



Science Experiment: Why is Nesquik Quick?

Project: Foods, Plant Science

Materials:

1. Gather these materials: 2 empty plastic cups; water; 1/2 tsp baking cocoa; 1/2 tsp NesQuik™.
2. Turn over the empty plastic cups.
3. Place one large drop of water on the bottom of one cup.
4. Sprinkle a small amount of cocoa on the drop.
5. Observe what happens. How would you describe this to someone else?
6. Now place one large drop on the second cup.
7. Sprinkle a small amount of NesQuik™ on the drop.
8. Observe what happens. How would you describe this to someone else? What is the difference between how the cocoa looked and how the NesQuik™ looked?
9. Find “lecithin” on the ingredient label of the NesQuik™ container.

What's the science?

Soy lecithin is a surfactant. Made from soy oil, soy lecithin causes molecules to separate and breaks surface tension. The lecithin in NesQuik™ causes the water drop to spread out and the chocolate to go into the drop. The cocoa does not contain soy lecithin so it “sits” on the top of the water drop. It does not break the surface tension or cause the water molecules to separate. In order to use cocoa to make a drink, you have to stir it a long time or use heat to “break up” the cohesiveness of the water molecules in the milk. Follow the directions on the label and make yourself a snack drink with NesQuik™.

More Challenges

1. Sticking Together: Demonstrate the cohesiveness of water with this experiment!
2. Gather these materials: 2 pieces of aluminum foil, water
3. Rub two flat pieces of foil together and then let them go. Do they stick together?
4. Rub each piece with water on one side.
5. Place the two wet sides together, hold them up and let them go. Do they stick together?

What's the science?

Two pieces of foil will not stick together when they are dry. But when you add water to each of pieces and then rub the wet sides together, they stick! Water molecules are cohesive. They stick together. Can you think of other ways to demonstrate cohesion?

Glossary

lecithin—a fatty substance which occurs in some animal and plant tissues

surface tension—the cohesive forces among liquid molecules that form a surface “film” which allows it to resist an external force

surfactant—substances that adjust the surface properties, and surface tension, of the liquid or solid to which it is applied. The term surfactant is made up from letters of the words ‘surface active agent’.

Emulsifiers, detergents, foam inhibitors and wetting agents are all examples of surfactants.

Process Questions:

Share

Describe what you did to prove why NesQuik™ is quick using these science words: cohesive, surface tension, surfactant, quick.

Reflect •••

Check the labels on your food. What questions do you have? Where can you get the answers? Where do you see chemistry being used?

Generalize •••

Scientists do experiments very carefully. Why is it especially important for food technologists to be careful?

Apply •••

Consider food technology as a career. How do food technologists make food healthier, easier to get, and more tasty? Where can you get the answers to these questions?

Adapted from: Ohio 4-H Food Science and Technology Lesson series Why is Nesquick Quick?