

Name:	Date:
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## Experiment: Carbohydrates in Food Evidence of sugar

### Equipment

Heating plate, beakers, test tubes, test tube rack, spatula, test tube plug

### Materials

Food products: glucose, household sugar, candy, honey, jam (not red, if possible), ketchup, cookies, salt, sweetener tablet

Reagents: Fehling's solution A: copper sulfate solution  
Fehling's solution B: alkaline potassium-sodium tartrate solution  
Diluted hydrochloric acid, HCl (2.5%)

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### Safety and disposal guidelines

Copper sulfate solution: environmentally hazardous, R 52/53, S 61

Alkaline potassium-sodium tartrate solution: caustic (C) R 35, S26-36/37/39- 45

Diluted hydrochloric acid: irritant, Xi, R 36/37/38, S 26

Do not dispose of copper sulfate solutions through the drain, but collect them in a waste bottle.

<b>Caution!</b> During some parts of the experiment, caustic Fehling's reagent, caustic soda and hydrochloric acid are heated. Always use safety goggles (Beware of splashes!)
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### Introduction

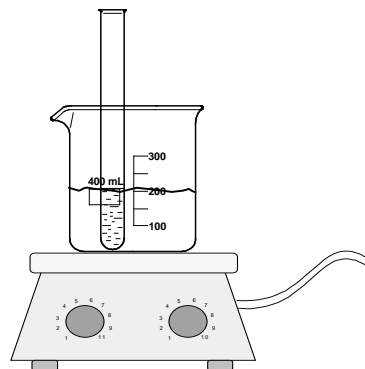
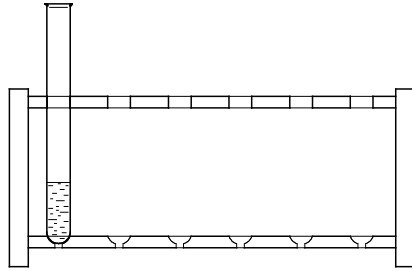
You probably have heard that there are different types of sugar: glucose, diabetic sugar (e.g. fructose) and, of course, the common household sugar (sucrose). In the following experiment, you will learn how to use a chemical reaction to detect sugar.

### Experiment

For detecting sugar we can use the reaction with copper-II-ions which causes a characteristic colour.

In order to become familiar with how to detect these substances, start with a comparative sample.

## 1. Comparative sample: Evidence of glucose (dextrose)



- Pour a spatula tip-full of glucose into a test tube and add 1-2 mL of water.
- Shake the test tube to dissolve the glucose in the water.
- Now add a big splash of solutions A and B and carefully put the test tube in a water-filled beaker that was heated on a heating plate to a point short of boiling.

### Observations

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## 2. Evidence of glucose in food products

- Dissolve different food products in water:
  - Use a test tube to dissolve 1 spatula tip-full of honey in 1-2 mL of water.
  - Dissolve a small piece of glucose candy in 1-2 mL of water.
  - Put a sweetener tablet into a test tube and add some water.
- Carefully shake the test tubes in order to better dissolve the substances.
- Add a big splash of solutions A and B and carefully put the test tubes in a water-filled beaker that is heated on a hotplate to a point short of boiling.
- Observe closely what happens!

### Observations

Sample	Observation
Honey	
Dextrose candy	
Sweetener tablet	