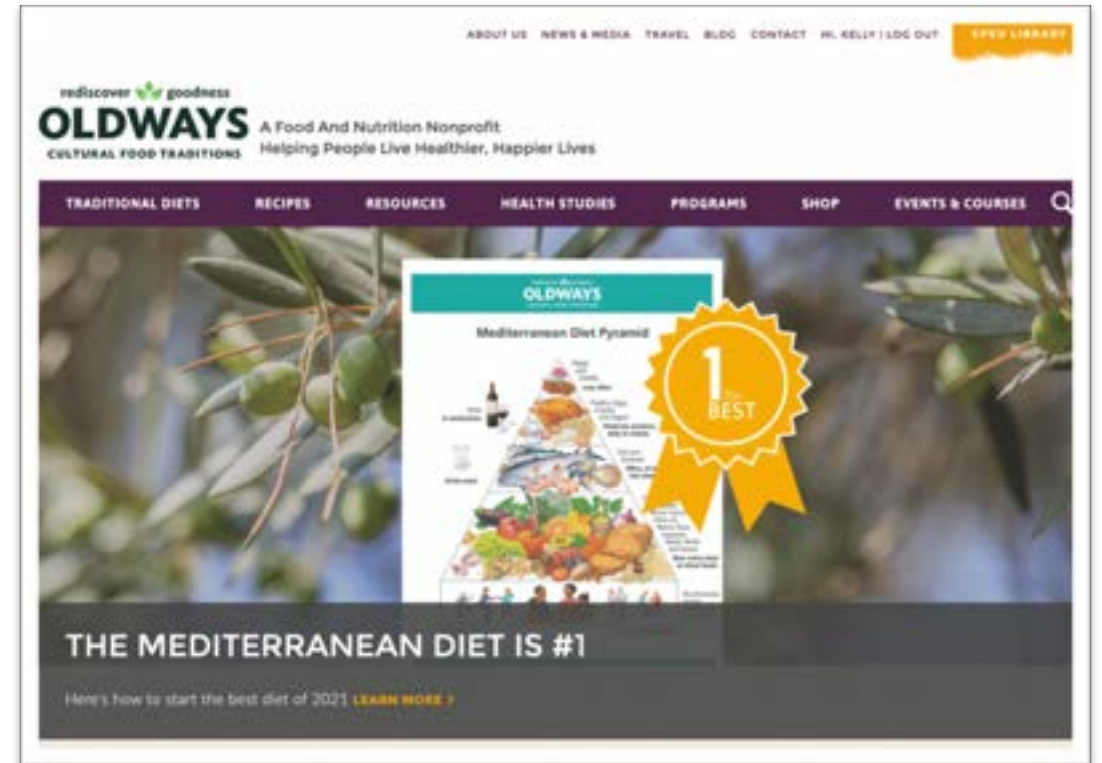


A Dietitian's Guide to Raw Milk Cheese

October 21, 2021

About Oldways

- Nutrition nonprofit founded in 1990
- **Mission:** To inspire people to embrace the healthy and sustainable joys of the old ways of cooking and eating
- Visit us online at **oldwayspt.org**



Housekeeping

- Attendees will receive an email within ONE WEEK with **CPEU certificate, slides, and recording**
- Visit **oldwayspt.org/CPEU** to register for upcoming webinars or view recordings of previous webinars
- Please submit any questions using the CHAT function in Zoom

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Sharing the Science Behind Oats

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Today's Speakers



Kelly LeBlanc, MLA, RD, LDN



Carlos Yescas

Raw Milk ≠ Raw Milk Cheese

- Cheesemaking is a **preservation method** that transforms milk into a product that is safer to consume after longer periods of time
 - To make cheese, the milk needs to be acidified and set/curdled. This can be done by adding starter cultures like animal, microbial, or vegetal rennet, or by adding non-starter cultures (such as lactic acid bacteria). Bacteria do not grow in acidic environments¹
 - When curds are formed, the water in milk is separated out. Bacteria need water & will grow more rapidly in moist environments (like milk) over drier environments (like solid cheese)¹
 - The salt added in the cheesemaking process dries out the cheese, thus decreasing the opportunity for bacterial activity¹
- 2018 *PLoS One* study of cheesemaking in the Middle Neolithic period (5200 BCE) found that “dairying and fermentation had additional human life-history dependent advantages by reducing infant mortality”²

What is raw milk cheese?

