

# The Truth about Hidden Sugars: A Risk for Health



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**CE Credits:** 1 hour

**Intended Audience:** Dentists, Dental Hygienists, Dental Assistants, Dental Students, Dental Hygiene Students, Dental Assistant Students

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**Disclaimer:** Participants must always be aware of the hazards of using limited knowledge in integrating new techniques or procedures into their practice. Only sound evidence-based dentistry should be used in patient therapy.

## Conflict of Interest Disclosure Statement

- The author reports no conflicts of interest associated with this course.

## Introduction – Hidden Sugars

The Truth about Hidden Sugars: A Risk for Health course explores the relationship between hidden sugars in foods and how they correlate with overall health risk; diabetes, cardiovascular, dental disease, and obesity. A large body of research demonstrates added sugars negatively impact just about every organ system in the body. Most recently, sugars are to blame for changes in the microbial flora in the digestive system, interfering with gut health, increasing inflammation, and causing a plethora of different symptoms while hindering our immune system.

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## Overview

Learn about the hidden sugars in food and how it may impact your health. Supporting research from major health organizations including the Dietary Guidelines for Americans, the American Heart Association, the American Academy of Pediatrics, the Institute of Medicine and the World Health Organization suggest reducing caloric intake from added sugars.<sup>10</sup> This course will examine the truth about hidden sugars, where it hides on a food label and how to avoid these products and choose healthier alternatives.

### Sugar Fact #1

Added sugars are hiding in foods that many of us consider healthy. Energy bars, yogurt, ketchup, breads and salad dressing can contain high amounts of sugars. Check the label carefully.<sup>5</sup>

## Learning Objectives

**Upon completion of this course, the dental professional should be able to:**

- Understand why hidden sugars are a risk for health.
- Define terms used on a food label to identify hidden sugars.
- Discuss the health implications relating to refined carbohydrate intake.

- List food products that contain the highest amount of hidden sugars and better alternatives.
- Practice reading the new food label to identify hidden sugars.
- Apply approaches to reduce hidden sugar intake.
- Describe current research and trends relating to carbohydrates and health.
- Evaluate carbohydrates effect on blood glucose levels using the Glycemic Index.

## Introduction

We are all well aware of the added sugars in soda and sports drinks, baked goods, and snack foods. But did you know your salad dressing, soup, bread, pasta sauce, and yogurt may contain added sugars? Even foods marketed as “healthy” may have additional sugars added to the product. In fact, pre-packaged foods, roughly 65% of them include some form of added sugars.<sup>5</sup> Manufactures are required to include added sugars in the ingredient list, based on weight. But they often disguise these names to “camouflage” the amount of sugar in their product. In fact, there are over 61 different names of added sugars on a food label.<sup>9</sup> Recently, the Food and Drug Administration (FDA) has required manufactures to use the new nutrition label template that includes a line for “added sugars.” The change will help consumers distinguish between sugars that are naturally occurring in foods, like lactose in milk and fructose in fruit verses “evaporated cane juice” in flavored yogurt.

### Sugar Fact #2

There are at least 61 alternative names for added sugars on a food label.<sup>5</sup>

## The Truth about Sugars

Sugars are chemicals made of carbon, hydrogen, and oxygen that taste sweet.<sup>9</sup> They are an important energy source for our brains and bodies. Sugars are further divided into groups; monosaccharides like fructose and glucose and disaccharides like sucrose, maltose, and lactose. Polysaccharides are long chain monosaccharides

made up of starch, glycogen, and cellulose. The body breaks down these sugars and uses them for fuel. But studies show too much sugar can have many negative health implications. Refined or processed sugars are stripped of natural nutrients, leaving you with empty calories and possibly unwanted weight gain.<sup>6</sup>

Today, the average adult consumes roughly 22 teaspoons of added sugars every day.<sup>9</sup> That averages 66 pounds of added sugar each year.<sup>9</sup> According to the American Heart Association, individuals should consume no more than six teaspoons of sugar per day for women, nine teaspoons of sugar for men and three to six teaspoons of sugar for children.<sup>9</sup> In spite of these recommendations, consumption of added sugar remains high, especially in the form of sugary drinks, which offer little nutritional benefit. Consumers often do not compensate for the high caloric content by consuming less food throughout the day. A single beverage may contain 34-47 grams of sugar per serving.<sup>4</sup> However, for individuals who are conscious about obvious sugars in foods, reducing sugar intake in an already healthy diet can be tricky. For example, many sauces have 3-16 grams, flavored waters 10-25 grams, vegetable soups 8-24 grams, and industrial breads 8-12 grams.<sup>4</sup>

