

THE CULTURED GURU SCHOOL OF FERMENTATION



The Fermented Foods Semester
Milk Kefir

lesson five workbook

01

The Timeline & The Microbes

This topic takes us through the microbial processes that transform milk into probiotic kefir.

02

How to Make Dairy Kefir

Learn through a step by step tutorial how to make delicious and nutritious dairy kefir

03

How to Make Dairy-Free Kefir

Learn through a step by step tutorial how to make delicious and nutritious dairy-free kefir

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Troubleshooting Intensive

To be successful at making kefir, we need to make sure we have clean equipment, properly prepared milk, and healthy active kefir grains.

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How to Develop Your Own Recipes

It's easy to get creative making milk kefir at home. Try new recipes by using different types of milk and flavoring after fermentation.



PROBIOTICS

01 THE FERMENTATION TIMELINE & THE MICROBES

This topic takes us through the microbial processes that transform milk into kefir.

Lactobacillus spp. in milk kefir grains can transform milk into kefir at room temperature in just 12 to 24 hours.

tonic one

FERMENTATION TIMELINE

When the microbes in milk kefir grains metabolize sugars in milk, they produce lactic acid. The acidity causes the proteins and fats in milk to coagulate, creating thick, delicious kefir.

01

INNOCULATION

Milk kefir grains are added to milk, and the ratio of grains to milk is flexible.

Any lactose-containing milk can be used to make milk kefir. For dairy-free options, a sugar source must be included in plant-based milk.

02

INCUBATION

The milk is fermented at room temperature (about 60 to 90° F) for 12- 24 hours. The ideal incubation time depends on the temperature.

As the milk kefir grains metabolize the lactose (sugars) in the milk, they produce lactic acid, creating a sour or tart flavor.

03

COAGULATION

Not all milk has the same amount of lactose, so the amount of acid microbes produce varies depending on the milk used.

This amount of lactic acid influences the coagulation of proteins. As lactic acid builds up in the milk, milk proteins coagulate. This coagulation transforms the milk into thick kefir with a drastic change in taste and texture.

NOTES

02

HOW TO MAKE DAIRY
KEFIR

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DAIRY MILK KEFIR

This is a recipe to make **16 ounces (about 500 mL)** of dairy milk kefir.

INGREDIENTS

- 16 ounces (about 500 mL) milk
- About 20 to 30 grams of milk kefir grains

SUPPLIES

- 1 glass mason jar
- cloth lid & rubber band
- mesh strainer

STEP ONE

Gather and measure your ingredients. If the milk is new and pasteurized, proceed to step 3. If using raw milk, proceed to step 2.

STEP TWO

To prepare your milk: In a small saucepan, bring the temperature of the milk up to 181° F (83° C). The milk should just barely simmer. Once it reaches the proper temperature, immediately remove the milk from heat. Allow the milk to cool to about 110° F (43° C). Once cooled proceed to step three.

STEP THREE

Add the milk and the kefir grains to a clean jar and stir the milk gently.

STEP FOUR

Place a breathable cloth lid on the jar and secure it with a rubber band. Allow the milk to ferment for 12 to 24 hours. (Aim for 12 hours if it is warm in your house. Go for 24 hours if it is cooler in your house)

STEP FIVE

After incubation, strain off the kefir grains and add them to a fresh batch of milk. Store the finished kefir in the fridge for up to a month.

03

HOW TO MAKE DAIRY-FREE KEFIR

tonic three

DAIRY-FREE MILK KEFIR

This is a recipe to make **16 ounces (about 500 mL)** of dairy-free milk kefir.

INGREDIENTS

- 16 ounces (about 500 mL) **unsweetened** coconut milk
- 25 grams organic sugar or agave syrup (or other sugar)
- About 20 to 30 grams kefir grains

SUPPLIES

- 1 glass mason jar
- cloth lid & rubber band
- mesh strainer
- kitchen scale

STEP ONE

Combine 1/4th of the milk and all of the sugar in a small saucepan. Bring the mixture to a simmer.

STEP TWO

Pour the heated milk and sugar into a clean glass jar and combine with the rest of the coconut milk. Allow to cool to room temperature.

