

Lorca and his times

Subject: Chemistry

Title: Sweet Federico

Year group : 2ºESO/3ºESO



Language Level B1

Skills: Reading X / Writing X / Speaking X / Listening X

Timing 15+60 min

Individual work (preparation and research) / Pair work (experiment) / Groupwork (Starter)

Goals:

Discussing about the relationship between Federico García Lorca and sugar

Stating some of the main properties of sugar (formula, usage, production,...)

Carrying out 2 Chemical tests to determine presence/absence of sugar in samples



The blue bottle

Is a colour-changing **redox chemical reaction**. An alkaline solution of glucose acts as reducing agent and reduces added methylene blue from a blue to colourless form. Shaking the solution raises the concentration of oxygen in the mixture and this oxidises the methylene blue back to its blue form. When the dissolved oxygen has been consumed, the methylene blue is slowly reduced back to its colourless form by the remaining glucose, and the cycle can be repeated many times by further shaking.

Write your observations here:

Research and share

What does Federico García Lorca has to do with sugar?

Do some research on your own to find out about the relationship between Federico García Lorca and sugar production in Granada

Write your findings here:

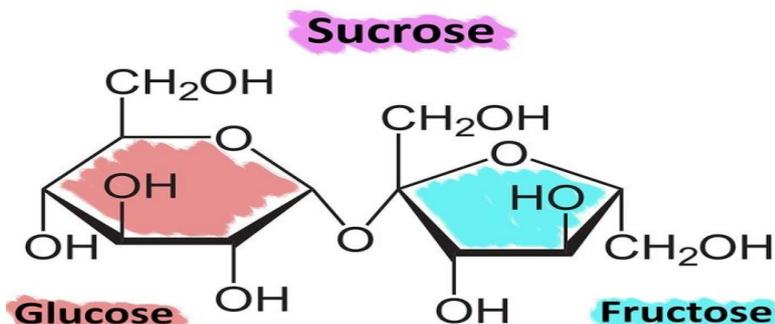


Read carefully and take a card to write a question to ask your partner. Remember to write the answer on the other side of the card.

Sucrose Chemistry

Sucrose is the common chemical name for **table sugar**. Sucrose is a disaccharide; each molecule of sucrose consists of two "simple sugars"(monosaccharides) glucose and fructose, joined together.

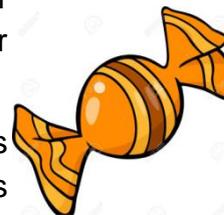
Sucrose is generally extracted from sugar cane or **sugar beet** and then purified and crystallized.



Crystalline nature

When you add sugar to water, the sugar crystals dissolve and the sugar goes into solution. But you can't dissolve an infinite amount of sugar into a fixed volume of water. The maximum amount of sugar that can be dissolved in water increases as temperature increases.

When you cook up a batch of **candy**, you cook sugar, water, and various other ingredients to extremely high temperatures. When the candy is through cooking and begins to cool, sugar crystallizes.



Usage

- Sucrose is the most common sweetener in the modern, industrialized world, although it has been displaced in industrial food production by some other sweeteners such as Stevia, Saccharin, Aspartame, Sucralose (Splenda),...
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In the human digestive system

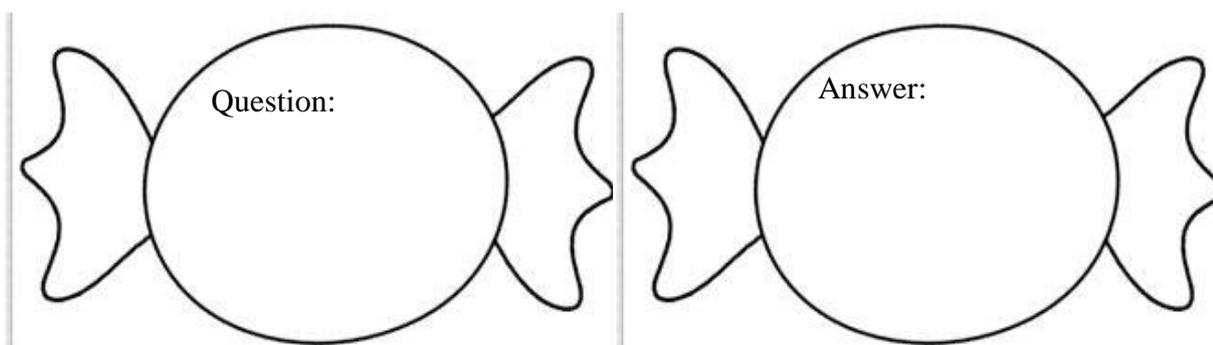
Sucrose is broken down in the gut by acidic hydrolysis into its component sugars fructose and glucose which are then absorbed into the bloodstream through the intestine.

Health effects

Sucrose has been linked with some adverse health effects. The most common is tooth decay, in which bacteria in the mouth convert sucrose in food to produce acids that attack tooth enamel. Sucrose has a high food energy content and in a poorly managed diet can contribute to obesity. People with diabetes mellitus need to control their intake of sucrose along with the other carbohydrates.

