Sugar Shocker

Educational Kit
for Adults and Children

Healthy Eating Team
August, 2017
# Table of Contents

**Description** .......................................................................................................................................................... 3

**Instructions for Display Assembly** ...................................................................................................................... 4
  - Shopping List to Assemble Your Own Display........................................................................................................ 4
  - Kit Display Assembly Instructions .......................................................................................................................... 6
  - Kit Display Set-Up Instructions .............................................................................................................................. 6
  - Kit User Instructions .............................................................................................................................................. 6

**Background Information: Sugar Shocker** ............................................................................................................... 7
  - Sugar-Sweetened Beverages..................................................................................................................................... 7
  - Energy Drinks ......................................................................................................................................................... 13
  - Juice ........................................................................................................................................................................ 17

**Appendices** ......................................................................................................................................................... 18
  - Appendix 1: Sugar Shocker Set Up Photo ................................................................................................................ 19
  - Appendix 2: Sugar Shocker! Fact Sheet .................................................................................................................... 20
  - Appendix 3: Liquid Candy Fact Sheet ....................................................................................................................... 21
  - Instructions Sugar Shocker Guessing Game ............................................................................................................... 22

**References** ......................................................................................................................................................... 23
Description

What we drink is important to our overall health and wellbeing. The objective of the Sugar Shocker Kit is to:

- raise awareness about how much sugar is added to common drinks
- learn how to make better drink choices
- decrease the public’s consumption of energy-dense, nutrient poor beverages.
- educate the public on sugar-sweetened beverages (SSBs)

Sugar Shocker is a visual, interactive kit illustrates the sugar content of various beverages such as sport drinks, fruit drinks, iced tea, 100% fruit juice, milk and water. It also displays the sugar content of pop drinks in various sizes. The kit also contains background information and discussion questions to engage adults and children.
### Instructions for Display Assembly

**Shopping List to Assemble Your Own Display**

See below for the required items to make the Sugar Shocker display.

<table>
<thead>
<tr>
<th>“Sugar Shocker” Display Purchase Checklist</th>
<th>Where to buy</th>
<th>Approx. Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>□ 200 mL 100% Orange Juice Tetra Pack</td>
<td>Grocery store/Convenience store</td>
<td>$2.50/10-pack</td>
</tr>
<tr>
<td>□ 591 mL Fruit Drink</td>
<td></td>
<td>$2.50</td>
</tr>
<tr>
<td>□ 591 mL Iced Tea</td>
<td></td>
<td>$2.50</td>
</tr>
<tr>
<td>□ 710 mL Sports Drink</td>
<td></td>
<td>$2.00</td>
</tr>
<tr>
<td>□ 473 mL Energy Drink</td>
<td></td>
<td>$3.50</td>
</tr>
<tr>
<td>□ 591 mL Vitamin-Added Water</td>
<td></td>
<td>$2.50</td>
</tr>
<tr>
<td>□ 2 L Pop bottle</td>
<td></td>
<td>$1.50</td>
</tr>
<tr>
<td>□ 591 mL Pop bottle</td>
<td></td>
<td>$2.50</td>
</tr>
<tr>
<td>□ 355 mL Pop can</td>
<td></td>
<td>$1.50</td>
</tr>
<tr>
<td>□ 237 mL Chocolate Milk</td>
<td></td>
<td>$1.50</td>
</tr>
<tr>
<td>□ 237 mL White Milk</td>
<td></td>
<td>$1.50</td>
</tr>
<tr>
<td>□ 500 mL Bottled Water</td>
<td></td>
<td>$1.50</td>
</tr>
<tr>
<td>□ 170+ extra packages of sugar needed for each kit</td>
<td>Walmart</td>
<td>$4.00</td>
</tr>
<tr>
<td>□ 515 mL Iced Cappuccino</td>
<td>Coffee shop (ask for an empty container)</td>
<td>Free</td>
</tr>
<tr>
<td>□ One 15 L plastic container with lid</td>
<td>Hardware store</td>
<td>$8.00</td>
</tr>
<tr>
<td>□ Lepage’s translucent, non-toxic white glue 400 mL for labels</td>
<td>Hardware store or craft store</td>
<td>$6.00</td>
</tr>
<tr>
<td>□ One small white spray paint for milk cartons</td>
<td>Hardware store or craft store</td>
<td>$4.00</td>
</tr>
<tr>
<td>Item Description</td>
<td>Store</td>
<td>Cost</td>
</tr>
<tr>
<td>-----------------------------------------------------------</td>
<td>---------------</td>
<td>-------</td>
</tr>
<tr>
<td>One small silver spray paint for pop cans and lids</td>
<td>Hardware store</td>
<td>$4.00</td>
</tr>
<tr>
<td>Two acrylic/plastic 8.5” x 11” frames for the factsheet</td>
<td>Dollar store</td>
<td>$10.00</td>
</tr>
</tbody>
</table>

*Price for fresh orange is included in total estimated cost of displays.
Total estimated cost of one display: $64.00
Kit Display Assembly Instructions

1. Drain all liquids from every bottle, remove all labels and ensure bottle is dry inside. The bottles need to be completely generic.

