IDENTIFYING ORGANIC MACROMOLECULES

Name _____ Date _____Period _____

In this experiment, the teacher will demo several tests to help you determine the "positive" tests for the organic macromolecules: carbohydrates (starches), proteins, and lipids. Each person will then perform all three tests to determine which organic macromolecules are present in their sample, and collect data as a group. Be sure to wash out the test tubes between tests and when the lab has been completed.

1. **DEMO - "POSITIVE" TEST RESULTS:**
   Record the description of the indicator before the test, then note the "positive" test results for the following teacher demonstrations in the table below.

Organic Macromolecule	Indicator Before Test	Indicator After Test
Simple Carbohydrates		
Complex Carbohydrates		
Proteins		
Lipids		

2. **HYPOTHESIS:**
   Before testing the samples, be sure to create a hypothesis about each of your samples. Place a (+) under those organic macromolecules you believe the sample will contain, and a (-) under those organic macromolecules that you believe will not be present in the sample.

Sample	Simple Carbohydrates	Complex Carbohydrates	Proteins	Lipids
1				
2				
3				
4				
5				

3. **PROCEDURES:**

Testing for Simple Carbohydrate (Sugars) -

1. Put 1-2 cm of the sample into one test tube.
2. Add 7 drops of Benedict's Solution.
3. Place the test tube into a hot water bath for at least 5 minutes.
4. Note any change and record your results in the data table.

Testing for Complex Carbohydrates (Starches) -

1. Put a small sample into a clean well of the spot plate.
2. Add 2-3 drops of iodine to the sample
3. Note the color change as the iodine enters the sample (it may not stay that color for long).
4. Record your results in the data table.

Testing for Proteins -

1. Put a small sample into a clean well of the spot plate.
2. Add 2-4 drops of Biuret Reagent to the sample. CAUTION: Biuret Reagent can burn your skin.
3. Note any color change and record your results in the data table.

Testing for Lipids -

1. Put a small sample into a clean well of the spot plate.
2. Add a couple grains of Sudan Red to the sample and mix with a clean toothpick
3. Note any change and record your results in the data table.

4. DATA TABLE:

To record your results, place a (+) under those organic macromolecules that the sample contains, and a (−) under those organic macromolecules that are not present in the sample.

Sample	Simple Carbohydrates	Complex Carbohydrates	Proteins	Lipids
1				
2				
3				
4				
5				

5. ANALYSIS AND CONCLUSION QUESTIONS:

1. Why was it important to for the teacher to do the demonstrations before beginning the actual tests on the samples?

2. What organic macromolecule does each indicator (Iodine, Biuret Reagent, and Sudan Red) test for? Which organic macromolecule did we not test for?

3. What were some variables and/or errors that were possible in the experiment?

4. What does this lab illustrate about the organic macromolecules that are found in foods?