroughly with soap and water**. Share your data with everyone in your group and at least 4 other people in the class who had different foods (write their names and what food they have!)

Write this up using the Lab Report Form (Use the word-doc on the website). In your discussion, include answers to the following questions:

1. What were some discrepancies between your predictions and results and how have they changed your thinking on nutrients?
2. Which, if any, of the foods contained all of the nutrients for which you tested? What does this mean for eating a balanced diet?
3. What is an indicator?

Due Tuesday Feb. 21 for peer review (share or email pdf to a partner-cc me). Read through your partner's lab report form and send comments/editing suggestions by Thursday Feb. 23. Final version with your partner's notes and comments on the changes you made or chose not to make due Monday, Feb. 27.

Nutrient	Test
Fats and oils	<p>Rub a drop of ground up food on a piece of brown paper. Hold the paper up to a light after the water in the sample has evaporated. Fats and oils make a translucent greasy spot on paper. No translucent spot appears in the absence of fats and oils.</p> <p>**Note: If the food contains only a small amount of fats or oils, they may not be detected by this method. If you do not detect fats or oils:</p> <ol style="list-style-type: none"> 1. Place the food in 10mL of isopropyl alcohol (a fat-and-oil solvent). 2. Allow the food to dissolve for 5 min 3. Place 10 drops of the mixture on brown paper and let it dry 5-10 min 4. Check for a translucent spot
Protein	<p>Place 5 mL of ground-up food in a test tube. Add 10 drops of biuret solution, an indicator for protein. It turns pink or purple in the presence of protein. No color change occurs in the absence of color.</p> <p>**Warning: Biuret solution is a <i>strong irritant</i> and may damage clothing. Avoid skin and eye contact. Do not ingest. If contact occurs, call the teacher immediately. Flush the affected area with water for 15 minutes. If contact occurs with the mouth, rinse the mouth with water.</p>
Starch	<p>Add 5 drops of Lugol's iodine solution to a 5-mL sample of ground-up food. Lugol's iodine solution turns bluish black in the presence of starch. No color change occurs in the absence of starch.</p>
Sugar	<p>Add 3 mL of Benedict's solution to a 5-mL sample of ground up food. Place the test tube in a beaker of boiling water. Heat for 5 minutes. If the test tube contains glucose, fructose, or both sugars, the Benedict's solution will react and turn orange or brick red. If the test tube contains either sucrose or no sugar, no reaction will take place. The solution will remain pale blue.</p> <p>**Note: Benedict's solution is an irritant. Avoid skin and eye contact. Do not ingest. If contact occurs, call the teacher immediately. Flush the affected area with water for 15 minutes. If contact occurs with the mouth, rinse the mouth with water.</p> <p>**Note: Always hold a hot test tube in such a way that the opening of the tube is pointed away from your face and anyone else's. Contact with boiling water will cause second-degree burns. Do not touch the beaker or allow boiling water to touch your skin. If a burn occurs, <i>immediately</i> place the burned area under cold running water, even if it will further wet the clothing. <i>Then</i> call the teacher.</p>
Vitamin C	<p>Add 8 drops of indophenol solution to a 5-mL sample of ground-up food. Blue indophenol becomes colorless in the presence of vitamin C. Disregard the intermediate pink color that may occur as you stir. In the absence of vitamin C, indophenol remains blue.</p> <p>**Note: Indophenol solution is an <i>irritant</i>. Avoid skin and eye contact; do not ingest. If contact occurs, call the teacher immediately. Flush affected area with water for 15 minutes. If contact occurs with the mouth, rinse the mouth with water.</p>