2. Spray paint (silver colour) all bottle caps to ensure a generic look.

3. Spray paint all cans where the label does not cover the colour of the bottle. This disguises the colour of the bottle, which could be associated with brand.

4. Spray milk containers with white spray paint.

5. Print generic coloured labels, then laminate them.

6. Glue labels in place on each bottle or can.

7. Store and transport this kit in 15 L plastic storage container with lid.

8. Tape “Sugar Shocker” set up photos on the inside of the lid (Appendix 4).

Kit Display Set-Up Instructions

9. Refer to Appendix 1 “Sugar Shocker Set Up Photos” for placement of bottles.

10. The number of teaspoons of added sugar in each drink is on each label. Place corresponding sugar packages in front of each bottle. Note: the number of teaspoons listed on the label is the amount of added sugar in the whole bottle, rather than per serving size. 1 sugar package = 1 tsp of sugar.

11. Print factsheets for each event (Appendix 2 and 3).

12. Display the framed laminated factsheets. Each factsheet is bilingual and can be flipped in the frame as needed.

Kit User Instructions

13. Refer to “Background Information” (Page 7).

14. Set up the display on a table, which is covered with a tablecloth with the OPH logo.

15. Refer to soft drinks in the kit as ‘pop’. Do not mention product names for any beverages on display.

16. Display the factsheets visibly. Either display sugar packets visibly so that teaspoons of added sugar per beverage are clear, or refer to Appendix 4 for instructions for guessing game. Note that the sugar measurements in teaspoons have been rounded to the nearest whole number.
Background Information:
Sugar Shocker

Sugar-Sweetened Beverages

**Key Messages**

1. Most of the sugar in Canadian diets come from beverages.
2. Most people are not aware of how much sugar is in sugar-sweetened beverages.
3. Sugar-sweetened beverages displace healthier beverages like water and milk from the diet and have a negative effect on nutrient intake.
4. Regular consumption of sugar-sweetened beverages is associated with obesity, cardiovascular disease, type 2 diabetes and dental caries.

**Why are there packets of sugar in front of the drinks?**

The packets represent the number of teaspoons of added sugar that each drink contains.

**How do you figure out how many teaspoons of sugar are in a drink?**

One teaspoon of sugar is equal to 4 g. To determine the number of teaspoons, look at the number of grams of sugar on the Nutrition Facts table. Divide this number by 4 to determine the number of teaspoons of sugar per serving in the drink. For example, if the drink has 8 g of sugar, divide 8 by 4 and you have 2 teaspoons of sugar in the drink.

- It is important to note that the serving size shown on the Nutrition Facts table is often less than the full bottle. Also, the value given for sugar is the total amount of sugar (natural and added).

**What are sugar-sweetened beverages?**

Sugar-sweetened beverages contain added sugars or syrups often in large amounts which contribute to the overall increase of calorie intake (WHO, 2015). Examples of sugar-sweetened beverages include soft drinks, fruit drinks, sweetened tea or coffee, specialty coffee drinks (i.e. iced cappuccinos), added sugar-sweetened “smoothie” drinks, flavoured milks (including chocolate, or other flavoured rice, soy or other alternative milks), sports drinks and energy drinks. 100% fruit juice is also considered a sugar-sweetened beverage as it contains a large amount of sugar and very little fibre. Most sugary drinks contain calories and few essential nutrients. They may not provide the same feeling of fullness that solid food provides.

**What are “added sugars”?**

Added sugars are sugars that are added to foods or beverages when they are processed or prepared. This also includes the “free sugars” that are naturally present in honey, syrups, fruit juices...
and fruit juice concentrates. Because the sugar in milk and whole fruit is naturally occurring, it is not considered “added sugars”.

What are common names of sugars?
Added sugars can have a variety of names that may not sound like sugar. Common names for added sugars include: sucrose, dextrose, dextrin, maltose, galactose, liquid glucose-fructose, invert sugar, raw cane sugar, brown sugar, corn sweetener, high-fructose corn syrup, rice syrup, fruit juice concentrates, honey, malt syrup, and molasses.

