Biochemical Food Tests

An Interactive 5-Part Science Activity

Testing for Reducing Sugars • Starch • Fats • Proteins

Why Do We Need Food Tests?

What's Inside This Activity

Five hands-on activities take you from learning the tests to applying them like a forensic scientist.

Activity 1: Learn the Tests

Run Benedict's, Iodine, Ethanol Emulsion, and Biuret tests on known food samples.

Activity 2: Mystery Samples

Test unknown samples and work out which nutrients they contain.

Activity 3: Procedures

Put each test's scrambled steps back into the correct order.

Activity 4: Vomit Lab

Analyze forensic samples to crack three real-world case files.

Activity 5: Check Your Understanding

Five questions to test what you've learned across all four tests.

Activity 1: Learn the Tests

Four biochemical tests, four macromolecules, four colour changes to remember.

Benedict's Test

Tests for: Reducing Sugars

Sample: Apple juice

Positive result: **Blue → Brick-red**

Iodine Test

Tests for: Starch

Sample: Potato extract

Positive result: **Orange-brown → Blue-black**

Ethanol Emulsion Test

Tests for: Fats

Sample: Olive oil

Positive result: **Clear → Cloudy white**

Biuret Test

Tests for: Proteins

Sample: Egg white solution

Positive result: **Blue → Violet**

Activity 2: Mystery Samples

Test three unknown foods with all four reagents, then decide what nutrients are hiding inside.

How it works

Run Benedict's, Iodine, Ethanol, and Biuret on the sample → read the colour results → pick the matching nutrient combination.

Sample A

Honey solution

Reducing Sugars

Sample B

Bread extract

Starch & Proteins

Sample C

Milk

Sugars, Fats & Proteins

Activity 3: Procedures

Steps get scrambled — drag them back into the correct order. Here's Benedict's Test, worked example:

Also covers: Biuret Test for Proteins • Ethanol Emulsion Test for Fats

Activity 4: Vomit Lab

Crack three forensic case files by testing a sample and matching it to the culprit meal.

Case File #1

Case 1: The Salad Lie

Jordan says it was just a salad. The tests say otherwise.

Case File #2

Case 2: The Cafeteria Mystery

Three sick students, one common food. Find it.

Case File #3

Case 3: Late-Night Snack Confession

No one touched the snack table… or did they?

Activity 5: Check Your Understanding

Wrap up with five multiple-choice questions covering everything from Activities 1–4.

5	4	1
Questions	Options Each	Attempt to Reflect

Sample Question

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

Key Concepts to Remember

One test, one reagent, one colour change — four times over.

Reducing Sugars

Benedict’s solution + heat → brick-red precipitate

Starch

Iodine solution → blue-black

Fats

Ethanol + water → cloudy white emulsion

Proteins

NaOH + $CuSO_4$ drop by drop → violet

Ready to Get Started?

Work through all five activities, then use the worksheet to record your results.