See Vitamin C

Which foods have vitamin C?

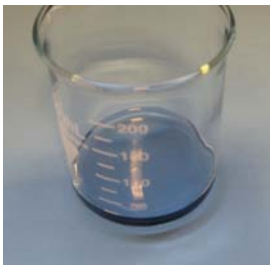
Activity Guide

Try This!

1. Put two tablespoons of the blue indicator solution into a small glass container.
2. Using a pipette, add a drop of vitamin C solution to the indicator solution. Swirl the solution. It should turn clear. If the blue color doesn't disappear right away, add another drop of vitamin C and swirl again.

What's Going On?

The indicator solution turns from blue to clear when you add a drop or two of vitamin C. This positive test shows you how the indicator solution works: if the blue disappears, your liquid contains vitamin C.



This procedure is called a *titration.* When the color of the indicator solution changes, that's the *end point* of the titration.

Now Try This!

1. Put two tablespoons of the blue indicator solution into a small glass container.
2. Using the pipette, add a drop of lemon juice to the indicator solution. Swirl the solution. Keep adding drops and swirling the solution. Does the blue color disappear?
3. Now repeat steps 1 and 2 using vinegar. Does the blue color disappear?
4. Optional: Test fruit juices and other liquids to find out if they contain vitamin C. You can also try heating these liquids, to see if you get different results.

What's Going On?

Lemon juice contains vitamin C, so the indicator solution turns from blue to clear. You probably found that it took more than one drop of lemon juice to turn the indicator clear. Lemon juice doesn't contain as much vitamin C as the solution you made with the tablet, so it takes more drops of lemon juice to reach the end point of the titration.

The blue indicator doesn't turn clear when you add vinegar. That's because the vinegar doesn't contain vitamin C. This test shows that it's the vitamin C and not the acidity of the lemon juice that makes the indicator turn clear. (Vinegar and lemon juice are both acids.)

If you keep testing, you'll find that Vitamin C is present in citrus juices, cranberry juice, potatoes, and other foods. Heat breaks down vitamin C, so cooked foods contain less vitamin C than raw foods.

Vitamin C is an important nutrient and antioxidant. It's important in many processes. For example, it helps our bodies to create the collagen in our cell walls and also prevents scurvy, a disease that causes abnormalities in bones and teeth.

Learning Objective

- An indicator solution of cornstarch and iodine can test whether vitamin C is present in different foods.

Materials

- Indicator solution *(Requires advance preparation; see below.)*
- Vitamin C solution *(Requires advance preparation; see below.)*
- Lemon juice
- Vinegar
- Water
- Measuring cup
- Measuring spoons
- Glass jars
- Thin-stem pipette or medicine dropper
- Microwave oven
- Fruit juices, milk, soda pop, broth and other liquids (optional)

SAFETY: Iodine is toxic. Do not ingest it.

(It will also stain your skin and clothes, although this is not harmful.)

Advance preparation

Indicator solution

- Cornstarch
- Iodine

1. Measure ½ teaspoon cornstarch into a large glass-measuring cup.
2. Add one-cup water and stir.
3. Heat in the microwave for 30 seconds.
4. Stir. If the cornstarch hasn't completely dissolved and the mixture is still cloudy, heat for another 20 seconds.
5. Measure one cup of water into a clean glass jar. Add one teaspoon of the cornstarch solution and four drops of iodine to the plain water. It will turn blue. This will be your indicator solution.

Vitamin C solution

- Vitamin C tablet (250 milligram)

1. Measure one-cup water into a jar.
2. Dissolve the vitamin C tablet in the water.

Credits
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