What are the health effects of consuming sugar-sweetened beverages?

- **Sugary drinks provide calories but little if any nutritional value.** They do not contribute to our overall nutritional status and health.

- **Sugar-sweetened beverages displace healthier beverages like water and milk from the diet.** When the frequent choice is a sugary drink instead of water or milk, there is a greater chance that the overall intake of important nutrients like calcium and vitamin D will be affected. Low intakes of calcium and vitamin D are associated with lower bone mineral density and an increased risk of bone fractures (Whiting et al, 2001).

- **Intake of other important nutrients may also be compromised by consuming excess sweetened beverages.** When used in extreme excess (more than 25% to 30% of total calories), sugar may displace other nutrients, resulting in nutrient deficiencies (American Academy of Pediatrics, 2015). Examples include vitamins like riboflavin, vitamin A, vitamin B12 and folate and minerals such as iron and magnesium as well as dietary fibre (McGoldrick, Woodruff, & Hanning, 2006).

- **Higher intake of added sugars is associated with higher energy intake and lower diet quality, which can increase the risk for obesity, pre-diabetes, type 2 diabetes, and cardiovascular disease.** Evidence from a number of studies and trials have shown an overall positive association between consumption of SSBs and body weight gain in both children and adults (Malik, Pan, Willett, & Hu, 2013). The majority of observational studies (cross-sectional, longitudinal, and nationally representative for both adults and children) show that sugar-sweetened beverage intake is significantly associated with greater adiposity (Woodward-Lopez, 2010). Added sugars have been linked to health concerns, including overweight and obesity, type 2 diabetes or pre-diabetes, inflammation and cardiovascular disease (American Dietetic Association, 2012).

- **Sipping sugary drinks, especially high acid ones (like sports drinks or pop) can lead to tooth decay.** Moderate evidence supports that higher consumption of SSBs is associated with higher dental caries prevalence, therefore it is recommended to limit consumption of SSBs to prevent dental carries (Wilder, Kaste, Handler, Chapple-McGruder, & Rankin, 2015). Sugary drinks mixed with bacteria in the mouth produce acid. Acid breaks down enamel and causes cavities (Ehlen et al., 2008). Diet drinks contain acid too. How many sugary drinks do Ottawa youth consume?
• In 2013, 78% of students in grades 7 through 12 reported having drunk at least one sugar-sweetened beverage in the past week:
  o 26% reported drinking 1 SSB in the past week
  o 33% reported drinking 2-4 SSBs in the past week
  o 9% reported drinking 5-6 SSBs in the past week
  o 10% reported drinking 7+ SSBs in the past week (OSDUHS, 2014)
• There were no significant differences between Ottawa and the rest of Ontario, between students in grades 7 to 8 and those in grades 9 to 12 (OSDUHS, 2014).

Is sugar addictive?
Much of the research into sugar addiction has been done using animals. Using these models, sugar may meet some of the criteria for being a substance of abuse (Am Diet Assoc., 2012). In medical terms, a substance is addictive if it 1) induces a pleasant state or relieves distress, 2) causes long-term chemical changes in the brain 3) leads to adaptive changes in the brain that trigger tolerance, physical dependence and uncontrollable cravings and 4) causes dependence so that abstaining is difficult and creates physical and mental reactions (Penn State University, 2006). This is of interest to consumers and scientists because of the linkage to cravings, binge eating and obesity (Am Diet Assoc., 2012). Changes in neurotransmitters similar to those seen with addictive drugs have been noted with excessive sugar consumption, but at a much small magnitude. Researchers in this area are careful to advise that more research in human beings is needed before we can conclude that sugar is an addictive substance (Am Diet Assoc., 2012).

What is the current recommended consumption of added sugars?
The Heart and Stroke Foundation recommends that added sugars make up less than 5% and a maximum of 10% of your daily calories. They state that the average 2,000 calorie-a-day diet contains no more than 12 teaspoons of added sugars, an amount that contributes about 10% of the day’s calories (Heart and Stroke, 2017).

Sip Smart! Ontario also recommends a maximum daily amount of no more than 10 tsp of added sugar for children ages 7-13 years based on the Heart and Stroke Foundation’s recommendations (Sip Smart! Ontario, 2015).

10 tsp = 10 sugar cubes = 10 sugar packs = 40 grams of sugar

How much added sugars are Canadians currently consuming?
In Canada, approximately 13% of the total daily calorie intake comes from added sugars (16 tsp. or 65 g). This amount is based on a 2000 kcal/day diet.

