How to Make Raw Dairy Products at Home

Here are some recipes to help you enjoy the taste and nutritional benefits of raw grass-fed dairy by turning milk into other delicious products. All equipment and cultures can be purchased from www.getculture.com. Let us know if you have questions about anything, and enjoy!

Butter

Ingredients and special equipment/supplies that you'll need:

- Cream (After letting your milk sit undisturbed for a day, you can skim the cream off the top.)
- A glass jar with a tight-fitting lid or a stand mixer with whisk attachment
- Salt (optional)

The basic process of making butter is agitating cream until it separates into solid butter and liquid buttermilk. The butter is then strained and rinsed. There are a number of different options for agitating the cream, outlined below. Whichever method you choose, you should leave the cream out at room temperature for a couple hours prior to agitating, because the process goes quickest when the cream is around 55°F. It's also important that the cream is at least 2 days old, because older cream forms butter more quickly than fresh cream.

The first method is shaking the cream by hand in a glass jar with a tight-fitting lid. Make sure the container is more than double the volume of the cream. Then you simply shake the jar until butter forms. (It's nice to do this with a friend so you can pass the jar back and forth.) As you shake, the cream will get thicker and thicker, and then all at once, it will "break." At that point, instead of one thick, homogeneous liquid, you'll have clumps of yellow butter floating in a thin murky liquid (the buttermilk).

The second method is to use a stand mixer with a whisk attachment. The bowl of the mixer should be more than double the volume of cream you are processing. Place a splash guard (or towel if you don't have one) on top of the bowl to minimize mess. Start mixing on low, and as the cream thickens, gradually increase the speed. Shut off the mixer once the cream breaks into butter and buttermilk.

It is possible to also agitate the cream using a food processor, but this method has some disadvantages. First, it usually takes at least 5 minutes of agitation for the butter to form, and most home food processors are not designed to run continuously for that long. In the past we have used a food processor for butter-making and we noticed that it gets excessively hot when running for so long (especially when doing multiple batches at once), and this likely shortens its lifespan. Additionally, the food processor agitates the cream much more aggressively than the other methods do, and this results in butter that has a crumbly texture and is difficult to spread. For these reasons, we don't recommend the food processor method.

After the cream breaks into butter and buttermilk, you will next drain off the liquid and rinse any remaining buttermilk from the butter. Set up a strainer over a bowl, and pour the butter into the strainer. Remove the liquid from the bowl for another use (see note below). Then, rinse the butter thoroughly with cold water, until the water coming out the bottom is consistently clear. Removing as much buttermilk as possible will help the butter to last longer without going sour.

Shake the strainer and let it drip for a few minutes to let as much water as possible drain out. Then, using cold water, thoroughly rinse out the bowl that you used to drain the buttermilk, and dump all of the butter and whatever liquid remains into that bowl. If you want salted butter, sprinkle in some salt at this point. (Start out with what seems like a small amount, and after the next step you can taste the butter and add more salt if needed.) Wash your hands, rinse them with the coldest water possible, and don't dry them. Knead the butter with your hands, working in the salt and expelling the remaining water. As you coax out more water, dump it into the sink. The purpose of the cold water coating the bowl and your hands is to keep the butter from sticking. (This works because fat and water repel one another, and the coldness keeps the butter solid.)

Finally, when you've gotten rid of all the water, pack your butter into glass containers for storage. Keep it in the fridge for immediate use (1 week if unsalted, up to 1 month if salted) or the freezer for longer-term storage.

Notes:

1. Just a heads up, butter-making can sometimes be finicky! So many variables affect how the process goes, such as the exact thickness, age, and temperature of the cream. The methods explained above are the result of many years of experimenting and have a high probability of yielding success. But be warned that this process might require some patience and practice. If you are new to making butter, it's a good idea to start with just a small amount of cream. If you have any questions, contact us and we are happy to help.
2. The term “buttermilk” can be confusing. It refers to the liquid by-product you get from turning cream into butter. But this is NOT what is sold in stores as “buttermilk”. The product sold in grocery stores is typically skim milk that has been cultured. You should not try to substitute the buttermilk that you get from butter-making for the buttermilk called for in recipes, because it is not cultured and not as thick. The cultured-milk version of buttermilk is super easy to make and you will find instructions for it below. The liquid byproduct from butter-making can be used for drinking, adding to smoothies, or feeding to pets or livestock.
3. If you are removing the cream from raw milk yourself, the non-cream portion left behind is called skim milk. The same options for using buttermilk also apply to skim milk.

