Leaveners
-Or-
What breathes life into "clay"

By: Lord Simon Hondy OW, CDB

What makes bread so fascinating? Is it the smell, the taste, the look, the feel, or the magic that seems to happen when, as dough, it comes alive?

For me, it is that time that the dough becomes a living breathing thing. Now don't get me wrong, I do greatly enjoy the other aspects mentioned above. With this addition of "life" it turns a simple flour tortilla into a dinner roll.

A rare example is a loaf of yeasted bread made of finely-ground barley and wheat flours discovered in the late Neolithic levels at Lake Bienne in Switzerland. [1]

This "life" that exists for the duration of the bread making process is called a Leavening Agent. We are going to concern ourselves with the biological agents, not the chemical kind, such as baking soda, and baking powder.

Leaven \Leav"en\, n. [OE. levain, levein, F. levain, L. levamen alleviation, mitigation; but taken in the sense of, a raising, that which raises, fr. levare to raise. See Lever, n.] 1. Any substance that produces, or is designed to produce, fermentation, as in dough or liquids; esp., a portion of fermenting dough, which, mixed with a larger quantity of dough, produces a general change in the mass, and renders it light; yeast; barm. [2]

In Chaucer's England one of the names for yeast or barm was goddisgood 'bicause it cometh of the grete grace of God'. These words imply a blessing. To me that is just what it is. It is also mysterious, magical. No matter how familiar its action may become nor how successful the attempts to explain it in terms of chemistry and to manufacture it by the ton, yeast still to a certain extent retains its mystery[3]

No one seems to know for sure when leaving began, it seems to be attributed to the Ancient Egyptians. Whether it was caused by accident, someone leaving out cooked crushed grains in water and they fermented, or possibly the beer sloshing into the bowl of flour no one knows. It has been one of the great discoveries of mankind.

Baker's Yeast:

Saccharomyces cerevisiae is a species of budding yeast. It is perhaps the most important yeast thanks to its use since ancient times in baking and brewing. It is believed that it was originally isolated from the skins of grapes (one can see the yeast as a component of the thin white film on the skins of some dark-colored fruits such as plums; it exists among the waxes of the cuticle).
"Saccharomyces" derives from Greek, and means "sugar mold". "Cerevisiae" comes from Latin, and means "of beer". Other names for the organism are:

- *Brewer's yeast*

• *Ale yeast*
• *Top-fermenting yeast*
•*Baker's yeast*
•*Budding yeast*[4]

Yes, tasty and healthy sugar mold, I think we might have been better off not knowing that. But interestingly enough, did you notice the mention of the white film on grapes being *Saccharomyces cerevisiae*?

The Bakers yeast is on its own, it does not have a partner bacteria breaking down the sugars into easily digestible parts. It has to feed on the sugars available *since the yeast cells lack the enzyme amylase, they cannot break the starch in flour down into sugar, which is a shame because it is the sugar that they eat.*[5] Bakers will add sugar to a recipe to assist the yeast or just add the amylase to the flour. One very easy and healthy way to add amylase to your baking is through the use of malted grains. The enzyme known as amylase or diastase is released within the grain during the malting process. Barley appears to have a higher diastatic level than other grains.

Below is a list of common types of Bakers yeast with a brief definition.

Active dry yeast
: Tiny dehydrated granules of yeast that are in a dormant phase until they are exposed to water.

Bread machine yeast
: A product especially developed for use in the types of doughs most commonly made in bread machines. It is an instant yeast.

Compressed yeast
: Fresh (not dried) yeast that is extruded and cut into a cake form. It must be refrigerated at all times and has a relatively short shelf life of 4-6 weeks.

Instant yeast
: Instant yeast is a specially processed form of Active Dry Yeast that can be mixed into dough dry (rather than dissolved) and reduces rising time up to 50 percent.

Quick-rise yeast
: An "instant" yeast ideal for dry mix methods of baking but can be used in any method.

Rapidrise yeast
: An "instant" yeast. This yeast is well-suited to the quick, one-rise mix method of making yeast breads.

Wild yeasts:

Wild yeasts are what make up what we call in America, Sourdough. This is simple enough to make with a bowl, some flour, and some water; leave it out for a few days covered with light muslin or cheese cloth. The cloth is primarily to keep out insects and pets. What happens is the capturing of yeast and lactobacteria, *the yeast is most commonly Candida milleri, a non-spore forming variety of Saccharomyces exigus. This*

yeast cannot metabolize the maltose found in the dough. The bacteria, Lactobacillus sanfranciscensis is a species of bacteria that helps give sourdough bread its characteristic taste. This bacteria metabolizes the disaccharide maltose into the monosaccharide glucose, which is used in conjunction with the other sugars in the dough by the yeast. This yeast then produces CO2 which provides the lift essential for a loaf of bread. The lactobacilli produces an antibiotic cycloheximide which kills many organisms (but not the Candida), and the Candida tolerates the acetic acid produced by the lactobacilli.[6]

Whew! Ok THAT part was for the biology and chemistry majors. If you did not catch it, what was going on was that the bacteria breaks down the sugar chains in the flour, allowing the yeast to feed on them. Other benefits of the bacteria and yeast working together is that the bacteria produces an antibiotic that kills off other organisms that might try to elbow in on their territory and turn your creation into something best removed from the house. The acidic nature of the environment assists the yeast by making it feel at home.

Not all "home made" starters are of the "wild" yeast variety with the cooperation of the *Candida milleri* and *lactobacilli.* You can make your own home yeast starters, whether you use a packet of yeast from the market, or you capture the *Saccharomyces cerevisiae* straight from a handful of Elder berries or cabbage leaves. There is a difference, both can provide a sour flavor like a loaf of San Francisco Sour Dough just as easily as each can provide a light and rounded flavor enjoyed by many. How often you refresh, rising times and storage can affect all of this.

So you have a recipe that you want to or need to change…
One package = 2 1/4 teaspoons = 1/4 ounce = 0.6-ounce cakes = 1 cup starter

Follow the directions for using the different kinds of yeast whether it needs to be proofed or can be added straight to the flour. For starters: *Place one cup of your favorite active sourdough starter in a large bowl with about 2/3 of the total flour called for in your recipe. Add all the milk or water to make a stirable thick batter. You don't want a dough but a batter.*[7]

In addition to this paper is a lengthy list of Starters, both Natural (wild) and yeasted with brief descriptions.

Bibliography:

1: “Prehistoric Cooking” Jacqui Wood Tempus Publishing Ltd 2007 page 63

2: Webster's Revised Unabridged Dictionary (1913)

3:”English Bread and Yeast Cookery” Elizabeth David American Edition, with notes by Karen Hess Viking Press New York 1980 page 92

4: Retrieved from: “http://en.wikipedia.org/wiki/Saccharomyces_cerevisiae”

5: “I’m Just Here For More Food” Alton Brown Stewart, Tabori & Chang New York 2004 page 73

6: Retrieved from: “http://en.wikipedia.org/wiki/Lactobacillus_sanfranciscensis”

7: Retrieved from: “http://www.sourdoughhome.com/convert.html”