

Grade Level: 3 to 5 with teacher  
or parent assistance

## Fun with Food: Cabbage Acid/Base Indicator



Hey kids! Penny, one of our favorite Super Crew members, wants to teach you about how you can use the juice from red or purple cabbage to test whether liquids are an acid or a base.

**What You Will Need:** about half of a head of red or purple cabbage, a metal grater, a pot big enough to fit all of the grated cabbage, a strainer, another large pot or bowl, an eye dropper, a few test liquids—such as vinegar, baking soda (2 Tbsp in 1 cup water), lemon juice (2 Tbsp in 1 cup water), laundry detergent (2 Tbsp in 1 cup water), or clear soda—and as many small glasses as test liquids

### Instructions:

1. Grate all of your cabbage and place it in your pot.
2. Fill the pot with enough water to cover the grated cabbage.
3. Boil your cabbage for about 20-30 minutes. The water will turn a dark purple color.
4. Pour the cabbage into your strainer, but have a large bowl or a pot underneath the strainer so that you can catch all of the liquid.
5. Place each of your test liquids into separate small glasses.
6. Next, using the dropper, add a few drops of the purple liquid from your cabbage to each of the small glasses with test liquids and watch what color the liquid turns. The test liquids that are acids will turn pink, while those test liquids that are bases will turn green! If the test liquid is neither an acid nor a base, the liquid will stay a purplish color.

### Why Did That Happen?

Red and purple cabbage get their color from pigments called anthocyanins. When anthocyanins come into contact with an acid or a base, their chemical structure changes, causing a color change.

Can you tell which test liquids are acids and which are bases?



[www.superkidsnutrition.com](http://www.superkidsnutrition.com)

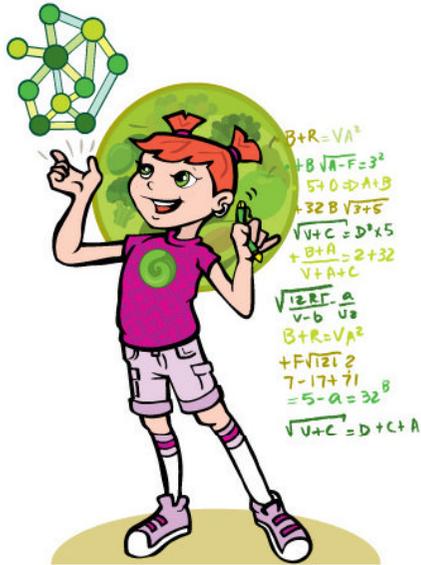
“saving the world one healthy food at a time™”

Sources: <http://www.madsci.org/experiments/archive/859332497.Ch.html>  
<http://www.middleschoolscience.com/cabbage.htm>

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## Fun with Food: Homemade Jam

Hey kids! Jessie, one of our favorite Super Crew members, has the power to change the form of foods. Can you help her make homemade jam from your favorite fruit?



**What you will need:** an adult to help, about 5-6 cups of your favorite fresh berries, kitchen supplies (bowl, large pot, funnel, large spoon), 1 package of pectin, 5 cups of granulated sugar, clean jars with lids to put the jam in

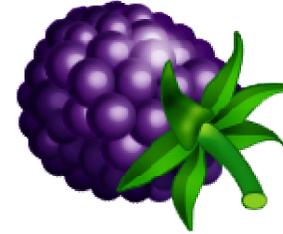
### Instructions:

1. Wash the berries to remove any dirt, then gently shake them to remove any water.
2. Mash the berries to make a thick pulp.
3. Place 4 cups of the berry pulp in your large pot.
4. Add one package of pectin to the pulp, then place the pot on the stove and turn the heat to medium-high.
5. Bring the pulp and pectin to a boil, stirring often so that it does not burn.
6. Once the mixture is at a rolling boil (that will not go away with stirring), add 5 cups of granulated sugar all at once.
7. Bring the mixture back to a boil for 2 minutes.
8. Remove the pot from the heat and pour the hot mixture into your jars, filling them to about  $\frac{1}{4}$  inch from the top.

### Jessie's Special Tips:

- Try picking your own fresh berries to use. It will be a fun activity to do with your family or friends, and the freshest berries always taste the best!
- Pectin is a natural product that is made from apples. You should be able to find it at grocery stores.
- Make sure to label your jars with the date, so that if you make more on a different day, you can use the oldest jam first!
- If you plan to keep the jam for awhile, seal your jars with paraffin, then cover with the jar lid.

# What's So Great About...



## **A**NTHOCYANINS?

*They're more than just an acid-base indicator!*

- Anthocyanins don't just add a splash of color to your plate; they also may help protect against cancer
- Anthocyanins may help prevent Urinary Tract Infections (UTIs)
- Anthocyanins are a good way to stock up on antioxidants, which may help your memory

## **B**ERRIES?

*Berry jam is not just yummy. Check out these super facts about what berries can do in your body.*

- Berries are packed with Vitamin C to keep you from getting sick
- Berries are full of antioxidants that can help protect against cancer and heart disease

## **C**ABBAGE?

*Get the juice on what makes cabbage a colorful plus to your diet.*

- Cabbage and other cruciferous (cr-ooH-SIF-er-us) veggies can help protect against cancer
- Eating cabbage is one way to get your calcium and iron for the day
- Cabbage is loaded with fiber and Vitamin C—so it keeps you regular and guards you against sniffles