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LAB 48
OBSERVATION

DETECTING NUTRIENTS IN FOODS

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Goal

Detect nutrients in a food or a solution.

Observation criteria

1. What are the six categories of nutrients in foods?

_____

2. For each indicator in the table below, indicate:

a) the nutrient that can be detected.

b) the reaction when the nutrient that can be detected is not present.

c) the reaction when the nutrient that can be detected is present.

Indicator	Nutrient detected	Reaction if nutrient not present	Reaction if nutrient present
Fehling's reagent			
Lugol's solution			
Sudan IV			
Biuret reagent			
Indophenol			
Silver nitrate			
Ammonium oxalate			

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Materials

- marker
- 5 test tubes (18 mm × 150 mm) and stoppers (No. 1)
- test-tube rack
- 400-mL beaker
- hot plate
- forceps
- dropper bottle of colourless soft drink
- dropper bottle of rice water
- dropper bottle of vegetable oil
- dropper bottle of homogenized milk (3.25%)
- dropper bottle of maple syrup
- glassware soap
- test-tube brush
- wash bottle of distilled water
- dropper bottle of Fehling's reagent solution A
- dropper bottle of Fehling's reagent solution B
- dropper bottle of Lugol's solution
- dropper bottle of Biuret reagent
- dropper bottle of indophenol solution
- dropper bottle of silver nitrate solution
- dropper bottle of ammonium oxalate solution
- container of Sudan IV solid
- spatula

Procedure

Label the test tubes with the marker: SD (soft drink), R (rice water), V (vegetable oil), M (milk) and MS (maple syrup).

Fehling's test

1. Boil 200 ml of distilled water in the beaker.
2. Add 20 drops of each test substance to its test tube.
3. Add 10 drops of Fehling's reagent solution A to each test tube.
4. Add 10 drops of Fehling's reagent solution B to each test tube.
5. Place the test tubes in boiling water for 5 minutes.
6. Observe the contents of the test tubes and record your observations.
7. Empty the test tubes into the disposal container provided.
8. Clean the test tubes with soap and the brush.
9. Rinse the test tubes with distilled water.

Lugol's test

1. Add 20 drops of each test substance to its test tube.
2. Add 6 drops of Lugol's solution to each test tube.
3. Observe the contents of the test tubes and record your observations.
4. Empty the test tubes into the disposal container provided.
5. Clean the test tubes with soap and the brush.
6. Rinse the test tubes with distilled water.

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Sudan IV test

1. Add 20 drops of each test substance to its test tube.
2. Add a few particles of Sudan IV to each test tube.
3. Stopper the test tubes tightly and shake well.
4. Set aside the test tubes for 2 minutes.
5. Observe the contents of the test tubes and record your observations.
6. Empty the test tubes into the disposal container provided.
7. Clean the test tubes with soap and the brush.
8. Rinse the test tubes with distilled water.

Biuret test

1. Add 20 drops of each test substance to its test tube.
2. Add 7 drops of Biuret reagent to each test tube.
3. Observe the contents of the test tubes and record your observations.
4. Empty the test tubes into the disposal container provided.
5. Clean the test tubes with soap and the brush.
6. Rinse the test tubes with distilled water.

Indophenol test

1. Add 20 drops of each test substance to its test tube.
2. Add 2 drops of indophenol solution to each test tube.
3. Observe the contents of the test tubes and record your observations.
4. Empty the test tubes into the disposal container provided.
5. Clean the test tubes with soap and the brush.
6. Rinse the test tubes with distilled water.

Silver nitrate test

1. Add 20 drops of each test substance to its test tube.
2. Add 4 drops of silver nitrate solution to each test tube.
3. Observe the contents of the test tubes and record your observations.
4. Empty the test tubes into the disposal container provided.
5. Clean the test tubes with soap and the brush.
6. Rinse the test tubes with distilled water.

Ammonium oxalate test

1. Add 20 drops of each test substance to its test tube.
2. Add 10 drops of ammonium oxalate solution to each test tube.
3. Observe the contents of the test tubes and record your observations.
4. Empty the test tubes into the disposal container provided.
5. Clean the test tubes with soap and the brush.
6. Rinse the test tubes with distilled water.
7. Put away materials.

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Observations

Record your observations in the table below. Give the table a title.

Title:

		Substance tested				
		Soft drink	Rice water	Vegetable oil	Milk	Maple syrup
Indicator	Fehling's reagent					
	Lugol's solution					
	Sudan IV					
	Biuret reagent					
	Indophenol					
	Silver nitrate					
	Ammonium oxalate					

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Reflecting on your observations

1. Complete the table below by referring to your observation results to place a checkmark in the appropriate box to signal the presence of a nutrient in a substance tested.

Substance tested	Carbohy-drates	Starch	Fat	Protein	Vitamin C	Chloride	Calcium
Soft drink							
Rice water							
Vegetable oil							
Milk							
Maple syrup							

2. Which tested substance contains the greatest number of nutrients?

_____

3. Bread is a food that contains starch. What would happen if a few drops of Lugol's solution were placed on a slice of a bread?

_____

_____

4. How could you improve the protocol for this lab?

_____

_____

_____