Applying the % to your diet

0.10 (10%) x 2,000 total calories = 200 calories/day of sugar

Because there are 4 calories/gram of sugar, divide 200 by 4:
200 calories / 4 calories per gram = 50 grams of sugar/day (12.5 tsp)
## What drinks should I be having every day?

<table>
<thead>
<tr>
<th>Choose Everyday</th>
<th>Choose sometimes</th>
<th>Avoid</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drinks in this category have no added sugar. They have high nutritional value and contribute to nutritional well-being through consumption throughout the day (water) and at meals and snacks (milk).</td>
<td>Drinks in this category are not the optimal choice because they do contain added sugar (flavoured milks) or because they are less nutritious than whole foods (100% fruit juice). Choose these occasionally (once or twice a week or less), but not daily.</td>
<td>Drinks in this category should be avoided. They are sweetened or artificially sweetened and they contain little to no nutritional value.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Water</th>
<th>100% Fruit juice</th>
<th>Sports drink</th>
</tr>
</thead>
<tbody>
<tr>
<td>Keeps a person hydrated and great for sipping throughout the day.</td>
<td>Has naturally occurring sugar and may also contain vitamin C and A, folate, potassium and antioxidants (limit servings to 125 mL of juice once or twice a week or less.)</td>
<td>Has high sugar content and is intended for use during continuous vigorous activity lasting longer than 60 minutes, or in hot and humid weather.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Plain milk</th>
<th>100% Vegetable Juice</th>
<th>Pop</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contains naturally occurring sugar and key nutrients like protein, calcium, vitamins A and D. Best to consume with meals.</td>
<td>Has naturally occurring sugar and is often high in added salt (sodium).</td>
<td>Is high in sugar, contains acid and has no nutritional value; cola often contains caffeine.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Unsweetened fortified soy beverage</th>
<th>Flavoured milk (for example, chocolate, strawberry)</th>
<th>Diet pop</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contains some naturally occurring sugar and key nutrients like protein, calcium, vitamin A and D.</td>
<td>Contains more sugar than plain milk but has just as much nutritional value.</td>
<td>Has no sugar, contains acid (harmful to teeth), no nutrients, artificial sweeteners and sometimes caffeine.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Flavoured fortified soy beverage</th>
<th>Energy drink</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contains more sugar than plain fortified soy beverage but has just as much nutritional value.</td>
<td>Has high sugar content and high or very high caffeine content; may also have other harmful additives. Should be avoided by children and youth.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Fortified milk alternative beverages</th>
<th>Fruit drink</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beverages like rice, hemp, flax and almond don not have the same amount of protein as plain milk or fortified soy beverage. Flavoured products also have added sugar.</td>
<td>Contains only a small amount of real juice; made with water, flavouring and added sugar. Fruit drinks may also be called fruit “cocktails”, “punch”, “blends”, “beverages” or end in “-ade”.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Plain coconut water</th>
<th>Iced tea, bubble teas</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contains some potassium but is not calorie free and has some naturally occurring sugar.</td>
<td>Bubble tea is very high in sugar and calories from tapioca, fruit-flavoured syrups and condensed milk in addition to tea. Iced tea contains added sugar and no nutrients.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Plain tea</th>
<th>Vitamin-added water</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be an occasional beverage when no sugar is added. Little nutritional value unless plain milk or milk alternative is added.</td>
<td>These are not necessary and contains added sugar. Can be unsafe for children to consume because of excessive intake of vitamins, minerals and caffeine.</td>
</tr>
</tbody>
</table>
Are natural sugars better than added sugars?
To answer this question, it is important to look at the food or beverage as a whole. While added and natural sugars are used in the body the same way, what makes added sugars worse is what happens before they are absorbed. Before you eat or drink something, natural sugars are usually trapped in the other components in the food - like protein and fibre. This means that during digestion the body has to work hard to find the sugars inside and because of this it will absorb the sugars slowly. Additionally, foods and beverages with mainly natural sugars (e.g plain milk and plain milk alternative) are nutrient dense and contain key nutrients for our bodies such as: protein, vitamins and minerals. On the other hand, foods and beverages that contain primarily added sugars (i.e. pop, sports drink, etc.) have little to no nutritional value, and nothing to trap the sugar. This means the body can find the sugar and absorb it right away, and there are no other nutrients for it to get at the same time.