### Why are Sugars Hidden in Foods?

As our culture demands cheap, readymade meals, it is no surprise this convenience comes at a price. Pre-packaged, processed foods, like soups, sauces, and frozen entrees contain added sugars to enhance the flavor and make them savory. Foods marketed as low-fat or diet foods often contain extra sugar to help improve their palatability and to add texture in place of fat. Even natural sugars in some fruit, including apples, has increased as new varieties such as Fuji and Pink Lady are emerging into a competitive market to satisfy our taste for sweetness.<sup>8</sup>

#### Sugar Fact #3

To make “low-fat” foods taste better, manufacturers often add sugars to make the product more palatable.<sup>5</sup>

## A Risk for Health Implications

### Dental Decay

Pediatric dental disease is the #1 chronic childhood illness in America.<sup>14</sup> More than 40% of children have dental caries by the time they reach kindergarten.<sup>14</sup> In the United States alone, emergency department care for dental complaints cost up to 2.1 billion dollars.<sup>14</sup> According to a recent study of hidden sugars in drinks marketed to children, dental caries is one of the most common reasons for children in the UK to be admitted to the hospital emergency room.<sup>2</sup> Consumption of free sugars, particularly in the form of sweetened beverages replaces more nutritional foods and leads to unhealthy eating patterns, increased risk of type 2 diabetes, and the likelihood of health problems in adolescences and becoming overweight or obese adults.

#### Sugar Fact #4

Growing evidence suggests that too much sugar over time can put you at risk for diabetes, heart disease, and unwanted weight gain.<sup>5</sup>

### Obesity

There is increasing research to show that it's the free sugars in foods rather than the fat in our diet that is the major contributing health risk inflicting our population.<sup>3</sup> In a study of 43 obese children, calories were maintained but sugars were reduced from 28% to 10%, resulting in improved cholesterol, triglycerides, blood pressure, and insulin levels.<sup>3</sup> Previous research has also linked added sugars with an increased risk of type 2 diabetes, heart disease, and obesity. In one study when individuals consumed 17 to 21% of their calories from added sugars, it increased their risk by 38% of dying from cardiovascular disease verses those who kept their intake of sugars at the recommended levels.<sup>3</sup>

### Inflammation

According to a review in the *Journal of Endocrinology*, when we consume too much refined sugar, the excess can increase levels

of pro-inflammatory messengers called cytokines.<sup>11</sup> Sugar also suppresses our white blood cells, weakening our immune system, and make us more susceptible to infectious diseases.<sup>11</sup> A simple solution is replacing high-glycemic foods for low-glycemic index alternatives, like whole grains and foods with healthy fat, protein, and fiber. Another study in the *Journal of Nutrition* discovered that on an equal calorie diet, overweight participants who ate a low-glycemic index diet reduced levels of the inflammatory biomarker C-reactive protein whereas participants on a high-glycemic diet did not.<sup>11</sup>

The Glycemic Index (GI) is a rating system from 0 to 100 that measures how much a carbohydrate raises blood sugar levels. Proteins and fats are considered zero GI foods. Most whole fruits and vegetables are considered low (55 or lower) to medium (56-69) glycemic-index foods with the exception of dates, kiwi, watermelon, potatoes, rutabaga, parsnips, and pumpkin, which are considered high-glycemic index foods (70 or higher). Processed foods and refined carbohydrates are considered high GI foods.<sup>13</sup>

## Diabetes

A person's risk of developing both type 1 and type 2 diabetes affects the body's ability to regulate blood glucose levels. While sugar does not directly cause diabetes, it may increase the risk of developing the condition by causing weight gain. The American Diabetes Association offers these guidelines:<sup>12</sup>

- Choose complex carbohydrates with a low or medium glycemic index
- Eat foods rich in fiber to slow digestion and better control blood glucose
- Eat lean protein to control food cravings
- Choose non-starchy vegetables like artichokes, broccoli, eggplant, and mushrooms
- Eat smaller meals more frequently

## Understanding the New Food Label

Many foods naturally contain sugars such as fruit, milk, and vegetables like sweet potatoes and beets. These foods come with small quantities of sugar and are packed with fiber, protein, vitamins, minerals, and phytochemicals that do not affect blood sugars as drastically as free sugars. Added sugars often come with empty calories with little nutritional benefits.

