

Name: _____

Date: _____

Denaturing Proteins Lab

Purpose

To experiment with different types methods of denaturing the protein found in fruits (protease). In addition, to view how denaturing protein enzymes results in the loss of function of such enzyme.

Materials

- Hot water bath
- 2 test tubes
- 4 100 mL graduated cylinders
- Ice bath
- Vinegar
- Gelatin dessert
- Marbles
- Pineapple juice

Procedure

Preparation before lab:

- Prepare gelatin dessert according to the package directions and fill 100 mL graduated cylinders to the 90 mL mark. (4 graduated cylinders per group)
- Place in the fridge until gel is set, according to package instructions.
- Add pineapple juice to 4 test tubes. (4 tubes per group)

Lab

1. Separate the class into groups of 4-5, or as you see fit for the class.
2. Each group needs all of the above materials.
3. Label test tubes 1-4 and graduated cylinders 1-4.
4. Add test tube 1 to the first graduated cylinder and add a marble. Record observations after 20mins in Chart 1.
5. Place test tube 2 into the hot water bath for 5 mins.
6. Add test tube 2 to the second graduated cylinder and add a marble. Record observations after 20mins in Chart 1.
7. Place test tube 3 in the cold water bath for 5 mins.
8. Add test tube 3 to the third graduate cylinder and add a marble. Record observations after 20mins in Chart 1.
9. Add 5 mL of vinegar to test tube 4.
10. Add test tube 4 to the fourth graduated cylinder and add a marble. Record observations after 20mins in Chart 1.

* Fruit juices contain natural protease enzymes that hydrolyze proteins.

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Observations

Chart 1: Observations of movement of marble in graduated cylinders

Cylinder	Observation
1. Gelatin + pineapple juice	
2. Gelatin + hot pineapple juice	
3. Gelatin + cold pineapple juice	
4. Gelatin + vinegar/pineapple juice	

Questions

1. Why did the marble sink in the first graduated cylinder?
2. Why did the marble not sink in the second, third and fourth graduated cylinders?
3. What are some source of error that could have resulted in you getting different results than expected?