STEP THREE

Add in the kefir grains and stir the milk gently. (remember, you can use milk kefir grains or water kefir grains here)

STEP FOUR

Place a breathable cloth lid on the jar and secure it with a rubber band. Allow the dairy-free milk mixture to ferment for 12 to 24 hours. (Aim for 12 hours if it is warm in your house. Go for 24 hours if it is cooler in your house)

STEP FIVE

After incubation, strain off the kefir grains and add them to a fresh batch of sweetened plant-based milk. Store the finished dairy-free kefir in the fridge for up to a month.

04 TROUBLESHOOTING INTENSIVE

To be successful at making milk kefir, we need to make sure we have the following:

- Clean equipment
- Active, healthy kefir grains
- Properly prepared milk
- Adequate fermentation time

toxic four

KEFIR SAFETY CHECKLIST

This is a checklist you can go through if you're ever wondering "is this safe?"

DID YOU CLEAN YOUR EQUIPMENT?

- Clean equipment is essential for successful kefir fermentation.
- Unclean equipment can introduce unwanted microbes to kefir.

ARE YOUR GRAINS ACTIVE AND HEALTHY?

- Grains must be active and fed regularly for proper kefir fermentation
- If using milk kefir grains to culture dairy-free milk, you must feed the grains dairy milk occasionally

WHAT IS THE PH?

- Finished dairy and dairy-free kefir should be at a pH right around 4.
- Lactic acid bacteria in the kefir grains metabolize sugars into lactic acid, dropping the pH of the milk to a safe level.

HOW DOES IT LOOK?

- Kefir is much thinner than yogurt but thicker than milk. Most people say the texture is like "drinkable yogurt."
- You should see "rivers" on the sides of the jar after pouring the kefir.

HOW DOES THE KEFIR SMELL?

- The smell is a great indicator of fermentation success.
- Properly fermented kefir should smell tart, sour, buttery, and slightly sweet.

HOW DOES THE KEFIR TASTE?

- Kefir should taste similar to yogurt, with slightly more earthy flavors.
- Depending on your individual kefir grains, kefir is sometimes effervescent.

05

HOW TO DEVELOP YOUR OWN RECIPES

It's easy to get creative making milk kefir at home.

Try new recipes by using different types of milk and flavoring after fermentation.

tonic five

HOW TO DEVELOP YOUR OWN RECIPES

There is so much room for creativity with kefir. We can experiment with variations in milk, thickness, and flavoring to create unique recipes.

PICK YOUR MILK & GRAINS

- For dairy kefir, cow and goat milk both work well
- You can try many types of plant-based milk for vegan options
- Use milk kefir grains or water kefir grains for dairy-free kefir

DO YOU NEED TO ADD THICKENERS?

- Thickeners can help when using other types of plant-based milk.
- Thickeners must be boiled into the plant-based milk and sugar mixture
- Options include: Pectin, Agar, gelatin, guar gum

STERILIZE YOUR INGREDIENTS

- Do not skip this step if using raw milk, milk that has been open a while, or if you are adding cane sugar to plant-based milk.
- Instructions for sterilizing are listed in the recipes.

FLAVOR AFTER

- For flavored kefir, it's best to ferment the kefir plain and flavor after.
- Try making simple flavoring syrups to blend into finished kefir.

HOW TO FLAVOR MILK KEFIR



Flavor when serving. It's easiest to ferment plain milk kefir and incorporate it with flavors when servings. Try adding kefir to smoothies, granola bowls, and fruit parfaits

Make a simple syrup with fruit. Add 1 cup of chopped fruit, 2 tablespoons sugar, and 1 cup water to a sauce pan and simmer until thick. Allow it to cool then blend with finished plain milk kefir to flavor.



Make a simple syrup with spices. Add 1 tablespoon of spices (like cinnamon or vanilla), 2 tablespoons sugar, and 1/2 cup water to a sauce pan and simmer until thick. Allow it to cool then blend with finished plain milk kefir to flavor.

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A handwritten signature in a cursive script, reading "Kaitlynn Fenley". The ink is a dark brown color, matching the text above. The signature is centered on the page.

MICROBIOLOGIST | CEO | EDUCATOR