

Sourdough Science!

Want to make a loaf of bread from scratch? Nowadays, it's pretty easy. Just go the store to pick up some flour, and get some yeast in those teeny, easy to use packets!

But if you lived in colonial times, life wouldn't have been this convenient. To make flour, for example, you would have needed to grow your own grains, harvest and grind them. And yeast, which came in dried blocks, was often hard to find and not always of good quality. That's why colonial women turned to an ancient way to make bread rise: they made a yeast mixture called "sourdough," which they could use again and again.

This Thanksgiving, engage your American History student with this sourdough baking project, which straddles social studies with science. This bread is pretty delicious, too, especially when it's warm and covered with honey and butter.

What You Need:

- 1 cup flour
- 1 cup room temperature water
- 1 tablespoon sugar
- 1 package active dry yeast
- 1 cup sourdough starter
- 1-1/2 cups warm water (about 85°, young scientists, or you will kill the yeast!)
- 6-1/4 cups all-purpose flour (for a more "historical" mix, use some whole grain flour here)
- 2 teaspoons salt
- 1 tablespoon sugar, honey or molasses (to be faithful to history, go for the honey or molasses!)
- ½ teaspoon baking soda
- optional: 1 egg, 2 tablespoons butter



What You Do:

1. First, remind your young mathematician that sourdough is one of those mixtures that offers great practice with *proportion*: for every *one* cup of flour, you can count on needing an equal amount of water, and *one* tablespoon of sugar.
2. Mix the three ingredients together with the yeast in a wide mouth crock or big glass jar with plenty of space for the mixture to "grow."
3. Cover your bowl with a dish towel (not plastic wrap, which cuts the air supply), and set it aside in a warm place for about 3 days.
4. Watch it change, and stir it down once a day with a wooden spoon. (Don't use metal, which may react with the mixture!)
5. What's going on? This is the science part. Dry yeast looks like dust, but actually it's a one-celled organism that needs nutrients to survive. Give it some water and a little sugar, and it springs to life!
6. Over three days, the yeast will grow and multiply, and give off carbon dioxide gas bubbles as a waste product. Watch your mixture bubble, and smell its distinctive odor on each day. As the sugar is being eaten completely, get ready for a "sour" smell. You can keep extra sourdough in the fridge for a long time, as long as you keep using parts of it now and then, and replenish equal parts of flour and water and a proportionate amount of sugar every few days, and stir thoroughly. You don't need to add more yeast—it's already growing. You're just feeding it!
7. Combine the warm water and sourdough starter with 4 cups of flour. Add the salt, sugar, and baking powder, and stir thoroughly. Cover your bowl with a damp dish towel, and allow it to sit overnight.
8. The next morning, stir the mix again in case there has been any crust, and then add 1-1/2 more cups of flour, as well as eggs and butter if you like.
9. Spread the remaining ¾ cup of flour on a clean tabletop, and dump the bread dough onto it. Knead it thoroughly (kids usually love this part, once they get over the first squishy surprise), and shape it into 2 loaves.
10. Place the loaves into two greased bread pans, cover them with a fresh damp towel, and leave them in a warm place for about 2 more hours. They should double, and you'll notice that they'll have a distinctive yeasty smell when you're up close!
11. Once the loaves have risen in this way, bake them in a preheated 375° oven until golden brown, about 50 to 55 minutes.

Did You Know?

Cool History: Some historians think that sourdough starter may have come to the New World with Columbus! Certainly, it took hold among American settlers. In the Gold Rush, prospectors sometimes carried sourdough pots on their backs, so they could make bread where they camped.

Cool Science: Glucose is the sugar molecule that yeast loves—and needs for survival! Honey, sugar, and molasses all break down into glucose molecules that feed yeast and help it ferment. Want to experiment some more? Try feeding your yeast with corn syrup or maple syrup. Which one works fastest?