<b>Nutrition Facts</b>			
Serving Size 2/3 cup (55g)			
Servings Per Container About 8			
Amount Per Serving			
<b>Calories</b>	230	Calories from Fat	72
		<b>% Daily Value*</b>	
<b>Total Fat</b>	8g		<b>12%</b>
Saturated Fat	1g		<b>5%</b>
Trans Fat	0g		
<b>Cholesterol</b>	0mg		<b>0%</b>
<b>Sodium</b>	160mg		<b>7%</b>
<b>Total Carbohydrate</b>	37g		<b>12%</b>
Dietary Fiber	4g		<b>16%</b>
Sugars	12g		
<b>Protein</b>	3g		
Vitamin A			<b>10%</b>
Vitamin C			<b>8%</b>
Calcium			<b>20%</b>
Iron			<b>45%</b>
* Percent Daily Values are based on a 2,000 calorie diet. Your daily value may be higher or lower depending on your calorie needs.			
	Calories:	2,000	2,500
Total Fat	Less than	65g	80g
Sat Fat	Less than	20g	25g
Cholesterol	Less than	300mg	300mg
Sodium	Less than	2,400mg	2,400mg
Total Carbohydrate		300g	375g
Dietary Fiber		25g	30g

Previous Label

<b>Nutrition Facts</b>	
8 servings per container	
<b>Serving size</b>	<b>2/3 cup (55g)</b>
Amount per serving	
<b>Calories</b>	<b>230</b>
<b>% Daily Value*</b>	
<b>Total Fat</b>	8g <b>10%</b>
Saturated Fat	1g <b>5%</b>
Trans Fat	0g
<b>Cholesterol</b>	0mg <b>0%</b>
<b>Sodium</b>	160mg <b>7%</b>
<b>Total Carbohydrate</b>	37g <b>13%</b>
Dietary Fiber	4g <b>14%</b>
Total Sugars	12g
Includes 10g Added Sugars	<b>20%</b>
<b>Protein</b>	3g
Vitamin D	2mcg <b>10%</b>
Calcium	260mg <b>20%</b>
Iron	8mg <b>45%</b>
Potassium	235mg <b>6%</b>
* The % Daily Value (DV) tells you how much a nutrient in a serving of food contributes to a daily diet. 2,000 calories a day is used for general nutrition advice.	

New Label

The earlier version of the Nutrition Facts label combines both naturally occurring sugars with added sugars under “total sugars,” making it difficult for consumers to identify between the two. To make things clear, the Nutrition Fact label was changed adding a line for added sugars, similar to total fat and saturated fat. The revised label makes it easier for an individual to identify natural occurring sugars from added sugars and make comparisons in food products. The FDA has mandated compliance of the new food label from manufacturers by July 2018. In addition to added sugars, the food label includes the daily value for both vitamin D, important for bone health, and potassium, good for controlling blood pressure.<sup>10</sup> The bold font makes the label easier to read while highlighting the calories and serving sizes. In addition to the “added sugars” calculation, consumers will also want to be aware of the daily value of total carbohydrates.

**Highlights of the Redesigned Food Label**

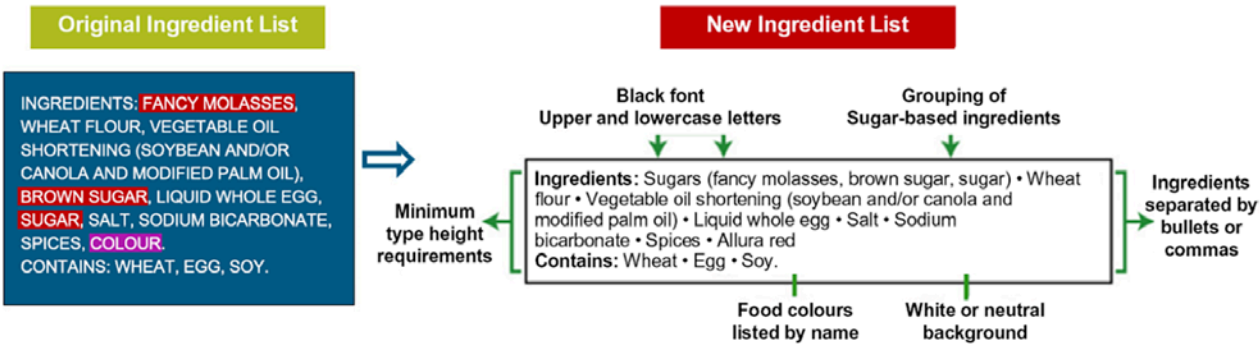
- Serving sizes have been updated to reflect what people actually eat and drink.
- Calories are now in larger and bolder font.
- Calories from fat have been removed because research has demonstrated the type of fat consumed is more important than the amount.
- An area for added sugars is included in grams and as a percentage Daily Value.
- Vitamin D and potassium are now included in the list of nutrients, replacing Vitamins A & C.
- The label also includes footnotes explaining Daily Value.

