



The Science of Cheese

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A Little History Lesson



- Little Miss Muffet - Written in 1805
- Pre Dates Recorded History - 8000 BC
- The Moon is Made of Green Cheese
- Milk is **MAGIC!**



Today's Lessons

- Provide math, science, agriculture and engineering into one cooking demonstration.
- Today we are using the perfect food – **CHEESE!**



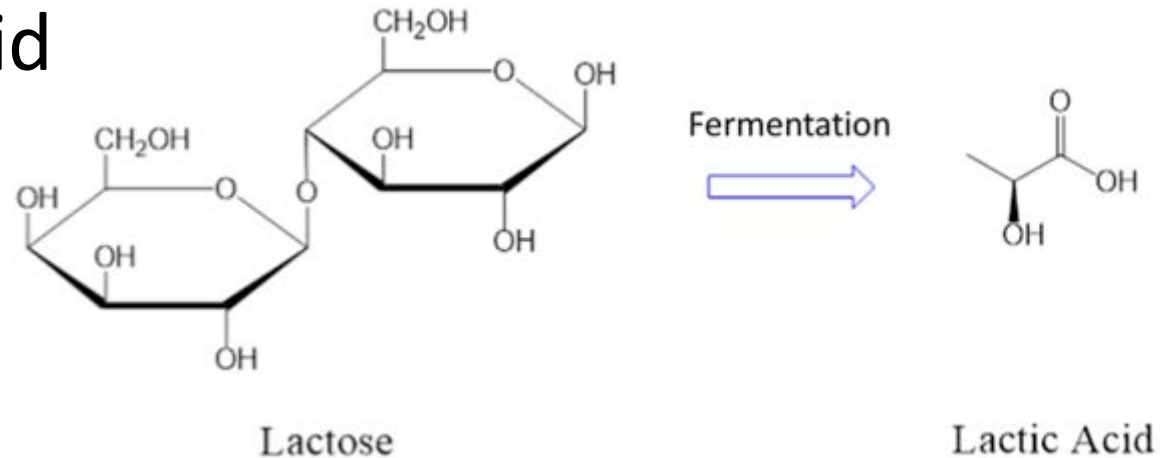
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Acidification (Chemistry)

- Water Quality
- The Fast Way or the Slow Way
 - Acid vs. cultures
- Lactose is Converted to Lactic Acid
- The **MAGIC** of Swiss Cheese



What about the Milk ? (Math)



④ Barbano Yield Formula

$$A + B + C$$

$$\text{Yield} = \frac{A + B + C}{1 - ((\text{moisture} + \text{salt})/100)}$$

$$A = (0.93) \times (\% \text{ fat in milk})$$

$$B = (\% \text{ casein in milk} - 0.1) \times 1.092$$

$$C = \text{other milk solids retained in water phase of the cheese}$$



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Rennet (Engineering)

- Rennet is Derived from Ruminant Animals (multiple stomachs)
- Yesterday vs. Today
- **MAGIC!** *Turns a liquid into a solid*