Ice Cream

Ingredients and special equipment/supplies that you’ll need:

- 8 cups cream (or any mixture of milk and cream totaling 8 cups)
  *We change the ratio of milk and cream regularly depending on what we have available. Of course using all cream makes the tastiest and best ice cream, but it’s totally fine to replace some of the cream with milk. An easy way to get about a 50/50 mix is to take 2 half gallon jars of raw whole milk and let them sit undisturbed in the fridge for at least a day. Then, without shaking the jars, pour 4 cups off the top of each jar. See notes in the butter recipe above for what to do with the skim milk left behind.
- 16 egg yolks
- ¾ cups maple syrup
- Ice cream machine

Whisk together the cream/milk, egg yolks, and maple syrup. Churn according to your machine’s instructions. (For most home ice cream machines, you’ll need to churn this quantity in 2 or 3 batches.) Read on for some variations on the basic recipe.

Vanilla: Add 2 teaspoons vanilla extract when mixing the other ingredients.

Chocolate: Add 2/3 cup cocoa powder when mixing the other ingredients.

Pumpkin: Add 2 cups roasted and pureed pumpkin (or any winter squash), 1 teaspoon ground cinnamon, 1 teaspoon ground ginger, and ¼ teaspoon ground nutmeg when mixing the other ingredients. Make sure your pumpkin puree is thoroughly drained.

Mint: (Note that this variation and the next one heat the dairy past the point of being raw.) Pour the milk and cream in a pot and add 2 bunches of fresh mint. Heat the pot over medium-low heat, stirring occasionally. Meanwhile, whisk the egg yolks together in a bowl large enough to fit all the ingredients. When you start to see steam rise from the pot, add a ladleful of the warm cream to the bowl with the egg yolks. Stir the warm cream into the yolks, then slowly pour this mixture back into the pot of cream. Continue to heat gradually, stirring frequently. Meanwhile, put the maple syrup in the same bowl that held the egg yolks and place a strainer on top of the bowl. Once the cream mixture thickens enough to coat the utensil that you're using to stir, turn off the heat and pour the cream mixture through the strainer. Let it sit until the mint in the strainer is cool enough to handle. Then use your hands to thoroughly squeeze the mint out over the strainer. Compost what is left of the mint. Stir the cream mixture and let it cool in the fridge before churning. Homemade chocolate chips are an amazing addition to mint ice cream! To make your own, heat 1 cup coconut oil and 2 teaspoons vanilla over low heat. Once the coconut oil is melted, remove from heat and slowly whisk in ¼ cup maple syrup and 1 cup + 1 tablespoon cocoa powder. Place a silicone mat inside a baking tray and pour the chocolate mixture over the mat. Freeze the tray. Once frozen, break the chocolate into large chunks and pulse in the food processor to your desired size. (It helps to put the bowl of the food processor in the freezer for a few minutes first to minimize the mess from melting chocolate.) Store chocolate chips in the freezer, and add your desired quantity to the ice cream toward the end of churning.

Orange-cardamom: Use the same process described above for mint ice cream, but substitute 3 tablespoons of cardamom pods and the zest of 2 oranges for the mint. For the cardamom pods, crush them slightly before using by placing them on a cutting board and pressing gently with the flat side of a knife or a rolling pin. For the orange zest, use a vegetable peeler to remove the zest in strips.

Yogurt

Ingredients and special equipment/supplies that you'll need:

- Milk
- Glass quart jars with tight-fitting lids
- Thermometer
- Starter culture: yogurt from your last batch or plain yogurt from the store (make sure it contains no other ingredients besides milk and cultures)
- Cooler that will fit all quart jars

Heat milk in a pot over medium-low heat to 110°F. While heating milk, put 1-2 tablespoons of starter yogurt into each quart jar. Pour heated milk into each jar, screw lids on tightly, and shake each jar.

Now it's time for the cultures to do their work – the cultures that you added to the milk will digest the milk, turning it into yogurt. They are most active at a temperature between 100°F and 115°F. So the next step is to keep your milk at that temperature for 12-24 hours. (The longer you let it culture, the more sour it will be.) There are different ways to do this, but here is a method that is practical to do at home and that we've had success with. Place the jars in a cooler. Fill the cooler with 120°F water so that the jars are completely submerged. Close the cooler and wrap it

with several layers of blankets. Remove the jars after 12-24 hours and refrigerate.