The label also makes it easier for consumers to identify hidden sugars. Changes include easy to read black font, upper and lower case letters on a white or neutral background. The items are separated by bullets and sugar based ingredients are grouped together. Check the list for anything ending in ‘ose’ (glucose, sucrose, fructose, lactose, maltose), as well as honey, molasses and syrups. As mentioned earlier, there are over 61 different names of added sugars on a food label.<sup>9</sup> Ingredients are listed in descending order by weight, so where sugar is listed in relation to other ingredients can indicate how much sugar a particular product contains.<sup>1</sup> The higher it is located on the ingredient list, the more added sugar the product contains. Keep in mind there are also a number of sugar substitutes used in low-calorie products to provide sweetness, but with fewer calories. Examples include xylitol, sorbitol, and mannitol. As a side note, keep xylitol out of reach from pets, it is toxic even in small doses and can be hidden in items such as peanut butter, protein bars, baked goods, and toothpaste.

**Surprisingly Sweet**

It is no surprise that chocolate, fizzy drinks, and baked goods have added sugars. But many consumers are fooled by “healthy” sounding foods that contain added sugars to enhance flavor. Below are a list of common culprits.

**Granola cereal and bars:** these may look healthy and make for a quick breakfast option in the morning, but many are processed and can contain as much sugar as a chocolate bar.<sup>7</sup> You’re better off mixing walnuts, almonds, or seeds with some dried fruit for a quick and healthy breakfast option.



**Salad dressing:** most people enjoy a salad for the “crunch” and to fulfill their daily vegetable requirement. But dressing like French, Thousand Island, and even oil-based dressing, claiming to be “low-fat,” can contain 9-10 grams of sugar in two-tablespoons.<sup>6</sup> The best option is to make your own dressing using olive oil, balsamic vinegar, and a squeeze of fresh lime or lemon or fresh herbs like garlic, chives or cilantro.

**Flavored yogurt:** all yogurts contain some sugar in the form of lactose, but many flavored yogurts contain added sugars, often as high fructose corn syrup. The best option is to purchase plain Greek style yogurt and add a sprinkle of cinnamon or fresh berries.

**Frozen vegetables and meals:** pre-packaged convenient foods can contain a surprising amount of both sugar and sodium, especially when sauce is included. Many have as much as 30-40 grams per serving of added sugars.<sup>6</sup> Read labels carefully and choose sauce-free options when available.

**Condiments:** adding sauces like barbecue, ketchup, mayonnaise, and Sriracha can account for 80% of the calories and 12 grams of sugar, not to mention the amount of sodium in these sweet and savory condiments. Better alternatives include hummus, mustard, and hot sauce.

### Product Comparison: Choose a Better Option

Reading food labels can be a daunting task while grocery shopping. Here are a few shortcuts that can help you choose the best options.

- Find the “plain” version of foods; yogurt, oatmeal, and crackers. Stay clear of foods with the label advertising “low-fat, low-calorie, fat-free.” They typically have more added or artificial sugars.
- Food labels using the terms “natural or organic” does not mean a food has less added sugar.<sup>5</sup>
- Scan the ingredient list for “code words” for sugars; anything ending in “ose.” They are listed according to weight.

- Check the “added sugars” line and the percentage Daily Value. 4 grams=1 teaspoon of sugar.<sup>1</sup>
- Compare pre-packaged, convenient type foods for the best option; even the same manufactured product in a different flavor may vary in sugar content. Below are a few examples of product comparisons.