100% fruit juice contains sugar. Should I choose this often?
At first glance, 100% fruit juices appear to be a good alternative to other SSBs, given that they contain some vitamins and other nutrients. However, fruit juices do not have the fibre that whole fruits have, so they have nothing to trap the sugar. The body can find the sugar just as quickly as it can other SSBs, therefore they are considered to have “added” sugars. They should be consumed in moderation (Hu, 2013). In children, it is recommended they consume a serving of no more than 125 mL (1/2 cup) of 100% fruit juice once or twice a week, or less. Dietitians of Canada recommends limiting intake of fruit juices because they are high in calories and low in fibre, and to eat whole fruits instead (Dietitians of Canada, 2014).

Milk contains sugar. Should I choose this often?
Choose plain milk with 2% M.F. or less more often. Plain milk contains a naturally occurring sugar known as lactose that is present with the protein component of the beverage. This leads to a slower absorption of the sugar in the body. Plain milk is also considered a nutrient dense drink because it provides a lot of nutrition compared to calories. It contains nutrients that our bodies need, including calcium and vitamin D. Plain milk is an important part of a healthy diet, as it contains nutrients for growth and bone development.

What should I drink instead of sugar-sweetened beverages?
Water is the best drink to choose instead of sugar-sweetened beverages. Water is calorie free and a great way to quench your thirst. For most people, tap water is free and readily accessible. In several studies, the substitution of SSBs with water was significantly associated with less weight gain and significantly lower risk of type 2 diabetes (Hu, 2013). Water helps your body keep your temperature normal, lubricate and cushion joints, protect your spinal cord and sensitive tissues, and get rid of wastes through urination, perspiration and bowel movements (CDC, 2014).

Are artificially sweetened or “diet” drinks a healthy choice?
Diet drinks should be avoided because they contain acid that is harmful to teeth, artificial sweeteners, no nutrients, and may contain caffeine. Little is known about the long-term health consequences of consuming artificial sweeteners (Hu, 2013). However, Health Canada regulates all sweeteners that are used and sold in Canada. Sweeteners are only approved when scientific evidence confirms they
are safe (Dietitians of Canada, 2016). Examples of artificial sweeteners include aspartame, sucralose, acesulfame potassium, thaumatin, and sugar alcohols such as isomalt, lactitol, maltitol, mannitol, sorbitol, and xylitol (Am Diet Assoc., 2012).

Both sugar-sweetened and artificially sweetened drinks have similar dental effects; both break down tooth enamel with frequent exposure. A normal mouth has a pH of 6.2 to 7, which is close to neutral with no damage done to the teeth. Tooth enamel begins to de-mineralize or dissolve at pH levels below 5.5. Although enamel is a hard substance, it can become porous and soft when repeatedly exposed to acid. Pop has an average pH of 2.5, which is very acidic (Cheng, Yang, Shao, Hu, & Zhou, 2009).

**Do diet drinks affect a person’s ability to regulate calories?**
At first, the human brain responds to sweetness with signals to eat more and then with signals to slow down and stop eating. By providing a sweet taste without any calories, artificial sweeteners could confuse the body’s natural hunger regulating mechanism. If this happens, it is thought that this could throw off the body’s ability to accurately gauge how many calories are being taken in. This theory is supported by animal research (Fowler 2008, Frank 2008). More research is needed before it is known how this might affect weight control in humans.

**Should I choose chocolate milk often?**
All milk contains lactose which is a naturally occurring sugar. The difference between plain milk and flavoured milk is that the flavoured milk also contains added sugar. Chocolate milk contains about twice as much sugar as plain milk due to the added sugar for the flavouring. Therefore, it is recommended to consume occasionally or sometimes. If making it at home, only add a small amount of syrup or powder.

**What is a serving of milk?**
According to Canada’s Food Guide a serving of milk is 1 cup (250 mL). See Canada’s Food Guide for other examples of milk products and recommended servings per day.

**How can I reduce the risk of tooth decay from drinking sugar-sweetened beverages?**
- Drink water instead. City of Ottawa tap water contains fluoride, which helps protect teeth against tooth decay.
- Avoid sipping sugary drinks all day; drink a serving at once. It is best to drink it with a meal.
- Use a straw to keep the sugar away from your teeth.
- After having a sugary drink, brush your teeth. If you can’t brush, rinse your mouth with water to help dilute the sugar and acid or chew sugar-free gum with xylitol.
- Always brush your teeth before sleeping, especially if you have just consumed a sugary drink.
- Brush your teeth with toothpaste that contains fluoride, floss regularly and have regular dental checkups.
Energy Drinks

**Key Messages**
1. Follow the warnings on the label.
2. Do not drink more than is recommended.
3. Do not mix energy drinks with alcohol.
4. Do not consume energy drinks if you are pregnant, breastfeeding, or are sensitive to caffeine.
5. Do not rely on claims made by brands as they are based on limited research.
6. Do not replace other drinks in your diet such as water and milk with energy drinks.
7. Be aware of the amount of caffeinated drinks being consumed in a short period of time.