Yogurt kept in the refrigerator will last a very long time. We've never had yogurt go bad; the longest we've kept it is 3 months. Your starter culture, however, should be under 1 month old.

Note: In this recipe, we only raise the temperature of the milk to 110°F so that the resulting yogurt is raw. Many yogurt recipes call for raising the milk to 180°F, then cooling to around 110°F before culturing. This extra step creates yogurt with a thicker texture, but in our opinion the thicker texture isn't worth the disadvantages. By heating the milk to 180°F you lose the nutritional benefits of raw yogurt, and this step also imparts an unpleasant cooked taste to the yogurt. If you've never had raw yogurt before, just be aware that it definitely has a thinner texture than yogurt from the grocery store. We have found that the more consistent you can keep the culturing temperature, the thicker the texture will be (though it will never be the same as grocery store yogurt). If you want, you can experiment with draining some of the liquid out of your yogurt through cheesecloth to make it thicker. Straining yogurt for a long time (12-24 hours), will result in a new product entirely called labneh, which is very delicious and versatile, used especially in many Middle Eastern dishes. The liquid that strains out of yogurt is called whey, and has the same uses as the whey from farmer's cheese (recipe below).

Farmer's Cheese

This is a very simple soft cheese with great versatility. You can use it plain or mix in herbs and spices. We like to keep one jar of plain and one jar of flavored farmer's cheese in the fridge at all times, as there are so many uses for each. Here are some of the ways we use this cheese, just to give a sense:

- filling for omelets
- spread on tomato slices and drizzled with olive oil
- as a topping for a variety of hot dishes: chili, fried eggs, ratatouille, any sautéed or roasted veggie
- tossed with salad greens along with a splash of vinegar and olive oil and a pinch of salt
- as a substitute for other soft cheeses (ricotta, cream cheese, cottage cheese, queso fresco, chevre, etc) in any recipe

Ingredients and special equipment/supplies that you'll need:

- 1 gallon milk
- Thermometer
- 1/4 teaspoon starter culture: MM100 (can be found at www.getculture.com)
- 3 drops liquid rennet, diluted in 1/3 C water (can be found at www.getculture.com)
- Butter muslin

Heat milk to 86°F in a pot over medium-low heat. Remove from heat and stir in starter culture. Stir in 1 teaspoon of diluted rennet mixture. Mix thoroughly. Cover pot and let milk sit at room temperature for at least 12 hours. Once the milk is cultured it is called "curd". To determine if your curd is ready for the next step, slide your finger along the inside of the pot. If the milk is gel-like and separated cleanly from the pot, move on to draining. If it is still liquid, let it culture a few more hours and try again. The microbes that are culturing the milk are very sleepy if the room temperature is below 68°F. If your room temperature is too cool, try placing the pot in the oven – the light or the pilot light should be enough to raise the temperature to the desired level.

Next, put your butter muslin into a bowl or another pot large enough to hold all of the curd. Scoop out all of the curd and place it into the butter muslin. Then gather the edges of the

muslin together and tie a rope around it. Hang the curd to drain with the bowl or pot sitting beneath it to catch the liquid. The liquid that drains out of the curd is called whey. For a very thick cheese, let it drain for 24 hours. Depending on what you want to use it for, you may want to stop it draining sooner. If it comes out drier than what you were aiming for, you can mix some whey back in before you pack the cheese into containers.

Once the cheese reaches your desired texture, pour the whey into containers for later use (see note). Then remove the cheese from the butter muslin into the bowl or pot that you used for the whey. Use a spoon to scrape the bits of cheese that stick to the butter muslin as best you can (it's impossible to get it all off). At this point, you can mix in salt and other flavors if you wish. (Garlic plus a mixture of fresh herbs like basil and/or parsley and/or cilantro is what we most commonly do, but the sky is the limit.) Then pack the finished cheese into containers and refrigerate. It will last at least 2 weeks in the fridge. It can also be frozen for later use. Right after packing the cheese, thoroughly rinse the butter muslin in hot water and hang to dry – it can be used over and over again.

