

Name: _____

Date: _____

What Fruits Contain Enzymes that Digest Protein?

OBJECTIVE:

To test for the presence of enzymes in fruit and the specificity of those enzymes, as well as to identify and show the susceptibility of enzymes to certain environmental factors (temperature, for example).

MATERIALS:

Pre-measured Knox gelatin

1 beaker

8 test tubes

1 test tube rack

Pipettes

Stirring rod

Graduated cylinder

Boiling water

Cold water

Adolph's Tenderizer solution

French's Meat Tenderizer solution

Fruit juices/pulp

Plastic wrap (such as Saran Wrap)

PROCEDURE:

1. Number test tubes from 1 - 8.
2. Prepare gelatin by sprinkling the powder over 30ml cold water. Let stand 1 minute; add 90ml of boiling water and stir until gelatin completely dissolves.
3. Meanwhile, place 3ml of the designated fruit juice into each test tube. The pipettes are graduated so that you do not need a graduated cylinder. **Use a separate pipette for each fruit. Failure to do so may result in mixing of juices and inaccurate results!**
4. Add 10ml of gelatin mixture to each test tube. Place a piece of plastic wrap over the top, place your thumb over the plastic wrap, and shake well to ensure proper mixing.
5. RINSE the graduated cylinders VERY WELL.
6. Refrigerate test tubes overnight.
7. Check each test tube for solidification of the contents. Record the observations.

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Number	Substance	Solidified Yes/No
1	Water	
2	Fresh pineapple	
3	Canned Pineapple	
4	Cranberry	
5	Orange	
6	White Grape	
7	Adolph's Tenderizer	
8	French's Meat Tenderizer	

LAB Questions:

1. What is the control in the experiment?
2. What are the independent variables?
3. Which variable(s) prevented the gelatin from solidifying?
4. What happened in the liquid gelatin to keep it from solidifying?
5. What do you suppose the difference between fresh and canned pineapple juice is? What was the effect of this difference, if any?
6. What is one factor that is important to keeping enzymes active?
7. What enzymes are in the meat tenderizers? Why would these products be used to tenderize meat?
8. Other than sanitary reasons, can you think of a second reason why pineapple processors are required to wear gloves and surgical masks?
9. Thinking back to the pudding demonstration and looking at your data from this lab activity, what are the purposes of enzymes in fruits? What about meat tenderizers?