



## Jr. Chef Club II

# The Art of Tasteful Beverages

### Lesson 3



## Educator Information

### Preparing to Teach the Lesson

This lesson teaches students about the importance of water, fluids, and keeping the body hydrated. It covers the functions of water, how much fluid is needed, and the sources of water and fluids. The lesson goes further and teaches students how to identify healthful beverage choices.

#### **Wonderful Water**

Water is essential for the body to be able to operate normally. Although one can exist without food for many days, the body can only last about three days without water. The body cannot store water and needs a large amount every day, so it must be consumed daily for good health. Drinking plenty of water optimizes health and makes sure that fiber doesn't become lodged in the large intestine and cause constipation.

#### **Functions of Water**

Water has many functions in the body, it:

- provides hydration to cells, helps brain function optimally
- helps muscles convert glucose to energy, thus limiting muscle fatigue
- transports substances such as nutrients and waste products
- lubricates and cushions against shock (as in joints)
- regulates body temperature (perspiration is the body's method of cooling off)
- acts as a solvent in many of the body's chemical reactions

#### **Water Losses**

Why do we need so much water each day? How do we lose water? The body loses water in four ways:

- kidneys filter fluids, keeping nutrients and expelling waste products in urine
- skin, via constant evaporation as well as perspiration
- lungs, through exhalation
- colon (large intestine) as solid waste carries some water with it, that's why it's soft not hard.

#### **Water Intake**

Traditionally, water intake recommendations ranged from 8–10 cups of water per day based on calorie expenditure. In 2004, the Food and Nutrition Board issued new information about water intake for everyone; the "adequate intakes" for children are listed below.

## ***Adequate Intake for Total Water\****

Children Ages 4–8 years old: 1.7 liters (about 7 cups) per day of TOTAL water. This includes approximately 1.2 liters (about 5 cups) as total beverages, including drinking water. The remainder (2 cups) comes from the water in foods.

Boys Ages 9–13 years old: 2.4 liters (about 10 cups) per day of TOTAL water. This includes approximately 1.8 liters (about 8 cups) as total beverages, including drinking water. The remainder (2 cups) comes from the water in foods.

Girls Ages 9–13 years old: 2.1 liters (about 9 cups) per day of TOTAL water. This includes approximately 1.6 liters (about 7 cups) as total beverages, including drinking water. The remainder (2 cups) comes from the water in foods.

Conversion factors: 1 liter = 33.8 fluid ounces, 1 cup = 8 ounces

1 liter = 1.06 quarts, 4 cups = 1 quart \*

*\*Dietary Reference Intakes for Water, Potassium, Sodium, Chloride, and Sulfate.* Food and Nutrition Board, National Academies Press, 2004.

In summary, since this curriculum is designed to be used with 5<sup>th</sup> grade students (average age = 10 years old), encourage students to drink 7–8 cups of beverages per day, some of which are water. Encourage students to drink whenever they are thirsty. Suggest that water make up half or more of their fluid needs.

High levels of activity and/or warm weather will increase water needs. Dehydration has already started by the time the thirst signal kicks in. However, sometimes the thirst signal cannot keep up with the body's need for water, such as on hot summer days or when there's great physical activity. Even mild dehydration causes a decrease in blood volume and may play a role in headaches and decreased physical performance. Dehydration affects muscles and can cause fatigue or even cramping. Further dehydration can cause confusion and disorientation. So encourage students to drink 7–8 cups of beverages every day, more on hot or high activity days, and always drink when thirsty.

One way to encourage adequate fluid consumption is for students to have a water bottle and know how much it holds. Water bottles make it easy to carry water and drink as much as the body needs (wash water bottles daily). If using a 2-cup water bottle, set a goal of drinking 3 or 4 per day. Drinking between meals is best, so that digestive juices do not become overly diluted from large amounts of water taken with a meal.

### **Water Sources**

We have three sources of water:

- water itself
- beverages
- foods (can separate into two sub-categories: fruits-vegetables plus meats and grains)

## Water Summary

Students need to know:

- drink 7–8 cups of beverages per day. Use a water bottle and drink mostly between meals
- water helps keep you from feeling tired
- water may help prevent headaches and muscle cramps
- water moves food and fiber along through the digestive system, preventing constipation

## Smart Beverage Choices

Now that students know why they need fluid and how much, show them healthful ways to get the fluids they need. Beverages may be high or low in sugar and high or low in nutrients. Show students how to read “Sugars” and vitamins and minerals on beverage labels so they can make healthy, non- or low-sugar choices. Examples are provided in the lesson plan.

## Sugar Budget

The 2005 U.S. Dietary Guidelines state:

Carbohydrate intakes of children need special considerations with regard to obtaining sufficient amounts of fiber, avoiding excessive amounts of calories from added sugars, and preventing dental caries . . . beverages with caloric sweeteners, sugars and sweets, and other sweetened foods that provide little or no nutrients are negatively associated with diet quality and can contribute to excessive energy intakes, affirming the importance of reducing added sugar intake substantially from current levels.

The sugar budget, or allowance, is calculated in this lesson as approximately 10 percent of energy intake which is in line with expert recommendations. This amount is converted to teaspoons and can be displayed on a poster as a visual aide.

## Calcium in Beverages

The 2005 U.S. Dietary Guidelines recommend that everyone aged 9 and older consume three cups of nonfat or low-fat milk, or the equivalent, each day to meet their calcium needs. (Children ages 2–8 need just 2 cups.)

Children’s calcium needs are:

- kids ages 4-8 years, 800 milligrams
- older children 9–18 years, 1,300 milligrams
- adults 19 to 30 years, 1,000 milligrams

Refer to Level 1, Lesson 3 for a review of the calcium information, if needed.

## Vitamin C in Beverages

Citrus juices are rich in vitamin C. Remind students though that juices are concentrated—it typically takes 3 or 4 oranges to make one cup of juice—thus juice is high in sugar (even though it natural sugar) and high in calories, compared to water. Limit juice consumption to one cup per day or less. Some people like to dilute their juice with water so it is not so sweet and it “stretches” the juice: 1 cup of water plus 1 cup of juice = 2 cups of beverage.

## **Sports Beverages**

Sports drinks are lower in sugar than soda. Some brands also offer a “lite” version of their sports drink. The sugars in sports drinks are special—they are processed in a way that helps the body absorb them slowly so as not to interfere with athletic performance. They are not really necessary unless undertaking 2 or more hours of continuous and strenuous activity.

## **“Designer” Beverages**

Students may ask about the vitamins, minerals and herbs listed in designer beverages. These amounts are often minimal. For instance, on one beverage that boasts about its vitamin C content, analysis shows that the amount of vitamin C in a serving of the beverage is the same amount of vitamin C as in a single strawberry. Some herbs have undergone scientific scrutiny and hold promise for affecting certain conditions. However, the amount of herbs in one or several servings of designer beverages is not enough to be used therapeutically, as in the studies. Designer beverages are often expensive. One’s money would be better spent taking a vitamin-mineral supplement and drinking plenty of fresh water!