Notes:

1. The whey from this cheese has a cultured and acidic taste. It contains a lot of protein and there are a variety of options for using it. It can be used for drinking, in place of plain water for cooking grains, added to smoothies, or fed to pets or livestock.
2. This recipe can easily be doubled or tripled. Since this cheese freezes so well, it saves time to make larger batches less often. Note that you can use the SAME amount of starter culture called for in this recipe (1/4 teaspoon) for a batch of up to 3 gallons of milk. The rennet mixture that you add should be adjusted proportionally to the amount of milk (1 teaspoon mixture per gallon of milk). The only tricky part about scaling up the recipe is figuring out how to drain a large amount of curd. One way to do this in a home kitchen is to tie the rope holding the butter muslin around the back of a sturdy chair and let the curd hang down the back of the chair.

Sour Cream and Buttermilk

Ingredients:

- cream (for sour cream) or milk (skim, whole, or anything in between, for buttermilk) – any quantity up to 4 gallons
- 1/8 tsp starter culture: Mesophilic Aromatic Type B (can be found at www.getculture.com)

Pour the cream/milk in a bowl. If you are making a quart or less, you can just put the cream/milk in the jar you will ultimately store it in. Add the starter culture and mix thoroughly. Let sit at room temperature until thickened, at least 24 hours. (The cooler the room temp, the longer it will take.) Pour the sour cream / buttermilk into jars and store in the fridge. It will last about 1 month in the fridge.

Mozzarella

Ingredients and special equipment/supplies that you'll need:

- 1 gallon milk
- 1.5 teaspoons citric acid (can be found at www.getculture.com)
- ¼ teaspoon rennet, diluted in ¼ cup water (can be found at www.getculture.com)
- 2 teaspoons salt
- Thermometer

Combine the milk and citric acid in a large pot and heat over medium-low heat to 90°F,

stirring regularly. Remove pot from heat and thoroughly mix in rennet mixture. Let the pot sit for 5 minutes. Check to see if the curd has formed by sliding your finger along the inside of the pot. If the milk looks gelatinous and separates cleanly from the side of the pot, go on to the next step. If the milk is still liquid, let it continue to sit, checking every few minutes.

Using a long knife, cut the curd all the way to the bottom of the pot in strips of about 1". Then turn the pot 90° and cut another set of strips to make a grid pattern. Heat the pot over low heat till it gets to 105°F, gently agitating the pot to distribute the heat. Remove the pot from the heat and let sit 10 minutes.

Set a strainer over a large bowl or pot. Use a spoon to scoop the curd into the strainer. Let it drain at least 30 minutes and up to 3 hours. Stir the curd once in the middle of draining to encourage more whey to escape. (Note that most recipes call for using cheesecloth here but we skip that to save time. A little bit of curd will go through the strainer, but we just fish that out with a slotted spoon.)

Pour all of the drained whey back into the original pot, and heat it to 175°F. Maintain this temperature (plus or minus 5°F) for this next step. Place the drained curd inside the hot whey and let it heat up for a minute. Using heat-proof and water-proof protective kitchen gloves, put your hands in the whey and remove the curd and place it back in the strainer. It should now be one cohesive mass. Divide that mass in 2 equal pieces. Place each piece back inside the hot whey. After 1 minute, retrieve one of the pieces and stretch it and fold it a few times. Place it back in the hot whey and do the same thing with the second piece. Repeat this heating/stretching/folding process 3 more times with each piece. On the second to last time, stretch the curd into a big circle like pizza dough and place it on a clean plate. Sprinkle 1 teaspoon of salt evenly over it, then fold and stretch a few times to incorporate the salt. Place it back in the hot whey for its final stretch.

When each piece is finished with its final stretch, place it back in the strainer to cool. Then slice, put in a sealed container, and refrigerate for up to 1 week. Mozzarella freezes very well.

Notes

1. This is NOT a raw cheese, because it gets heated past the point of being raw in the stretching process. We also have to admit that unlike all of the previous recipes, we do not find homemade mozzarella to be a superior eating experience to mozzarella from the store. (Although as we get better at the stretching process our homemade version is definitely improving!) We included it here because many people are interested in trying it. It's also a fun project to do with kids because they can experience the transformation of milk into cheese in real time. But if you have a good source of mozzarella that you like, by all means do not pour your time and effort into this recipe!

2. Like the whey from farmer's cheese, this whey can be used for drinking, in place of plain water for cooking grains, added to smoothies, or fed to pets or livestock. Unlike the whey from farmer's cheese, this whey is not cultured and not raw, so it is less awesome, but it's still a good source of protein.