- Raw milk cheeses are produced with milk that has not been pasteurized or heat-treated above the body temperature of the animal before the start of curdling of the milk.
- Raw milk cheeses are made all around the world and before the introduction of pasteurization as a food safety protocol for dairy production, all cheeses were raw-milk cheeses.
- Raw milk cheeses are culturally diverse and promote gastronomic diversity, because they allow us to experience the place of origin of the raw-milk and different cheesemaking practices.

Do we need to pasteurize milk for cheese?

- NO, pasteurization is not a necessary technical step in the production of any cheese.
- NO, pasteurization is an expensive and resource-intensive production process.
- MAYBE, pasteurization won't stop production and post-production contamination.
- YES, if there are concerns about the overall quality of the milk.
- YES, if milk is going to be pooled and cooled for a long period of time before cheesemaking.
- YES, because it is the law*.

Raw milk cheese regulations in the United States

- Pasteurized cheese is defined as cheese produced with milk that has been heated to a temperature of 161° F for fifteen seconds or to 145° F for thirty minutes or more.
- In order for a raw milk cheese to be sold in the US, the cheese must be aged at least 60 days at a temperature no lower than 1.7°C / 35°F.
- The definition of raw / unpasteurized cheese remains somewhat less clear. It can indicate cheese whose milk has not been raised over the temperature of the milk at the time of milking (roughly 104°F) prior to the setting of the curd or cheese made with milk that has been heat treated but at no more than 160° F.

Raw milk cheese regulations elsewhere

- Thermization or thermalization is not recognized in the US, but in Europe is seen as a middle ground between pasteurization and no heat-treatment and involves bringing milk up to between 131° F to 155° F or for two to sixteen seconds.
- Producers in the region of Quebec in Canada are allowed to produce using raw milk cheese and sell them under 60 days of aging, however, those cheeses cannot be sold in other Canadian provinces.
- In Mexico, and most of Latin-America, the FDA standard is utilized, however there are accommodations for some traditional cheeses that can be sold under 60 days of ageing.

What are some truly raw milk cheeses?



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How does pasteurization impact milk?

- Pasteurization decreases the number of microorganisms in milk, potential pathogens, but also native cultures, yeasts, esters, and enzymes that give milk its unique microbial fingerprint.
- Milk treated at temperatures ranging from 158 to 212°F can denature due to heat treatment. The whey protein, which mainly includes α -lactalbumin (α -La) and β -lactoglobulin (β -Lg), is degraded.³
- Riboflavin, thiamine, vitamin C, and folate decrease significantly during the pasteurization process.⁴

How does pasteurization impact cheese flavor?

- Heated milk can also have sulphhydryls and other sulphur compounds, which give a "cooked taste", this happens when denaturation accelerates the formation of this flavour by liberating sulphur groups on proteins.⁵
- The absence of diverse microbial communities in the milk and cheese, can have an effect in the ripening process when many cheeses develop flavor.⁶
- Cheeses made with pasteurized milk can lack in flavor and producers may add extra salt to enhance taste, leading to an increase in sodium levels in processed cheese.

Foodborne illness raw vs pasteurized

- The CDC reported 122 incidents of dairy related illness from 1993-2006.
- Only 27 of those 122 involved raw milk cheese, while 38 were a result of cheese that had been pasteurized.⁷
- Dr. Catherine Donnelly has suggested, “Mandatory pasteurization of milk may increase the susceptibility of cheese to growth of pathogens introduced via postprocessing contamination.”⁸
- In 2016, the FDA paused testing non-toxigenic e-coli in raw milk cheese as an indicator of contamination.

Cheese Intake During Pregnancy & Infancy

- **Pregnancy:**
 - “take special precautions not to consume unpasteurized (raw) juice or milk, raw sprouts, or **some soft cheeses made from unpasteurized milk.**”⁹
- **Birth through 23 months:**
 - “Infants and young children also should not be given any unpasteurized foods or beverages, **such as unpasteurized juices, milk, yogurt, or cheeses,** as they could contain harmful bacteria.”⁹



Which Cheeses Can Be Eaten in Pregnancy?

