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Freshly cultured yogurt

Culturing Milk: Making Yogurt at Home

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(all photos by C. Haug)

Don't you just love that sweet-tart flavor of creamy white yogurt? Or do you prefer yours with honey and fruit stirred in? Did you know that yogurt is a lacto-fermented food that you can make at home?

Yogurt is a very popular food, as major brands like Dannon have promoted yogurt's ability to normalize a troubled digestive system. It's the probiotic bugs in yogurt that do this good work, but you don't need to buy these advertised brands to get the same benefit.

Other cultured dairy products include: yogurt, cottage cheese, cheese, sour cream, buttermilk, butter, and kefir. All provide benefits to both your digestive and immune systems. (See also my recent post: [Lacto-Fermentation or Live Culture](#), and [The Essentialist: Yogurt & Kefir, from Powdered Culture](#)).

Topics discussed:

- The Process
- Notes on Ingredients & Equipment

The Process

NOTE: This photo-essay is for making [true yogurt](#), which is a thermophilic culture (cultures at above room temperature, ideally 100° - 116° F). Mesophilic yogurt-like cultures are also available that culture at room temperature, but the method is a bit different. (4)

Before starting, find a warm space for your yogurt to culture, 95° - 116° F. See below under 'Equipment' for more detail.

Step 1: Assemble ingredients. I made 2 quarts yogurt for this demonstration, so used: (*in photo, clockwise from upper left*):

- 2 quarts (8 cups) milk
- 2 tsp plain unsweetened yogurt from a previous batch (don't overdo - this is one time when more is not better. Yogurt doesn't like a crowd).
- optional: a few sprinkles powdered yogurt inoculant (one envelope pictured above will make 1 quart of yogurt if already cultured yogurt is not used, or will make at least 6 batches if used with already cultured yogurt. See below for more on this)



Ingredients for making yogurt

Step 2: Pour milk into saucepan, insert dairy thermometer, and heat to 180° F.



Heating milk to 180° F



Milk heated to 180° F

Step 3: Then set saucepan into a water bath to speed up the cooling of the milk to culturing temperature (100° - 116 F). This takes 15 - 20 minutes.



Warmed milk in cooling bath



milk cooled to about 115° F

Step 4: Remove saucepan from cooling bath when milk reaches culturing temperature.

Step 5: Prepare inoculant:

- **If using only powdered inoculant** (not shown), pour about 1/2 cup warm milk into small bowl. Dump the powder from the packet onto the milk and stir well until it is all dissolved.
- **If using plain unsweetened yogurt** (method shown here), measure 1 tsp per quart into small bowl or measuring cup. Add about 1/2 cup warm milk and stir until all is well mixed. (more photos, next page).



Add yogurt inoculant to small bowl



Add powdered inoculant, if desired

NOTE: As shown, left, I usually add a few sprinkles of powdered inoculant to my yogurt inoculant because I like the flavor, and to keep my yogurt strong (see below for more). Stir this into the yogurt to dissolve.



Add warm milk to inoculant



Stir to mix warm milk & inoculant

Step 6: After inoculant is thoroughly blended with the 1/2 cup milk, pour mixture into saucepan of milk and stir. I usually pour some of this back into the small bowl, stir, and add back to the saucepan twice more to ensure it is thoroughly mixed.

Step 7: When well mixed, pour into jar(s). Add lids, and set in warm spot to culture.



Stir dissolved inoculant into warm milk



Inoculated milk in jars, ready to culture

Step 8: I set my lidded jars in a warm water bath to help stabilize the temperature in my culturing location (my gas-fired oven or broiler, warmed by a pilot light, door closed). The water bath is especially important if your warm location is subject to breezes that could cool the mixture.

Your yogurt should be ready in 4 - 6 hours. After 4 hours, take off the lid and insert a knife; if ready, the yogurt will divide at insertion, and will have tangy (tart) taste. If not ready, replace lid and allow to culture a bit longer. The batch I made for this photo-essay was ready in 6 hours).

