

Making Yogurt

EXPERIMENT 23-2

SAFETY FIRST

Review these safety guidelines before you begin this experiment.



Yogurt is a cultured milk product made when lactic-acid bacteria cause milk to ferment. The milk is first heated to kill any undesirable bacteria that may be present and to denature the milk protein. This gives the finished product a firmer

body and custard-like texture. Lactic-acid bacteria are then inoculated into the milk, and the milk is incubated. This experiment lets you observe the changes caused by lactic-acid bacteria in making yogurt.

Equipment and Materials

| | | |
|-----------------------------------|---|------------------------------|
| yogurt base | yogurt maker or a setting pan apparatus | spoon |
| saucepan or double boiler | yogurt culture | yogurt containers and covers |
| safety goggles | 50-mL beaker | pH indicator paper |
| laboratory thermometer in stopper | | ice and pan (optional) |
| ring stand and clamp | | |

Procedure

1. Obtain a yogurt base (kind of milk) from your instructor. Three different yogurt bases will be used in this experiment.
2. Heat the base assigned to your group in a saucepan or double boiler to 82°C. Maintain this temperature for 15-20 minutes. Wear safety goggles while heating.
3. Cool the yogurt base to 43°C.
4. Add 30 mL of yogurt culture to the 43°C yogurt base. Mix with a gentle stirring motion to minimize the addition of air.
5. Fill yogurt containers and cover. Mark your containers with the code number of your base.
6. Put filled containers in either a yogurt maker or setting pans. Maintain the temperature at 43°C. Check frequently, as temperatures of 46°C and above will kill the culture.
7. When the milk has coagulated and formed a firm gel, remove the yogurt containers. Cool them immediately by setting them in ice or refrigerating.
8. Measure the pH of a sample of each yogurt base and record in your data table.
9. Test a sample of each yogurt base for color, texture, and taste. Record your observations in your data table.

Analyzing Results

1. Were there differences in color among the fermented samples? If so, which looked most appealing?

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EXPERIMENT 23-2 (Continued)

2. What textural difference, if any, did you note among the samples?

3. Which of the samples, if any, had an unpleasant taste?

4. Which sample was the most acidic?

5. Is there any correlation between the degree of acidity and taste?

6. All factors considered, which base produced the best yogurt?

7. Which do you prefer, the best homemade yogurt or the best commercial brand? Why?

DATA TABLE

| Yogurt Base No. | pH | Color | Texture | Taste |
|-----------------|----|-------|---------|-------|
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