The Skinny on Low Fat Cookies

Companies that make low-fat cookies usually try to make them taste like the regular cookies. But to make low-fat cookies, they need to change the regular recipe. Try the following activity and see if you can tell the difference between regular and low-fat cookies by their taste and by their feel.

Materials:

- Chocolate sandwich cookie with white cream in the middle
- Low-fat chocolate sandwich cookie with white cream in the middle (same variety as above but low-fat)*
- 2 Napkins
- Plastic spoons or Popsicle sticks
- *Do not use cookies with the fat substitute "Olestra".

Procedures:

1. Place two napkins on your work surface. Label one napkin Low-fat and the other regular. Place each kind of cookie on its labeled napkin.

2. Carefully pull each cookie apart as shown. Use a plastic spoon or Popsicle stick to scrape the white cream completely off one of the wafers from each cookie.

3. Take a taste of the regular cookie wafer with no cream. Chew it and move it around in your mouth so you get a good sense of the taste.
4. Now taste the low-fat cookie wafer with no cream in the same way. Can you tell the difference? Does one seem sweeter, more bitter, more chocolate?
5. Now taste just the cream from the regular cookie. Move it around in your mouth to see how it feels and tastes. Now try the same thing with just the cream from the low-fat cookie. Do they feel different or taste different? In what way?

6. Now try the regular wafer with cream and then the low-fat wafer with cream. What do you think causes the difference in taste between regular and low-fat cookies? Is it the wafer, the cream, or a combination?

Think about this …

In order to make foods low-fat or low-calorie, the normal recipe, of course, needs to change. To lower the fat, applesauce can be used instead of oil in some cake recipes. In other recipes, a plum mixture can be used instead of eggs. There are also new chemicals that can be used as fat substitutes that do not act like regular fat when eaten. To reduce calories from sugar, several different chemicals have been invented that taste sweet but have very few calories.

Where's the Chemistry?

The look and feel of the white cream was different in the low-fat cookie because fat has a big effect on the smoothness or texture of food. The low-fat cookie tastes different because they have less fat but also because they have more sugar.

The American Chemical Society develops materials for elementary school age children to spark their interest in science and teach developmentally appropriate chemistry concepts. The *Activities for Children* collection includes hands-on activities, articles, puzzles, and games on topics related to children's everyday experiences.

The collection can be used to supplement the science curriculum, celebrate National Chemistry Week, develop Chemists Celebrate Earth Day events, invite children to give science a try at a large event, or to explore just for fun at home.

Find more activities, articles, puzzles and games at www.acs.org/kids.

Safety Tips

This activity is intended for elementary school children under the direct supervision of an adult. The American Chemical Society cannot be responsible for any accidents or injuries that may result from conducting the activities without proper supervision, from not specifically following directions, or from ignoring the cautions contained in the text.

Always:

- Work with an adult.
- Read and follow all directions for the activity.
- Read all warning labels on all materials being used.
- Wear eye protection.
- Follow safety warnings or precautions, such as wearing gloves or tying back long hair.
- Use all materials carefully, following the directions given.
- Be sure to clean up and dispose of materials properly when you are finished with an activity.
- Wash your hands well after every activity.

Never eat or drink while conducting an experiment, and be careful to keep all of the materials used away from your mouth, nose, and eyes!

Never experiment on your own!

For more detailed information on safety go to www.acs.org/education and click on "Safety Guidelines".