Step 9: When ready, store covered jars in fridge or other cold spot (such as a cold root cellar). Will keep a long time, undisturbed and with the lid on, in cold storage. The lid will likely form a seal as the jar cools, which helps with keeping-time.



Inoculated milk in warm spot (my broiler warmed by pilot light)



Freshly cultured yogurt

Freshly cultured yogurt, ready to eat, is shown, left. It has a nice ivory color because I use whole milk. I like it just like it is, naturally sweet-tart. But you can stir in honey and/or fruit when you serve it, if desired.

If you need help with troubleshooting, you can email me (Cat), or check out [Mother Linda on Yogurt](#) (5).

Note on Ingredients & Equipment

Milk: Raw or Pasteurized

Pasteurized commercial milk (vat or HTST process such as [Kalispell Creamery](#) or [LifeLine](#)) can be used, but I would not recommend using ultra-pasteurized milk, because the casein is damaged and may produce a gritty product. See [Food Safety and Pasteurization](#) (4) for more.

I start with raw milk, but after many frustrating failures using it raw, I admitted that I would have to heat it (to 180° F) first. This is because the bacteria that thrive naturally in the raw milk, out-compete the yogurt culture and cause the casein to coagulate and separate, thus keeping the yogurt culture from being able to work.

NOTE: you must also preheat pasteurized milk, to kill any bacteria that may have infected the milk after pasteurization. Preheating also produces a better texture.

I am not a fan of pasteurized milk, but making yogurt out of pasteurized milk restores much of the enzymes and vitamins destroyed by the pasteurization, so this is a compromise I am willing to make for the health-promoting ability of yogurt and it's wonderfully sweet-tart taste. See [The World's Healthiest Foods: Yogurt](#) (1) for more on the health benefits of yogurt.

If you don't want to pasteurize your raw milk, try a slightly different, mesophilic culture, such as Viili (Fil Mjolk) or Piima, which work at room temperature and don't require heat-treated milk. See [Alternative Yogurt Cultures](#) below for more.

Cream or Not?

I prefer whole milk to low fat or non-fat for making yogurt (See my post [Dairy fat: healthful or not?](#) for more)

Goat vs Cow Milk

I have used both, but prefer cow's milk for yogurt because it produces a more pudding-like consistency. Sometimes, however, it doesn't get that thick and has a texture more like kefir.

Goat milk yogurt has a very odd texture because of its strong surface tension. If you use a spoon to scoop some into a bowl, the yogurt will try to get back into the jar.

You can add powdered milk to cow's milk before heating, for a thicker texture, or to goat's milk to minimize the surface tension as well as thicken the yogurt. But powdered milk is treated with heat and pressure to evaporate the liquid, so is less healthful.

True Yogurt Culture

While many brands also add other beneficial probiotics, such as *L. casei*, and *L. bifidus*, true yogurt must contain at least these two bugs:

- *L. bulgaricus*, a probiotic bacteria responsible for the tart flavor of yogurt.
- *S. thermophilus* is a thermophilic bacteria, that requires a warm culturing temperature (110 - 116° F) for making yogurt.

To make yogurt at home, you can use as the starter (inoculant):

- **Commercial yogurt** such as Nancy's, Stoneyfield, Brown Cow, or Strauss Farms. Be sure to select one that says "contains live bacteria" on the container. I would not recommend the functional food versions such as Dan-Active, as they have specially-bred bacteria that may not work well at home. Use 1 tsp per quart of milk.
- **Homemade yogurt** from a friend (or from your own previous batch of yogurt).
- **Powdered yogurt culture** such as *Culture Bulgare* from Yo'gourmet; use one 5-gram packet per quart of milk. Yo'gourmet also has a *casei/acidophilus/bifidus* version, but is not as sweet-tangy as the Bulgarian yogurt. New England Cheesemaking Co. (cheesemaking.com) has their own brand of powder.

I have been making yogurt from my own yogurt now for about 10 years, with a few sprinkles of optional Yo'gourmet powder to the mix, to keep it strong from batch to batch. [Using your last batch of yogurt to inoculate the new batch can, with time, weaken it as it is contaminated with bacteria from the air. Adding a bit of powdered inoculant, minimizes this effect.]

