

Food Chemistry Experiments: Cottage Cheese, Mild Cheddar Cheese, and Tofu**Standard(s):** 3.3, 3.4, 3.7**Objective(s):**

1. Students will learn about the sources of proteins and their uses in the food industry.
2. Students will conduct the precipitation of casein from milk with an acid (vinegar).
3. Students will conduct the enzymatic coagulation of the casein from milk with rennet.
4. Students will conduct the coagulation of protein from soymilk using a salt (magnesium sulfate).

Procedure:

1. Lecture discussion:
 - a. Briefly discuss background information on food science.
 - b. Discuss background information on proteins.
 - c. Discuss the experiment and basic setup.
2. Use the textbook, internet, or various other sources to find information on the following questions relating to the food chemistry experiments:
 - a. Why are proteins the most complex and important group of molecules?
 - b. Describe the chemistry of proteins.
 - c. What are enzymes and which one begins carbohydrate digestion in the mouth?
 - d. What are some food uses of proteins?

Find the definitions to the following food chemistry vocabulary:

- a. amino acids
- b. casein
- c. coagulation
- d. colloid
- e. denatured
- f. digestion
- g. enzymes
- h. isoelectric
- i. kappa-casein
- j. micelle
- k. peptide bonds
- l. precipitation
- m. proteins
- n. proteolysis
- o. rennet
- p. rennin
- q. substrate

3. After the textbook, internet, or various other sources research is completed we will have a class discussion on what we have found

Follow-up Activities:

1. Students can compare food products based on the types of milk and precipitation from the lab, compare types of milk, and compare different types of cheddar cheeses.