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It's Time to Cut the Cheese



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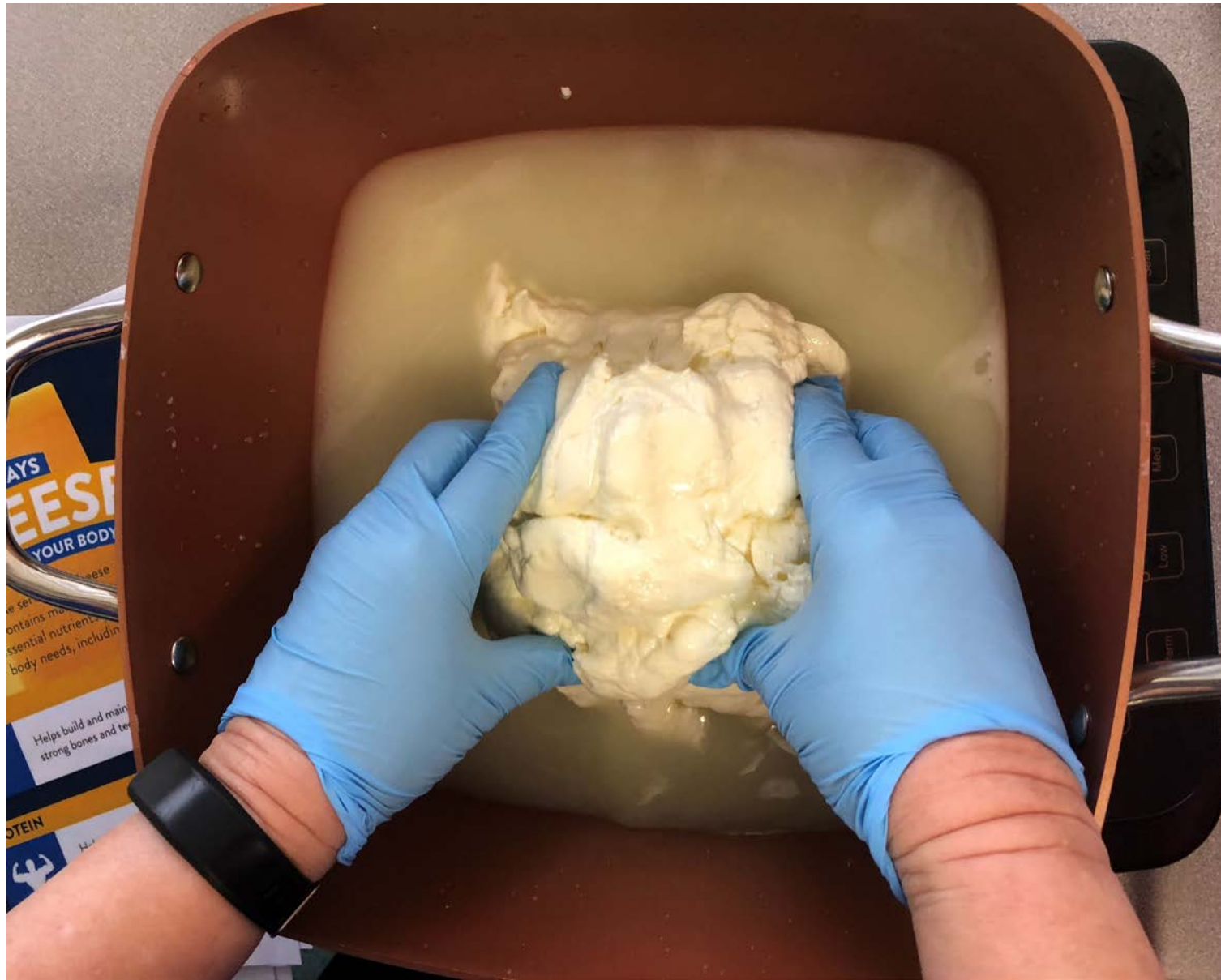


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Curds and Whey (Agriculture)

- Environmentally Sustainable
- Socially Responsible
- No Waste
- Essential Nutrients
- **MAGIC!** *We got the white out*

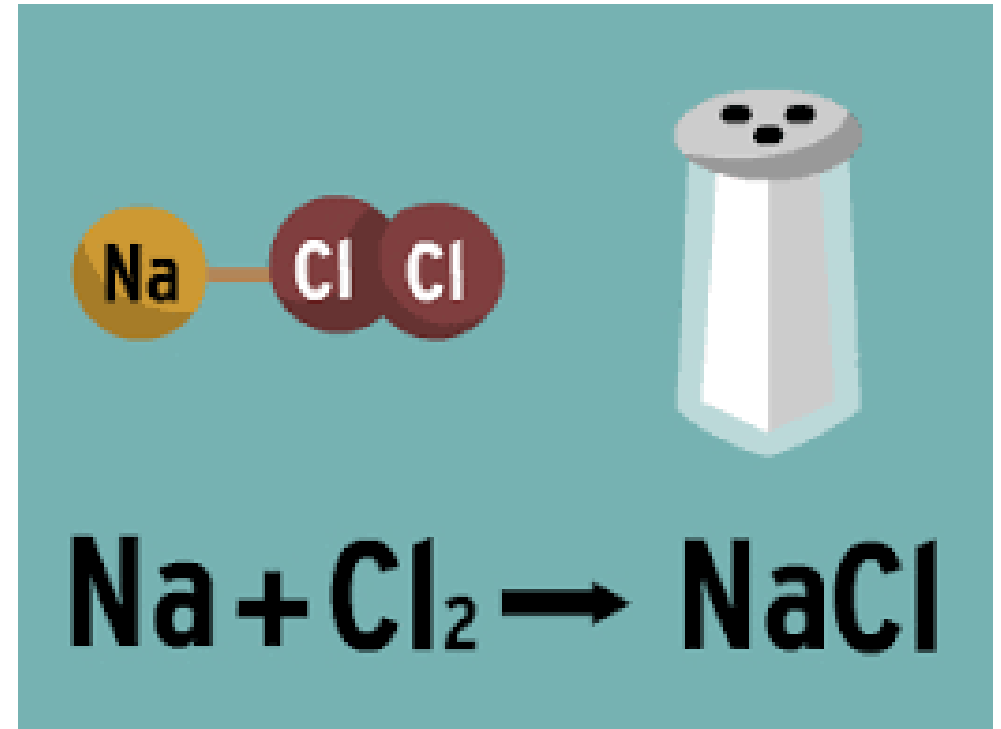




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Salt (NaCl) and Flavors

- Adds Flavor
- Slows Down the Acid
- Don't Skimp
- Dill
- Basil
- Peppers
- Italian Ham
- **MAGIC!** *It preserves your cheese*





Cheese Today



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