Equipment:

- **Thermometer**: I strongly recommend a dairy thermometer to track the temperature of your milk during heating, cooling and culturing.
- **2 - 3 quart saucepan** (stainless or enameled steel). Do not use aluminum. Saucepan should have a heavy bottom, such as all-clad aluminum or copper. If you don't have one of these, use a double boiler to keep the milk from scorching on the bottom of the pan.
- **Small bowl** or measuring cup for diluting inoculant;
- **Stainless steel spoon** for mixing inoculant with milk;
- **Large pot** or bucket for cooling bath (large enough to accommodate your saucepan);
- **Glass canning jars** (for storage). I don't recommend reusing plastic yogurt containers, and they can leach toxins into the acidic yogurt.
- **Warm location** for culturing.

It's that last item that is the difficulty for many. Warm location ideas:

- Gas range with pilot light for oven/broiler (this is what I use).
- Oven of an electric stove with the light turned on.
- Ovens with a setting for proofing bread.
- A styro-box or other cooler with a light inside.
- [Yogotherm](#) (6) is a large thermos; I don't think it holds the heat well enough.
- Electric yogurt-maker (not my first choice).

See [Making Yogurt Without a Yogurt Maker](#) for more ideas.

To test a location, fill a jar with water heated to 115° F. Insert the thermometer and set it in your warm spot. Check it after 4 hours and again at 6 hours. If it has maintained a temperature between 95° and 115° F, it will work.

Alternative Yogurt Cultures

If you don't want to heat-treat your milk (pasteurize), or if you don't want to deal with maintaining a warm culturing spot for making true yogurt, you do have options. However, the method is a bit different than that detailed above, and the result is not identical to true yogurt.

Your best option is to use a mesophilic (room temperature) culture such as the following from Scandinavia. The resultant product is similar to yogurt, but not the same.

- **Piima** has a runny texture and almost cheesy flavor;
- **Viili** (Fil Mjolk) is mildly sweet and gelatinous.

See [Cultures for Health: Yogurt Starters](#) or [Nourished Kitchen: Homemade Yogurt](#) (4) for more on these alternative cultures.

Sources & References

1. [The World's Healthiest Foods: Yogurt](#)
(www.whfoods.com/genpage.php?tname=foodspice&dbid=124)
2. [Making Yogurt Without a Yogurt Maker](#)
(homecooking.about.com/od/dairyrecipes/r/bldairy9.htm)
3. [Cultures for Health: Yogurt Starters](#)
(www.culturesforhealth.com/starter-cultures/yogurt-starter.html)
4. [Nourished Kitchen: Homemade Yogurt](#) (mesophilic vs thermophilic)
(nourishedkitchen.com/homemade-yogurt)
5. [Mother Linda on Yogurt](#) (www.westonaprice.org/motherlinda/yogurt.html)
6. [Yogotherm: www.cheesemaking.com/store/p/100-Yogotherm-Yogurt-Maker-2-QT.html](#)
7. Roma's (470 Electric Ave, Bigfork) for 2-quart stainless steel saucepan & dairy thermometer

Related ESP Articles

1. [Making Yogurt at Home](#) (essentialstuff.org/index.php/2011/07/01/Cat/culturing-milk-yogurt)
2. [Lacto-Fermentation or Live Culture](#)
(essentialstuff.org/index.php/2011/06/20/Cat/lacto-fermentation-or-live-culture)
3. [The EssentialList: Yogurt & Kefir, from Powdered Culture](#) (pdf)
(essentialstuff.org/wp-content/uploads/2009/02/yogurt-kefir_esl.pdf)
4. [Food Safety and Pasteurization](#) (pdf)
(essentialstuff.org/wp-content/uploads/2009/08/foodSafety-Pasteurization_chaug.pdf)
5. [Dairy fat: healthful-or-not?](#)
(essentialstuff.org/index.php/2011/05/27/Cat/dairy-fat-healthful-or-not)