THE SCIENCE OF SOURDOUGH

Harness the power of fermentation to make your own sourdough starter

What you'll need:

- 1 transparent container with a lid, such as a glass jar
- Kitchen scale (preferred) or measuring spoons (if you don't have a scale)
- 30 g flour* (or 3 tbsp and ½ tsp)
- 30 g room temperature water (or 2 tbsp)
- Optional: dried fruit (e.g., raisins), dried seeds and grains (e.g., bulgar wheat), dried pulses (e.g., lentils) or beer or wine sediment to help create an active culture

**Although whole grain is preferred, you can use any kind of flour for your sourdough starter—all-purpose, spelt, corn, bean or even dried bread crumbs.*

Did you know?

Humans have been using fermentation to produce food and beverages since the Neolithic Age, about 12,000 years ago.

Activity setup:

1. Pour the flour and water into your transparent container, and mix well. Make sure the flour is wetted down. Record the starting mass of flour and the date.

   Note: If you use refined flour like all-purpose or pastry, obtaining an active culture may take longer than if you use whole grain flour. To help the process along, soak dried fruit, seeds, grains or pulses—sources of micro-organisms—in the water for 10-30 minutes. Remove the fruit, seeds, grains or pulses and pour the remaining water into the container along with the flour.

2. Place your container in warm spot like a sunny window, on top of a water heater or in the oven with the light on, to encourage yeast growth. Yeast grows best at around 30°C.

3. Maintain your starter by feeding it every 24 hours. Remove part of the culture—the discard—to bring it down to the original flour mass (30 g) or volume (3 tbsp and ½ tsp). Then add an equal amount of fresh flour and water—ideally 30 g (or volume equivalent) of each—stirring well. If possible, use refined flour, like all-purpose, to feed your starter to avoid adding more microorganisms to the culture.

   Mark the level of the starter on the container after each feeding, using tape, a dry erase marker or rubber band.

4. When bubbles appear on the culture's surface (in 3-4 days), start feeding the starter every 12 hours to obtain an active starter culture—one that doubles in volume within 8 hours of feeding. On average, it takes 7 days to get an active culture.

   If, after 7 days, the culture is not doubling in volume within 8 hours of feeding, try introducing additional micro-organisms such as whole grain flour and/or rinse water from dried fruit, seeds, grains or pulses.

5. Once you have an active starter culture, you can store it in the fridge. Once a week, stir it well, remove a portion of the culture and feed it as outlined in step 3. With proper care, your culture can be maintained indefinitely.

Pro tips:

- Need more starter culture? Increase its mass by not removing any culture before feeding.
- Ready to bake? Remove starter culture from the fridge and let it come to room temperature. Feed it with fresh flour and water 4-6 hours before using.
- Be sure to keep some starter culture aside so that you can continue using it. Some families pass their starter culture down from one generation to the next!

How does it work?

Microorganisms, like yeasts and bacteria, are all around us, particularly on food sources such as plants, which use light energy from the sun to convert water and carbon dioxide into carbohydrates, including sugars and starches. Some microorganisms are able to extract energy from carbohydrates through a biochemical process called **fermentation**. During fermentation, yeasts generate carbon dioxide (CO_2) and ethanol, a simple alcohol. The carbon dioxide gas generated by yeast leavens baked goods by creating bubbles within the dough or batter, resulting in a light and airy final baked product.

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