

Are All Sugars Sweet?

Introduction

Sugars are a type of edible crystals that our tastebuds often tell us are sweet. Sugar is a basic food carbohydrate, or saccharide, and primarily comes from sugar cane and sugar beets, but also appears in fruit, honey, and many other sources. Due to their chemical structure, some sugars have a very sweet taste, while others are not sweet at all.



Some people limit their sugar intake by using sugar substitutes, or artificial sweeteners. These have been used in food production for decades to decrease the number of calories while maintaining sweetness and flavor. In fact, many sugar substitutes are hundreds of times sweeter than regular sugar, so they are often used in very small amounts. In this lab, you will taste-test several different kinds of sugars and gauge their sweetness. You will also test several different sugar substitutes.

Materials

sugars:

dextrose
fructose
galactose

glucose
lactose
maltose
sucrose

substitutes:

aspartame (NutraSweet)
saccharin (Sweet'n'Low)
stevia (Truvia)
sucralose (Splenda)

Equipment

food-safe spoons

food-safe well plates

Safety Considerations

- Lab station surfaces can contain chemicals long after experiments have been completed. Do not touch the lab station with your hands; do not eat any sugar that has landed on the lab station.

Procedure

1. Using a food-safe well plate, obtain a small sample of each of the sugars. Make sure you remember which sugar is in each well.
2. Obtain one packet each of the sugar substitutes.
3. One at a time, place a small amount of a sugar sample in your mouth by licking the end of your finger, dipping it in the sugar and then placing it in your mouth.
4. Record the sweetness for each sugar in the Data Table.
5. Using the sugar substitutes, repeat Steps #3-4.

Clean-up

1. Dispose of the sugars and sugar packets in the trash, NOT THE SINK.
2. Rinse the food-safe well plate thoroughly with soap and water using your hands, NOT A TEST TUBE BRUSH.
3. Return all equipment to its proper location.
4. Wipe down your lab area and wash your hands before leaving the lab.

Data Table

Sample	Not Sweet	Medium Sweet	Very Sweet
dextrose			
fructose			
galactose			
glucose			
lactose			
maltose			
sucrose			
aspartame			
saccharin			
stevia			
sucralose			

Questions

1. Which sugar was the sweetest? Which sugar was the least sweet?

2. What was your favorite sugar substitute? Why?

3. Besides diet sodas, name two food products that use sugar substitutes.

4. Aspartame and saccharin have been linked to cancer by scientific studies on lab rats. Why do you think they are still in use today?

5. List one way you could change this lab and describe how your results might be different.