Properties

- Solubility in water: about 2.1 g sucrose in 1 g water (at 25 °C).
- Melting point: 186 °C
- Molecular Weight: 342.3 g/mol
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TESTING FOR SUGARS

Now that you have learned a lot about sugars, you will test different foods using 2 different tests:

FEHLING'S TEST

BENEDICT TEST

SAMPLE PREPARATION

1. Grind the food using a _____
and a _____



2. If necessary, add a little water to each food so that the nutrients are released from the food _____ material.

3. Filter the liquid if necessary using a _____ and a _____

4. Add 30 drops of the liquid obtained into a test tube using a _____.

Activity:

Draw the steps of the procedure and name the laboratory equipment used.

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Materials:

BENEDICT'S TEST:

5. Add 30 drops of Benedict's reagent to each test tube using a different _____ (to avoid _____)

6. Shake the test tube gently

7. Place the _____ in a water bath of boiling water for 3 minutes and record the colour change.

BENEDICT TEST RESULTS:

FOOD	INITIAL COLOUR	FINAL COLOUR	SUGAR PRESENT?
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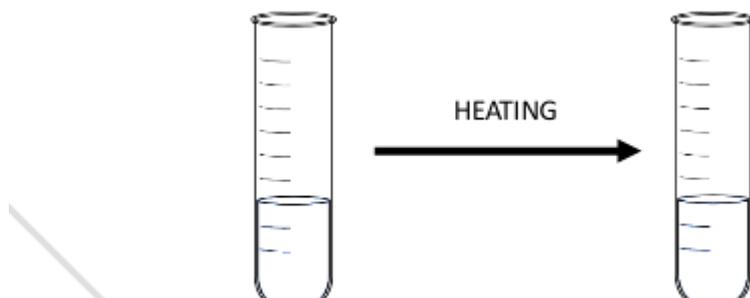
CONCLUSIONS:

1. If sugar is present....
2. If sugar is not present....
3. The food with the highest amount of sugar is ...
and I know it because...
4. The food with less amount of/no sugar is...
and I know it because...

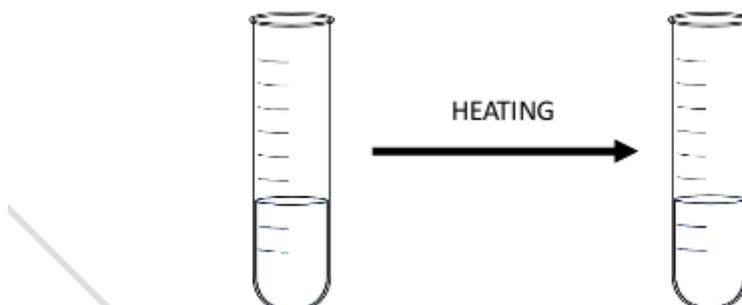
FEHLING'S TEST:

5. Add 20 drops of Fehling's A reagent and 20 drops of Fehling's B reagent to each test tube using a different _____ (to avoid cross-contamination)
6. Shake the test tube gently
7. Place the _____ in a _____ of boiling water for 3 minutes and record the colour change.

Food 1

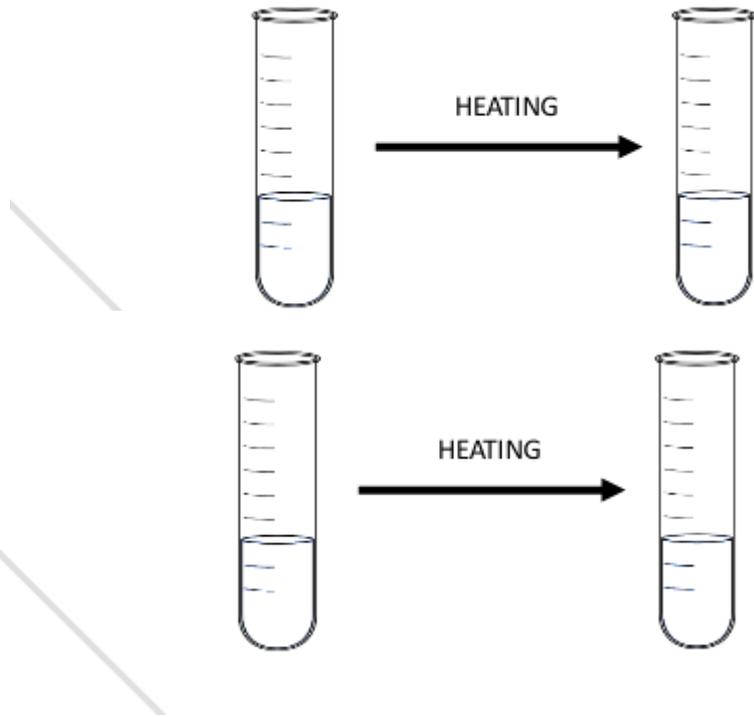


Food 2



Food 3

Sample



CONCLUSIONS

- 1.
- 2.
- 3.

Reflect on your learning and click....

<i>CRITERIA</i>	<i>MY LEARNING</i>		
			
<i>Listening</i>			
<i>Speaking</i>			
<i>Reading</i>			
<i>Writing</i>			