

# Food Chemistry

Evaluated by Brenda Mueller (Elkhart Memorial High School)



## Product Information

- Food Chemistry Module Lab Activity
- Ward's
- \$129.95
- **Includes 8 food chemistry lab activities**
  1. Test for Fats, Starches, and Protein
  2. Fresh Fruit Discoloration
  3. The Composition of Milk
  4. The Presence of Iodine in Salt
  5. Calcium Propionate as a Bread Preservative
  6. The Qualitative and Quantitative tests for Vitamin C
  7. The Presence of Sulfur Dioxide in Dried Fruit
  8. The Presence of Iron in Foods
- **This lab kit can be useful not only in the Biology and Chemistry curricula but also in Family Consumer Science.**

## Experiment #1: Test for Fats, Starches, and Protein

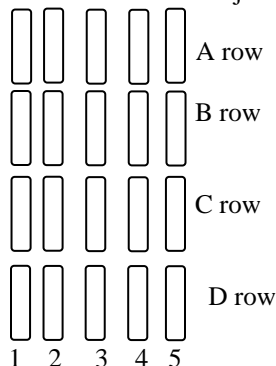
In this experiment the students are using a series of chemicals on a food product, or chemical solution to be able to visually see what type of macromolecule it is. The lab originally starts out with five groups, sugar, starch, vegetable oil, protein, and a control. These are what will be tested by each of the chemicals, Benedict's solution, Sudan IV, Buriet reagent, and Potassium Iodide solution. The lab will have the students handle each food product and chemical to perform in the correct procedure. This gives the students the lab skills needed as well as showing them the differences between each macromolecule. What can also be done is to give the students food unknowns to figure out using the tests. This gives more inquiry as well as changing the outcomes for each lab group.

- **Preparation:** All of the testing solutions need to be divided up for the groups. The kit only comes with one bottle of each solution. Putting the solutions in separate bottles and having one for every other group would work out well. As well as preparing the food solutions. If using the chemical food samples that came with the kit, then a 4% dextrose solution needs to be made as well as Gelatin solution. If using unknowns then try and make them as colorless as possible. Placing them in separate containers with a code on the front that the teacher knows what food they are. Also testing these unknowns beforehand so the teacher knows what to expect is also a good idea. Some foods get multiple results, and knowing this beforehand can help the when trying to guide the students in their search.

- **Procedure:** There are multiple ways to set this lab up this is one that is useful.

20 test tubes per group. In four rows, five columns. Label each test tube in that row with a letter, A-D for all four rows. Then label test tube in that columns with a number, 1-5 for all five columns. See below. That way the teacher can give each test a number, and when giving the unknowns the teacher will have a key that shows what the group's results should look like. This is just one way to set it up. The kit does not give a specific way to handle this many tubes and the labeling system is helpful when trying to keep the unknowns a secret.

Otherwise would could just label the rows to what macromolecule they correspond with.



- **Materials Provided**

- Test Tubes (20)
- Eye droppers (3)
- Sudan IV
- Biuret Reagent
- Potassium Iodide Solution
- Dextrose Powder
- Gelatin Powder
- Vegetable Oil
- Benedict's Solution
- Starch/Acetic Acid solution

**Materials Needed but not provided**

- More Test Tubes (20 per group of 3 students)
- Hot plate
- Test tube rack (1 per group)
- Food samples
- Distilled water (to dilute samples, tap could be used, but test results first)
- 1ml pipettes (4)
  - Bottles for chemical tests (recommended 4 for every other group)
- Containers for food samples  
(as many as needed for the amount of unknowns per group, estimated 14 per class of 21)

**Lab Evaluation**

This single macromolecules kit could be completed without the entire Food Chemistry kit. The Lab manual that came with the kit is less than desired. The directions need to be modified, as well as the creation of analysis questions, and a data table. This could also be an opportunity for the students to create a formal lab report. Thankfully the wonderful collaboration efforts of our group have produced many ideas, as well as concepts of merging other labs to create a wonderful student manual for the section. This lab does involve teacher creativity as well as time to test the unknowns. Some ideas for unknowns what were brought up was, testing lettuce (or green water), egg whites, Knox Gelatin, potato flakes (plain), Apple juice, and melted butter. This is an amazing concept to add to the Biology curriculum, but the need of purchasing the kit is lost when this is the only goal. The chemical testing materials can be bought in bulk for much cheaper, and the directions can easily be typed out in one afternoon. As a final note the Potassium Iodide solution sent to us did not work. Our hypothesis is that the Iodine is too dilute in the solution.