# Chapter 8: Sugar SUGAR SOLUTIONS

### Did you know that there are many types of sugar?

Carbohydrate	Digestive Enzyme	Common Food Source
Sucrose	Sucrase	Table Sugar
Fructose	None	Fruit, Corn Syrup
Glucose	None	Fruits, Vegetables, Grains

Sugar is considered a *simple carbohydrate*, or simple sugar. Simple carbohydrates provide our bodies with a quick energy source. Once in our body, they are broken down or converted to glucose to burn as an energy source. Glucose is converted to energy through *cellular respiration*. Cellular respiration is essential for survival. It needs glucose and oxygen to form the energy our cells need to grow and divide. However, if our bodies do not need the glucose at that time, it is then converted into a storage form (body fat). Carbohydrates are small chains of one to three units of sugar linked together. *Glucose*, also called dextrose, is the most common carbohydrate present in food today. It can be found in all fruits and vegetables. The body uses glucose for energy. *Fructose* is the sweetest of all naturally occurring sugars. It is found primarily in fruits and is also called fruit sugar. Common table sugar is *sucrose*. It is typically used as an added sweetener for many recipes. One molecule of glucose and one molecule of fructose are linked together to make sucrose. In order to break





Drinking 20oz of regular soda is the same as eating 16tsp of table sugar!

sucrose down into glucose and fructose, the digestive enzyme sucrase is needed. Glucose and fructose do not need to be broken down further to be absorbed by the body. You will learn more about glucose, fructose, and sucrose in *Food Explorations Lab I* of this chapter.

**Solubility** is one of the many properties of sugar. Solubility is the ability of a substance (solute) to dissolve in another substance (solvent). When you add sugar to water, the sugar dissolves and the mixture becomes a solution. In this example, sugar is the solvent and water is the solution. However, you can't continue to add an endless amount of sugar to the water. Once you reach the water's capacity for sugar, the solution is considered saturated, meaning any added sugar will not be dissolved. The saturation point varies at different temperatures; the higher the temperature of water, the more sugar the solution can hold. You will learn more about solubility in *Food Explorations Lab II* of this chapter. We see sugar solutions every day. Sugary drinks like soda and energy drinks are considered sugar solutions. Some of these drinks can contain as many as 16 teaspoons (almost 80 grams) of sugar in a 20-ounce bottle. That is a lot of sugar! The American Heart Association indicated that we should not consume much more than 5-6 teaspoons of added sugar per day. This example contains three times that amount!

## Think About It

### **Food Explorations Lab I**

1. Two sugars found in fruit are _	and	

2. The most common sugar found in food is \_\_\_\_\_\_.

3. Table sugar is the simple sugar \_\_\_\_\_\_.

#### Food Explorations Lab II

1. The ability of one substance to dissolve in another substance is \_\_\_\_\_\_.

2. When no more of a substance can be dissolved in another the solution is called

3. How does temperature affect the amount of sugar that can dissolve in water?