

Biochemical Food Tests

Student Worksheet

Name: _____

Date: _____

Class: _____

Score: _____

Instructions

Go through these online activities and complete this worksheet at the same time.

<https://edtechsim.com/food-tests-lab/>



Activity 1: Learn the Tests

Complete the table below for each biochemical test, based on what you observed in the interactive activity. The first row has been completed for you.

Test	Sample Used	Reagent(s)	Positive Result (colour change)
Benedict's Test	Apple juice	Benedict's solution	• Blue solution → Brick-red precipitate (large amount) • Blue solution → Yellow/Orange precipitate (moderate amount) • Blue solution → Green precipitate (traces present)
Iodine Test			
Ethanol Emulsion Test			
Biuret Test			

Activity 2: Mystery Samples

For each mystery sample, record the colour you observed for each of the four tests, then write down which nutrients you conclude are present.

Mystery Sample A

Benedict's	Iodine	Ethanol Emulsion	Biuret

Nutrients present: _____

Mystery Sample B

Benedict's	Iodine	Ethanol Emulsion	Biuret

Nutrients present: _____

Mystery Sample C

Benedict's	Iodine	Ethanol Emulsion	Biuret

Nutrients present: _____

Activity 3: Procedures

Number the steps below (1-5) to put each procedure in the correct order.

Benedict's Test for Reducing Sugars

Sample: Orange juice

- () Observe for colour changes from blue to green/yellow/orange/brick-red
- () Add equal volume of Benedict's reagent to 2 cm³ of sample
- () Leave test tube in boiling water bath for 2 minutes
- () Heat beaker of water until it boils
- () Shake the mixture thoroughly

Biuret Test for Proteins

Sample: Milk sample

- () Shake after every drop added
- () Add 1% copper(II) sulfate solution drop by drop
- () Continue until violet colour appears (if proteins present)
- () Add 2 cm³ of sodium hydroxide (NaOH) to food sample
- () Shake mixture thoroughly

Ethanol Emulsion Test for Fats

Sample: Butter sample

- () Allow solid particles to settle for a few minutes
- () Observe for cloudy white emulsion formation
- () Add 2 cm³ of ethanol and shake thoroughly
- () Cut and grind food sample into small pieces
- () Decant ethanol into test tube with 2 cm³ distilled water

Activity 4: Vomit Lab

For each case file: record the test results, identify the macromolecules present, then decide which meal matches the evidence.

Case 1: The Salad Lie

Jordan swears they only had a garden salad before gym class, then got sick. The nurse collected a sample and needs proof.

Benedict's	Iodine	Ethanol Emulsion	Biuret

Step 1 - Macromolecules present (circle all that apply):

Reducing Sugars Starch Fats Proteins

Step 2 - Which meal matches the evidence?

- ☐ Garden Salad
- ☐ Fruit Cup
- ☐ Cheeseburger & Fries

Case 2: The Cafeteria Mystery

Three students from the same lunch table got sick. The nurse wants to know which food is the common culprit.

Benedict's	Iodine	Ethanol Emulsion	Biuret

Step 1 - Macromolecules present (circle all that apply):

Reducing Sugars Starch Fats Proteins

Step 2 - Which meal matches the evidence?

- ☐ Pizza
- ☐ Chicken Nuggets & Milk
- ☐ Ice Cream

Case 3: Late-Night Snack Confession

A camper insists they didn't touch the snack table before feeling ill overnight. The counselors aren't so sure.

Benedict's	Iodine	Ethanol Emulsion	Biuret

Step 1 - Macromolecules present (circle all that apply):

Reducing Sugars Starch Fats Proteins

Step 2 - Which meal matches the evidence?

- ☐ Peanuts
- ☐ Potato Chips & Candy Bar
- ☐ Beef Jerky

Create your own case!

Search for a food item and consider what macromolecules (reducing sugar, proteins or fats, starch) it may have. Then fill in the expected colour changes for various food tests. Get another group to try Steps 1 and 2. Tell them if they managed to solve this case!

Case 4: _____ (create your own)

Scenario: (create your own)

(fill in expected observations)

Benedict's	Iodine	Ethanol Emulsion	Biuret

(get another group to try and answer)

Step 1 - Macromolecules present (circle all that apply):

Reducing Sugars Starch Fats Proteins

Step 2 - Which meal matches the evidence?

- ☐ Peanuts
- ☐ Potato Chips & Candy Bar
- ☐ Beef Jerky

Activity 5: Check Your Understanding

Circle the best answer for each question.

1. What colour change indicates a large amount of reducing sugars in Benedict's Test?

- A. Blue to brick-red
- B. Blue to blue-black
- C. Clear to cloudy white
- D. Blue to violet

2. What is the positive colour change for starch in the Iodine Test?

- A. Blue to brick-red
- B. Orange-brown to blue-black
- C. Clear to violet
- D. Blue to green

3. Which observation confirms a positive result for fats in the Ethanol Emulsion Test?

- A. A cloudy white emulsion forms
- B. A blue-black precipitate forms
- C. The solution turns violet
- D. The solution turns brick-red

4. Which reagents are added, in the correct order, for the Biuret Test for proteins?

- A. Benedict's solution, then heat
- B. Sodium hydroxide, then copper(II) sulfate drop by drop
- C. Iodine solution only
- D. Ethanol, then water

5. A sample turns Benedict's solution brick-red, but the Iodine and Biuret tests stay negative. What does this tell you?

- A. Reducing sugars are present, but no starch or protein
- B. Starch is present, but no sugar or protein
- C. Protein is present, but no sugar or starch
- D. All three nutrients are present