Handling Raw Milk From A Food Safety Perspective

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Objectives

• Define milk, raw milk, pasteurization, and homogenization
• Risks of consuming raw milk in the US
• Popularity of raw milk in the US
• Common myths and facts
• Florida law concerning sale of raw milk to the public
• Safe handling, milking, and storage
• Testing for quality and safety
• Other marketing opportunities

Allow Me To Introduce Myself

• Graduate of UF
  • Bachelors in Psychology
  • Masters in Health Education and Behavior
• Health education field since 2006; began with UF/IFAS Extension in 2011
• Currently work in nutrition, wellness, and food systems
  • Food safety education and certification (ServSafe, SafeStaff, general)
  • Nutrition and wellness education

What Is Milk?

• A fluid secreted by mammary glands for nourishment of young and consists of casein, albumin, milk sugar, and inorganic salts
• Popular sources: cow, sheep, goat, water buffalo, camel
• Important food source for humans
  • Provides carbs, fats, proteins, and nutrients (Ca, P, Vitamins A, D and B)
  • Dairy food group, important for our overall health
  • Pasteurized and homogenized
• Milk composition varies by herd, breed, animal, feed, seasons, geography
• Goat milk in general
  • Consumers becoming aware of potential health benefits
  • Higher protein content, lower allergens, lower cholesterol concentrations

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What Is Raw Milk?

- Milk that has not been pasteurized and not homogenized
- Pasteurization: process of heating for an amount of time
- Homogenization: process of separating milkfat from liquid
- Popular local sources: cow, goat, sheep

What Are The Risks?

- Raw milk may be contaminated with bacteria that can cause illness
  - Most common: Brucella, Campylobacter, Cryptosporidium, E. coli, Listeria, and Salmonella
  - 2007-2012: 81 outbreaks caused 979 illnesses and 73 hospitalizations
  - Almost 57% of cases linked to children under 5 years of age
  - Outbreaks linked to raw milk tend to cause more severe illness
  - E. coli – HUS (kidney failure)
- Majority of outbreaks connected to raw milk occur in states where it is legal
- Almost 70% of all illnesses linked to raw dairy, even though only 1%-3% of population consumes raw dairy products

Why Is Raw Milk So Popular?

- Many claims link raw milk to improved health
  - Such as reduced allergies, lactose intolerance, and asthma in children and adults
  - Three studies show some positive effects, but all were done with children raised on farms
  - Lower rates of allergies, asthma, etc. linked more to farming lifestyle than raw milk consumption

CDC
Real Raw Milk Facts

Legal Status of the Sale of Raw Milk and Outbreaks* Linked to Raw Milk, by State, 2007-2012

* Outbreaks linked to raw milk
- Use legend to identify states with outbreaks linked to raw milk
- New Mexico and Vermont have the highest number of outbreaks linked to raw milk
- Outbreaks linked to raw milk are more common in states where it is legal to sell raw milk

CDC
Real Raw Milk Facts
Myths

• Raw milk is healthier and more nutritious than pasteurized milk
• Pasteurization kills good bacteria and changes the nutritional benefits
• If animals are raised in sanitary conditions or on humane farms, the milk is safer and cleaner
• Raw milk that is tested and shows a negative result means that it is clean of bacteria
• Growing up drinking raw milk means it is always safe to drink raw milk
• People who are lactose intolerant can drink raw milk without getting sick
• Raw milk is safe and healthy for babies

What Does The Law Say?

• Before pasteurization, many illnesses and deaths related to milk and milk products
• According to 2017 Florida Statutes 502.091
  • No raw milk sales to public
  • Milk and milk products must be pasteurized
  • Cheese from raw milk possible under certain conditions
  • Can be sold as pet food or for pet consumption
  • To sell milk and milk products, see FDACS applications
    • Distributor, Producer, Manufacturer

Safe Handling, Milking, and Storage

• Clean facility and hands
• Equipment maintenance, repair, and replacement
• Animal health
  • Mastitis/Udder health
    • Inflammation of the mammary gland caused by bacteria
    • Decreased milk production and quality
    • Subclinical (appears healthy but elevated somatic cell count/WBC) and Clinical (notifiable abnormalities)
• Refrigeration
• Pasteurization

Testing for Quality and Safety

• Testing can be done at food or milk testing labs
• Test for microbial load of bacteria, somatic cell count, and coliforms
• Animal, facility, and handler cleanliness lowers risk, but doesn’t eliminate it

<table>
<thead>
<tr>
<th>Milk</th>
<th>Test</th>
<th>Maximum level</th>
</tr>
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<tbody>
<tr>
<td>Pasteurized milk for Grade A use</td>
<td>Total bacteria</td>
<td>Individual producer not to exceed 100,000/mL, Commingled not to exceed 300,000/mL</td>
</tr>
<tr>
<td></td>
<td>Somatic cell count</td>
<td>Individual producer not to exceed 750,000/mL</td>
</tr>
<tr>
<td></td>
<td>Drugs</td>
<td>No positive test on drug residue detection</td>
</tr>
<tr>
<td>Grade A pasteurized milk</td>
<td>Total bacteria</td>
<td>20,000/mL</td>
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<tr>
<td></td>
<td>Somatic cell count</td>
<td>Not to exceed 750,000/mL</td>
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<tr>
<td>Raw milk</td>
<td>Total bacteria</td>
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<tr>
<td></td>
<td>Somatic cell count</td>
<td>Not to exceed 750,000/mL</td>
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Microbial Standards for Milk, FDA Pasteurized Milk Ordinance 2009
Other Potential Marketing Opportunities

- Soap
- Lip balm
- Lotion
- Face wash
- Bath salts
- Hair mask
- Pet products

Resources

- Sale of Raw Milk and Outbreaks Linked to Raw Milk, by State (CDC, 2015)
- Two Milks: Pasteurized and Raw. Real Raw Milk Facts Hot Topics [www.retrailrawmilkfacts.com]
- Raw Milk Questions and Answers (CDC, 2017)
- Florida Statutes: Title XXXII, Chapter 502.091 [www.leg.state.fl.us/statutes]
- Florida Department of Agriculture [www.freshfromflorida.com]
- Milk Microbiology [www.milkfacts.info]
- Importance of Raw Milk Quality on Processed Dairy Products. eXtension. April 2010. Cornell University-Dairy Food Science Notes

Contact

- Got questions? Call us 321-697-3000
- Dairy, livestock: Brittany Justesen [brittanyjustesen@ufl.edu]
- Food safety questions and certification: Gabriela Munza [gmunza@ufl.edu]
- Small farms; eggs: Jessica Sullivan [Sullivan@ufl.edu]

- Schutz M. & Ferree M. (2012). Raw Milk FAQs. Purdue University Extension (AS-612-W)
- Zitt, M., Schmidt, R., & Shelnutt, K. (2015). Raw Milk: Fact or Fiction. UF/IFAS Extension (FC380004)