What is the difference between a sports drink and an energy drink?

- Sports drinks rehydrate the body, provide electrolytes, and allow quick absorption of carbohydrates to replenish stores during prolonged activity (DC PEN, 2016).
- Energy drinks contain caffeine, which may have a diuretic effect and can actually cause the body to lose water leading to dehydration (DC PEN, 2013).

What should I drink when I exercise?

Water and a healthy diet will replace water and minerals that are lost during exercise. Sport drinks are intended for use during continuous **vigorous** activity lasting longer than 60 minutes, or in hot and humid weather.

What is in an energy drink?

**Sugar**: Many energy drinks are sold in large can sizes that have a lot of added sugar. The amount of sugar varies and will depend on the brand and the size of the can. There are approximately 10 teaspoons of added sugar in a 355 mL can and 23 teaspoons in a 710 mL can. By volume there is more sugar in energy drinks than pop or sports drinks.

**Caffeine**: In Canada, energy drinks usually have less caffeine than a cup of coffee; however, it may be easier to consume larger amounts of energy drinks compared to hot coffee. The amount of caffeine in energy drinks is more than what is recommended for children and youth. This means that one or two energy drinks can easily be over the caffeine limits for this population group.

**Other ingredients**: Energy drinks also contain ingredients such as taurine, herbal ingredients, and the B vitamin niacin. Taurine is an amino acid; a building block of protein. It is unclear why taurine is
added into energy drinks (Dietitians of Canada, 2016). The B vitamin niacin helps our bodies convert food into energy. Too much niacin may cause burning, tingling, itching and redness in the face, arms and chest. Niacin is found naturally in many foods like meat, chicken, fish, seafood, eggs, legumes (beans, peas, lentils), tofu, grain products, milk, cheese and soy beverages (Dietitians of Canada, 2016). Some energy drinks have added herbal ingredients such as Ginseng and Gingko Biloba. It has been claimed that these herbs improve physical and mental performance. However, there is no scientific evidence to support this claim (Dietitians of Canada, 2016). Be sure to talk to your doctor about using energy drinks with these ingredients if you are taking medication or other supplements.

What is caffeine and how much is a safe amount?

- Caffeine is a central nervous system stimulant that can temporarily ward off drowsiness and restore alertness. It is found in coffee beans, cocoa beans, tea leaves, yerba mate and guarana berries (DC PEN, 2013).

- Foods that contain caffeine include chocolate or any food containing chocolate (more in dark chocolate), some pop drinks, energy drinks, coffee, and tea.

- Health Canada has set guidelines for moderate daily caffeine intake for the average adult to be 400 mg/day. This level is not associated with any adverse effects (DC PEN, 2016).

- Health Canada has also set some lower guidelines for pregnant and lactating women. They should consume no more than 300 mg of caffeine a day.

- There are additional guidelines for children:

<table>
<thead>
<tr>
<th>Age of Child</th>
<th>Maximum amount of caffeine per day (mg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>4-6 years old</td>
<td>45 mg/day</td>
</tr>
<tr>
<td>7-9 years old</td>
<td>62.5 mg/day</td>
</tr>
<tr>
<td>10-12 years old</td>
<td>85 mg/day</td>
</tr>
</tbody>
</table>

- One typical 355 mL can of some varieties of pop contains between 36-46 mg of caffeine, the same amount of caffeine as the maximum recommended amount per day for young children.

- The size of the drink, whether it is pop, energy drink or coffee, needs to be considered when you are determining caffeine intake; some drinks are as large as 710 mL which could contain 100 mg of caffeine.
• More youth are drinking coffee or energy drinks daily. Most coffees (and iced coffee drinks) contain 180 mg of caffeine per 237 mL cup. Keep in mind that most cups of coffee or iced coffee are 2 or 3 times this size!

• A 250 mL energy drink has about 80 mg of caffeine, which is below the maximum intake for those over the age of 12. However, it is easy to consume more than one energy drink in a day or consume a larger amount.

**What are the effects of too much caffeine?**

Some people are more sensitive to caffeine than others. For individuals who are sensitive, too much caffeine can cause:

• Increased alertness

• Increased heart rate

• Increased urination (due to the diuretic effect)

• Insomnia or restless sleep

• Possible diarrhea, headaches, nervousness and irritability

• Stomach upset

• A “crash” or low in energy after the caffeine high wears off

• Addiction, or withdrawal symptoms

• Nausea, vomiting, and heart irregularities

(DC PEN, 2016).

