**Biomolecules in Food Lab**

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Pre-Lab Assessment Questions:**

***Answer on a SEPARATE PIECE OF PAPER!!!***

1. What is the difference between starch and glucose (sugar)?
2. How do you know if a food contains starch?
3. How do you know if a food contains glucose (simple sugars)?
4. How do you know if a food contains a polysaccharide?
5. When do you add Benedict’s solution to the food sample in the test tube?
6. How do you know if a food contains lipids?
7. How many tests are done on EACH food item?
8. Complete the prediction column on the data table on the next page. What type of biomolecule do you think is present in each of the food samples?

\*\*\*Collect three samples of EACH food item (3 pieces of apple, 3 pieces of potato, etc) and place it in the well plate. Bring the well plate back to your station to conduct ALL THREE TESTS on the food items.\*\*\*

**Part 1: Testing for Carbohydrates (Polysaccharides – Starch)**

1. Use a dropper or tweezers to place a small amount of the food item into your test tube.
2. Add 1-2 drops of Iodine to the test tube.
3. Observe the test tube. If the food contains starch it will turn a blue-black color. If the color remains brown, no starch is present.
4. Record data on the data table. Empty the test tube into the trash can and rinse with water.

**Part 2: Testing for Carbohydrates (monosaccharides – sugar)**

1. Place a large beaker half full of water on the hot plate. Turn the hotplate to high.
2. Use a dropper or tweezers to place a small amount of the food item into your test tube.
3. Add 5 drops of Benedict’s solution to the test tube.
4. Carefully place the test tube into the hot water bath. Heat the tube for 2-3 minutes. When you notice a color change, carefully remove the tube from the hot water with a test tube holder.
5. Observe the test tube, looking at the table below to determine the quantity of sugar in the food.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Color | Blue | Blue-green | Green | Yellow | Orange-Red |
| Amount of sugar in food | None | Trace amounts (very little) | Little sugar | Some sugar | A lot of sugar |

1. Record data on the data table. Empty the test tube into the trash can and rinse with water. Turn the hotplate OFF.

**Part 3: Testing for Lipids**

1. Use dropper or tweezers to place a small amount of the food item onto a piece of white paper. If the food is a solid, rub onto the paper.
2. Wait for 2 minutes, remove any large pieces of food and observe.
3. Hold the paper up to the light. There are lipids present if a lot of light can pass through the paper. If little or no light can pass through, then there are little to no lipids present.
4. Throw the paper and food scraps away. Record data on the data table.

**Data Table**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **FOOD** | **PREDICTION** | **STARCH** | **SUGAR** | **LIPIDS** |
| POTATO |  |  |  |  |
| BUTTER |  |  |  |  |
| APPLE |  |  |  |  |
| PAPER TOWEL |  |  |  |  |
| OIL |  |  |  |  |
| WATER |  |  |  |  |

**Post Lab Questions**

1. Which foods come from plants? What biomolecule is most common in these foods?
2. Why is water used as a control in this experiment? Does water contain any biomolecules you tested for?
3. Most molecules are made from chains of much simpler molecules (subunits). Name the subunits that link up to form the following macromolecules.

|  |  |  |
| --- | --- | --- |
| **Macromolecule** | **Subunit** | **Tests to Identify the Presence** |
| Carbohydrate - sugar |  |  |
| Carbohydrate - starch |  |  |
| Proteins |  |  |
| Lipids |  |  |