Unpasteurized / raw milk cheeses sold in the US (discouraged during pregnancy)

- Italian Parmigiano-Reggiano
- Swiss Gruyère AOP
- French Comte AOP
- Swiss Emmentaler AOP

Cheeses that are sold in both raw and pasteurized forms in the US

- Cheddar
- Gouda
- Blue cheeses, including Gorgonzola
- Asiago
- Manchego
- Hard goat's cheeses
- Hard ewe's cheeses

Cheeses that are virtually always pasteurized in the US

- Feta
- Mozzarella
- Brie
- Ricotta
- Halloumi

Raw Milk Cheese & The Gut Microbiome

- Fermented foods ↑ microbiome diversity & ↓ inflammation¹⁰
- Probiotics have been detected in numerous types of raw milk cheeses, including Grano Padano,¹¹ cheddar,¹² and Piacentinu Ennese PDO¹³. **WHY?**
 - Heat (via pasteurization) destroys live probiotics in raw milk
 - Cheese fermentation (via aging) allows the “friendly microbes” in cheese to proliferate and crowd out the “bad bacteria”¹²
 - Microbiota present in raw milk cheeses can also be impacted by the traditional cheese making process¹⁴
- More microbial diversity in rind region than core region¹⁵

How Much Cheese Belongs in a Healthy Diet?

- **2017 meta-analysis in *European Journal of Nutrition*¹⁶**
 - Eating more cheese linked with a 10-14% lower risk of heart disease and a 10% lower risk of stroke than eating less cheese
 - Greatest benefit was associated with eating about 1 ½ ounces (40g) of cheese per day
- **2020 prospective epidemiological study in *BMJ Open Diabetes Res Care*¹⁷**
 - 2+ servings dairy per day -- > 11% less likely to have hypertension, 14% less likely to have diabetes & significantly more likely to have ↓ WC, ↓ BMI, and ↓ blood sugar, ↑ LDL
 - low-fat dairy linked with ↑ risk of metabolic syndrome, full-fat dairy linked with ↓ risk of metabolic syndrome

“Mediterranean-ize” Meals with Small Amounts of Traditional Cheese

ORIGINAL: SCRAMBLED EGGS AND SAUSAGE

Served with buttered white toast



Original Nutrition: Calories: 780, Total Fat: 61g, Saturated Fat: 29g, Sodium: 1200mg, Carbohydrate: 26g, Fiber: 0g, Protein: 30g

REMAKE: SPANISH FRITTATA

Served with avocado toast and fresh fruit



New Nutrition: Calories: 370, Total Fat: 24g, Saturated Fat: 4.5g, Sodium: 260mg, Carbohydrate: 25g, Fiber: 4g, Protein: 15g

“Mediterranean-ize” Meals with Small Amounts of Traditional Cheese

ORIGINAL: TURKEY AND CHEESE SANDWICH

Deli turkey on white bread, with mayonnaise, cheese, iceberg lettuce, and sliced tomato, served with potato chips



Original Nutrition: Calories: 640, Total Fat: 39g,
Saturated Fat: 12g, Sodium: 2060mg,
Carbohydrate: 40g, Fiber: 2g, Protein: 30g

REMAKE: WALNUT HUMMUS PITA POCKETS

Served with fresh fruit or carrots on the side



New Nutrition: Calories: 480, Total Fat: 27g,
Saturated Fat: 4g, Sodium: 610mg,
Carbohydrate: 50g, Fiber: 10g, Protein: 16g

“Mediterranean-ize” Meals with Small Amounts of Traditional Cheese

ORIGINAL: CHEESE AND CRACKERS

Typical mix of cheeses (cheddar, pepper jack, etc) with crackers and salami



Original Nutrition: Calories: 620, Total Fat: 49g,
Saturated Fat: 23g, Sodium: 1680mg,
Carbohydrate: 14g, Fiber: 0g, Protein: 30g

REMAKE: ANTIPASTO PLATTER



New Nutrition: Calories: 340, Total Fat: 22g,
Saturated Fat: 4g, Sodium: 550mg, Carbohydrate: 35g,
Fiber: 6g, Protein: 8g

In Summary

- Raw milk cheeses are safe to consume for most people, and are MUCH SAFER than consuming fluid raw milk
- Raw milk cheeses contain live probiotics and can beneficially impact our gut microbiome
- In the US, raw milk cheeses must be aged for at least 60 days. Fresh, unaged cheeses in the US are pasteurized
- Moderate amounts of traditional raw milk cheeses can be a part of a healthy diet (like the Mediterranean diet) and can be used to increase consumption of underconsumed foods

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Thank You!

Questions?

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