**How much caffeine is in other beverages/foods?** *

<table>
<thead>
<tr>
<th>Beverage</th>
<th>Caffeine Content</th>
</tr>
</thead>
<tbody>
<tr>
<td>Energy drinks</td>
<td>between 80-360 mg (depending on size)</td>
</tr>
<tr>
<td>Coffee</td>
<td>76-180 mg/250 mL (higher in brewed vs. instant)</td>
</tr>
<tr>
<td>Espresso (brewed)</td>
<td>64-90 mg/1 oz</td>
</tr>
<tr>
<td>Cappuccino or Latte</td>
<td>45-75 mg/250 mL</td>
</tr>
<tr>
<td>Tea</td>
<td>25-60 mg/250 mL (Black or Green)</td>
</tr>
<tr>
<td>Herbal Tea</td>
<td>Usually 0 mg (check labels)</td>
</tr>
<tr>
<td>Some pop varieties</td>
<td>23-40 mg/355 mL (1 can)</td>
</tr>
<tr>
<td>Extra caffeinated pop</td>
<td>71 mg/340 mL</td>
</tr>
<tr>
<td>Chocolate milk</td>
<td>3-5 mg/250 mL</td>
</tr>
<tr>
<td>Hot Chocolate</td>
<td>5-12 mg/250 mL</td>
</tr>
<tr>
<td>---------------</td>
<td>----------------</td>
</tr>
<tr>
<td>Dark Chocolate</td>
<td>27 mg/40 g bar</td>
</tr>
<tr>
<td>Chocolate covered coffee beans, dark or milk chocolate</td>
<td>114-120 mg/10 coffee beans</td>
</tr>
</tbody>
</table>

*Caffeine content can vary a lot*

**Are the sugar-free energy drinks a better choice?**

No, sugar-free energy drinks are not a better choice. Although they do not contain any sugar, they still offer little nutritional value. It is better to replace “sugar-free” energy drinks with healthier drinks such as water or milk which contribute vitamins, minerals and/or protein.

**Why don’t all energy drinks have a Nutrition Facts table?**

Many energy drinks are not considered a food by Health Canada because of the added caffeine. Instead, they are classified as “natural health products” (NHP) and therefore do not require nutritional information.

**Why is it dangerous to mix energy drinks with alcohol?**

- Caffeine and alcohol are a dangerous combination. Together they may cause: heart irregularities, heart failure, inability to regulate body temperature, loss of co-ordination and balance, alcohol poisoning as a result of excess drinking, and death due to severe dehydration.

- Caffeine is a stimulant and may mask the effects of alcohol. This could lead people to underestimate the true effects. Effects may include:
  - A false sense of being alert. This could lead you to do things you usually wouldn’t do, like driving after drinking.
  - Not being aware of lost coordination and balance. You may slip, trip, or fall when engaging in physical activity such as dancing, jumping, or walking.
  - Drinking too much or too quickly and losing consciousness, or “passing out” from alcohol poisoning. Alcohol poisoning is serious and can be fatal.
Juice

What is fruit juice?

Beverages labeled as 100% fruit juice are made from real fruit and do not contain added sugars. Unsweetened 100% fruit juice has some of the nutrients, such as vitamin C, potassium and B vitamins, found in the whole fruit; however, fruit juice lacks fibre found in the whole fruit.

Drinking juice is not as filling as eating the whole fruit. You would have to eat about $1\frac{1}{2}$ – 2 oranges or apples to get 125 mL ($\frac{1}{2}$ cup) of juice (with a similar amount of calories and sugar). This makes it much easier to over consume juice than to over eat fruit (Sip Smart! Ontario, 2015).

Fruit juice is still considered a source of added sugar even when unsweetened due to the removal of the fibre and because it is easy to over consume. It is better to eat a whole fruit and drink water instead.

What is a fruit drink?

Fruit drinks are sugary drinks made with water, flavouring, added sugar and often contain only a small amount of real fruit juice. They can be labeled as fruit drink, beverage, punch, cocktail or ending in –ade and should not be confused with 100% fruit juice. Some have vitamin C added, but fruit drinks do not have the other nutrients found in real fruit juice. Do not be fooled by the colourful fruit pictures on the container! Read the ingredient list to find out what is actually in the drink (Sip Smart! Ontario, 2015).

How often should I drink juice?

- Whole fruits and vegetables provide more nutrition and fibre than juice, and should be chosen every day. 100% fruit juice should be an occasional or sometimes drink.

