

5 fun facts about The Science of Baking

Have you ever wondered what the ingredients in your favorite recipes do? You might not think of cooks as scientists. But you become a scientist when you mix, match and mess with recipe ingredients. Learning about the ingredients you use will help you be a better baker. Here are a few facts and tips for your kitchen.

1. Yeast

Yeast is a tiny fungus. Yeast eats sugar. As it does it gives off carbon dioxide (a gas). This gas fills the dough with bubbles, causing it to rise. Folding, turning, and rolling dough is called kneading. Kneading helps develop the gluten – a protein found in wheat. Gluten strengthens the dough and supports the gas bubbles. **TIP:** If you knead the bread too much or too little, it will become heavy and dense. Kneading for 10 to 15 minutes by hand is usually about right.



2. Flour

Have you ever wondered what the difference is between types of flour? The answer is that each has a different amount of protein. Depending on what you want to bake, you may want a flour with more or less protein. All-purpose is the most common flour, with 8 to 11 percent protein. Bread flour is 12 to 14 percent protein, which gives it greater gluten strength. It is the best choice for yeast products. Pastry flour (9-10 percent protein) doesn't work well in yeast breads. Cake flour has the lowest protein (6-8 percent protein). **TIP:** Choose the right flour for baking projects. Try substituting whole wheat flour for half of the white flour.

3. Sugar

Remember that yeast eats sugar? It is important to have the right amount of food for the yeast. This way, yeast will produce the gas that makes bread rise. **TIP:** Be careful not to add more sugar than a recipe calls for. Too much sugar can have the opposite effect. The yeast will make too much gas. This breaks the gluten bubbles and makes the bread fall flat.

4. Salt

Salt does a lot more than just add flavor to breads. Salt protects bread from getting dry and stale too quickly. It does this by absorbing water and holding it in. Salt helps to control the growth of the yeast. It also strengthens the gluten (protein) in the dough. **TIP:** If you eliminate salt from a bread recipe, reduce the time that the dough rises, so that large air pockets do not have time to form.

5. Fats (butter, margarine, shortening or oil)

Fat helps make dough softer and lighter. Fats melt during baking, which increases the size of the baked product. Some recipes say to cream the fat with the sugar. This step traps air that helps the baked good rise during baking. **TIP:** Except for pie crust or pastry dough, use fat at room temperature for baking. A heated fat does not incorporate air well and a cold fat does not spread evenly with the other ingredients.