Basic Testing for Carbohydrates Lab

Introduction:

This lab is a preliminary lab in Benedict's solution to test for the presence of Carbohydrates. You are to test the presence of monosaccharides in various samples of food. Carbohydrates are composed of molecular building blocks known as *monosaccharides or simple sugars*. Glucose is the well known simple sugar but is not limited to just glucose.

Benedict's solution:

Benedict's solution is used to detect sugars but more specifically *reducing sugars*. Reducing sugars are simply monosaccharides where it is the most basic building block for a carbohydrate chain. Examples of reducing sugars include maltose, lactose, fructose, glucose, galactose, ribose and xylose.

In order for Benedict's solution to work, it must be heated. A hot water bath is usually used with test tubes submerged inside. A hot water bath is simply a beaker filled with about 2/3 of water over a heat source.

<u>Benedict's Solution Colours</u>

- Green – Low Concentration
- Yellow – Low to medium concentration
- Orange – Medium concentration
- Reddish/Orange – medium to high concentration
- Brick Red – High concentration

<u>Materials</u>:

- Test tubes
- Test tube rack
- Hot water bath
- Eye dropper
- Goggles
- Benedict's Solution
- Gloves
- Test tube clamp

<u>Food samples:</u>

- Milk
- Potato
- Apple
- Bread
- Apple juice
- Crackers
- Banana
- Yogurt
- Non-diet pop

Procedure:

1. Do not SPILL Chemicals on Skin or Clothing. It will stain!
2. All glassware MUST be cleaned BEFORE and AFTER to achieve accurate results!

3. Obtain 7 test tubes and label C and 1 – 6. The C is the control where nothing will be added to it. It will be used as a comparison.
4. Add 5 drops of Benedict's solution to each and 20ml water to the Control.
5. Take a small sample from the various food samples. Add about 10ml of water to each to have the sample either submerged if it is a solid or diluted if it is a liquid.
6. Setup your hot water bath with a 500ml beaker.
7. Place all your test tubes in the water bath for 4 minutes and observe.
8. Create a table for your observations.
9. Clean each test tube by washing each with soap provided.

What you need to hand in:

1. Your own version of your observation table that is properly labeled.
2. An summary discussion of what the purpose of the lab is and what you have accomplished by completing the lab.
3. Questions below.

Questions:

1. List the samples that you tested where sugar was present.
2. From your tested samples identify the sample that had the highest concentration of sugar and the sample that had the lowest concentration.
3. Where are carbohydrates found in the natural world?
4. Specify the process on the planet that creates carbohydrates.
5. What is the purpose of the control test tube?
6. Why must the glassware be clean in biochemical testing?