

Food Science Div B

Example Activities

Starch and Sugar Determination (B or C)

Materials:

Ripe banana

Unripe banana

Iodine

Butter knives (1 per team)

Fehlings solution

Glucose solutions (0.5%, 1.0%, and 2.0%)

PART 1

Methods:

1. Cut a thin slice of green banana and a slice of dark ripe banana
2. Add a drop of iodine to the surface of each slice
3. Iodine will form a blue-black color when combined with starch. Using this information observe the results and answer the question below and in Part 2 of this experiment.

Questions:

5. Which of the bananas has more starch?

PART 2

Methods:

1. Label 3 test tubes as 0.5%, 1.0% and 2.0%.
2. Put 5 mL of Fehlings solution into each test tube.
3. Put 2 mL of the 0.5% glucose solution into the test tube labeled 0.5% and do the same for the 1.0 and 2.0% test tubes.
4. Briefly swirl each test tube.
5. Observe the results of each.
6. Label 2 additional test tubes as ripe and unripe.
7. Mash a slice of the unripe banana in the test tube labeled unripe and the ripe banana in test tube labeled ripe.
8. Add 10 mL of Fehlings solution to each.
9. Based on the observations you made of the first 3 test tubes with the glucose solutions answer the questions below.
10. Remember to clean up your lab area and all glassware!

Questions:

6. What color did the solution in 0.5% test tube turn after adding the Fehlings solution?
7. What color did the solution in the 1.0% test tube turn after adding the Fehlings solution?
8. What color did the solution in the 2.0% test tube turn after adding the Fehlings solution?
9. What color did the solution in the test tube labeled ripe turn?
10. What color did the solution in the test tube labeled unripe turn?
11. Based on the observations in Part 2 which banana has the most glucose?
12. Based on the observations in Part 1 & 2 what banana would you expect to have the sweetest flavor?
13. Slice off a small piece of each type of banana for you and your partner. Which of the two has the sweetest flavor?
14. Based on the observations in Part 1 & 2 where does the glucose come from? (limit your answer to one simple sentence)

NOTES: The solution should turn green (0.5%), yellow (1.0%) and orange-red (2.0%).

Moisture Content Determinations (B or C)

Directions:

Moisture Content (% Water in food product) is often determined through drying. The sample is dried in an oven at a specific temperature for a specified amount of time in order to evaporate all of the water present in the sample. The weight of the sample before and after drying is used to determine the amount of moisture evaporated from the sample.

Use the data given in the following table to fill in the blanks in the table.

To determine the moisture content % in the table use the following equation:

$$\text{(Weight of Water Evaporated (g) / Initial Weight of Sample (g))} \times 100 = \% \text{ Moisture Content}$$

	Sample A	Sample B
Weight of dish (g)	3.98	4.05
Weight of dish with sample before drying (g): Initial	7.93	8.21
Weight of dish with sample after drying (g): Final	4.32	4.51
Weight of sample before drying (g): Initial*		
Weight of sample after drying (g): Final*		
Weight of water evaporated (g)*		
Moisture Content of initial sample (%)*		