- Infants less than six months of age should not be given juice (DC PEN, 2015).

- Infants greater than six months, toddlers and children should not have more than 125 mL of 100% fruit juice once or twice a week, or less. Never offer juice in a bottle (DC PEN, 2014).

- Fruit punch, fruit drink, fruit cocktail and fruit flavoured beverages contain water, flavouring and added sugar. They offer no nutrition. It is healthier to avoid these products. For more information about sugar-sweetened beverages visit Sip Smart! Ontario: http://brightbites.ca/
Appendices

Appendix 1: Sugar Shocker Kit up photo
Appendix 2: Sugar Shocker! Fact Sheet
Appendix 3: Liquid Candy Fact Sheet
Appendix 4: Sugar Shocker Guessing Game Instructions
Sugar Shocker! Setup Photo
## Sugar Shocker!

<table>
<thead>
<tr>
<th>Drinks (Common Sizes)</th>
<th>Amount of Added* Sugar Per Container</th>
<th>Teaspoons of Added* Sugar Per Container</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regular pop (591 mL)</td>
<td>68 g</td>
<td>17 tsp.</td>
</tr>
<tr>
<td>Fruit Drink (591 mL)</td>
<td>53 g</td>
<td>14 tsp.</td>
</tr>
<tr>
<td>Energy Drink (473 mL)</td>
<td>46 g</td>
<td>12 tsp.</td>
</tr>
<tr>
<td>Sports Drink (710 mL)</td>
<td>40 g</td>
<td>10 tsp.</td>
</tr>
<tr>
<td>Iced Cappuccino (515 mL)</td>
<td>37 g</td>
<td>9 tsp.</td>
</tr>
<tr>
<td>Iced Tea (591 mL)</td>
<td>33 g</td>
<td>8 tsp.</td>
</tr>
<tr>
<td>Vitamin-added Water (591 mL)</td>
<td>32 g</td>
<td>8 tsp.</td>
</tr>
<tr>
<td>100% Fruit Juice (200 mL)</td>
<td>20 g</td>
<td>5 tsp.</td>
</tr>
<tr>
<td>Chocolate Milk (237 mL)</td>
<td>13 g</td>
<td>3 tsp.</td>
</tr>
<tr>
<td>Plain Milk (237 mL)</td>
<td>0 g</td>
<td>0 tsp.</td>
</tr>
<tr>
<td>Water</td>
<td>0 g</td>
<td>0 tsp.</td>
</tr>
</tbody>
</table>

*Addition sugars are sugars that are added to foods or beverages when they are processed. This also includes sugar in honey, syrups, fruit juices and fruit juice concentrates.

Children ages 7-13 should have no more than 10 teaspoons of added* sugar a day. Adults should have no more than 13 teaspoons of added* sugar a day.

---

Eat Well. Be Active. Feel Good.
Bien manger et bouger pour le plaisir de vivre!
Liquid Candy

How much added sugar do you drink?

Regular pop is high in sugar...

- There is a lot of sugar in regular pop and there are no vitamins, minerals or proteins.
- Large amounts of sugar increase the risk of developing cavities.
- Regular consumption of sugary drinks is associated with obesity, cardiovascular disease and type 2 diabetes.

What are some better drink choices?

**Water:** Water is great to quench your thirst. Water does not contain any sugar and it contributes to good health.

**Milk:** Many Canadians do not drink as much milk as they need. Milk contains essential nutrients including protein, calcium, vitamin D, vitamin A, and others.
Instructions Sugar Shocker Guessing Game

To make the booth more interactive, ask the participants to guess the number of packages of sugar in each beverage.

To play:

- Arrange bottles in a line on the table with labels turned to show name and volume only.
- Ask the participants to guess how many packages of sugar there is in the entire bottle. Explain that one package of sugar is equal to 1 teaspoon, and 1 teaspoon is equal to 4 grams.
- Once participants have placed all the sugar packages in front of the bottles and are done guessing, turn the bottles around to reveal the grams and teaspoon information on the back. Make corrections where necessary.
References


5) DC PEN. Updated 2013-03-06. Caffeine Background.

6) DC PEN. Updated 2016-04-28. Food Sources of Caffeine.


8) DC PEN. Updated 2016-01-20. All About Sports Drinks.

9) DC PEN. Updated 2014-05-14. How much fruit juice is appropriate to include in the diet of a toddler/preschooler?


17) Hu, F.B. (2013). Resolved: there is sufficient scientific evidence that decreasing sugar-sweetened beverage consumption will reduce the prevalence of obesity and obesity-related diseases. Harvard School of Public Health. Boston, USA.


