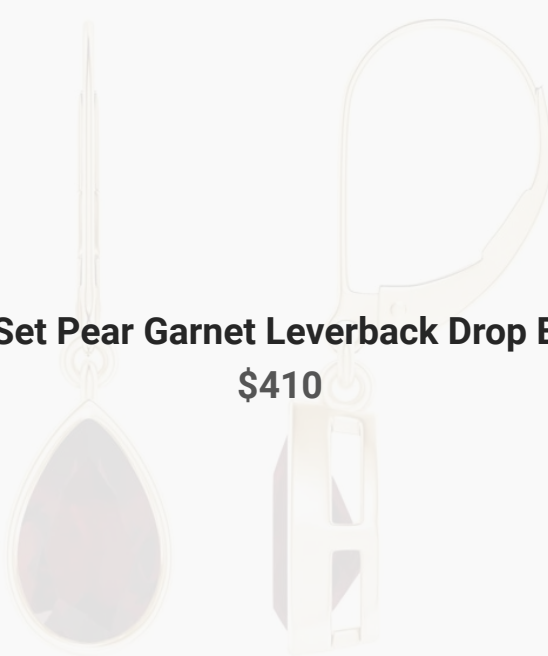


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## Sourdough

From Academic Kids

**Sourdough** is a symbiotic culture of **lactobacilli** and **yeasts** used to **leaven bread**. Sourdough bread has a very distinctive taste, due mainly to the **lactic acid** produced by the lactobacilli.

Sourdough bread is made by using a small amount of so-called starter dough, which has the yeast culture, and mixed in with new flour and water. Part of this resulting dough is then saved to use as the starter next time. It is not uncommon to have a baker's starter dough that has had years of history, from many hundreds of previous batches.



## Biology and chemistry of Sourdough

A sourdough starter is a stable symbiotic culture of **yeast** and **lactobacteria**, typically *Candida milleri* for the yeast and *Lactobacillus sanfrancisco* for the lactobacteria, growing in a paste of **flour** and **water**.

A flour water mixture will tend to develop this symbiotic culture after repeated feedings. Fresh, organic, and wholemeal flour raises the probability of initiating this symbiosis. The flour water mixture also can be inoculated from a previously kept culture. The culture is stable due to its ability to prevent colonization by other yeasts and **bacteria** as a result of its **acidity** and other anti-bacterial agents. As a result, many sourdough bread varieties tend to be relatively resistant to spoilage and mold.

The yeast and bacteria in the culture will cause a **wheat** based dough, whose **gluten** has been developed sufficiently to retain gas, to leaven or rise. In a typical wheat flour dough the yeast and lactobacteria contribute equally to the rising. A yeast cell produces far more of the **carbon dioxide** leavening gas than a lactobacterium, but there are many more lactobacteria, a ratio of 100 to 1 being typical.

## History of sourdough

Sourdough has been used since ancient times with a variety of grains.

Bread made from 100% **rye** flour, which is very popular in the northern half of **Europe**, is always leavened with sourdough. Baker's yeast is not useful as a **leavening agent** for rye bread, as rye does not contain enough **gluten** - sourdough however, in lowering the **pH** level of the dough, causes the **starch** to partially gelatinize, enabling it to retain gas bubbles.

Sourdough was the main bread made in **Northern California** during the **California Gold Rush**, and it remains a major part of the culture of **San Francisco**. The bread became so common that *sourdough* became a general nickname for the gold prospecters. The nickname remains in *Sourdough Sam*, the **mascot** of the **San Francisco 49ers**.

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