### Strategies to Reduce Sugar

Sweets can be enjoyed in moderation. Just be aware of added sugars elsewhere in your diet, such as in drinks, breads, cereals, salad dressing, condiments, and sauces.

#### Sugar Fact #5

Liquid sugar in drinks is the single largest source of added sugars in the American diet.<sup>5</sup>

- Energy drinks, soft drinks, and fruit juice are prime sources of liquid carbohydrates that contribute to extra calories and weight gain with little or no nutritional benefit. In fact, the development of type 2 diabetes, heart disease, and other chronic health conditions continue to plague our population by this industry alone. The average sweetened beverage provides about 150 calories, usually from high-fructose corn syrup, which is equivalent to 10 teaspoons of table sugar.<sup>1</sup> Instead, enjoy herbal teas or carbonated water with fresh lemon in place of fruit juices. Add a sprinkle of cinnamon to coffee in place of added cane sugar. Recent studies show cinnamon may lower both cholesterol and blood glucose levels in type 2 diabetics.
- Choosing whole, unprocessed foods, with a limited ingredient list, is a great way to avoid consuming added sugars unintentionally. Whole fruit, steel-cut oats, plain Greek yogurt are healthier breakfast choices compared to ready-to-eat breakfast cereals, bars and pastries, yet are still convenient.
- Avoid low-fat ‘diet’ foods which tended to be higher in sugar. Instead, consume smaller portions of the regular version.
- Be aware of ‘sugar-free’ foods which may contain artificial sweeteners like sucralose

and aspartame. Although these products taste sweet, they may send a confusing message to the brain and may cause overeating.<sup>8</sup>

- Balance your lean proteins and carbohydrates to help manage food cravings; consuming legumes, low-fat dairy and meats with whole grains can help slow digestion and improve satiety.
- Reduce sugar in recipes by adding spices to boost flavor while adding nutritional value; cinnamon, ginger, nutmeg, allspice, and vanilla all have additional health benefits.
- Snack on fresh fruit, nuts and seeds, string cheese or plain yogurt to balance blood sugar and energy levels.
- Swap simple, refined carbohydrates for complex whole grains such as brown rice, whole wheat bread, and pasta.
- To reduce the risk of dental caries from sugars, end a meal with a protein or fat to raise the pH of the oral cavity above 5.5. Nuts, cheese, or a slice of turkey can offset the negative effects of fermentable carbohydrates.

- Pay attention to sugars in alcohol, especially ciders, fruity cocktails, and rich spirits such as sherry. The best option is a dry red wine; it contains approximately 2-3 grams of sugar and the added benefit of Resveratrol, a powerful antioxidant.

## Conclusion

In conclusion, hidden sugars in foods may pose a major health risk for some individuals. Studies continue to demonstrate that the hidden sugars in our foods are responsible for the increase in obesity, heart disease, type 2 diabetes, and poor oral health related to tooth decay. Further research concerning the sugar content added to foods is needed in order to improve public health awareness. The ongoing discussion between health care professionals, researchers and the FDA have made some improvements in consumer understanding by requiring manufactures to utilize the new nutrition label template. The general public needs to recognize the health implications of consuming products with added sugars and make informed decisions regarding food purchases.



**Higher Sugar**  
17 grams of sugar



**Lower Sugar**  
4 grams of sugar



**Higher Sugar**  
31 grams of sugar



**Lower Sugar**  
14 grams of sugar



**Higher Sugar**  
9 grams of sugar



**Lower Sugar**  
1 gram of sugar



**Higher Sugar**  
16 grams of sugar



**Lower Sugar**  
10æ grams of sugar



## Course Test Preview

To receive Continuing Education credit for this course, you must complete the online test. Please go to: [www.dentalcare.com/en-us/professional-education/ce-courses/ce558/test](http://www.dentalcare.com/en-us/professional-education/ce-courses/ce558/test)

**1. Which two nutrients have been added to the new food label?**

- A. Vitamins D and Potassium
- B. Vitamin C and Vitamin D
- C. Potassium and Calcium
- D. Vitamin A and C

**2. One teaspoon of sugar equals?**

- A. 4 grams
- B. 5 grams
- C. 6 grams
- D. 7 grams

**3. How many sugars can you identify in the ingredient list below?**

**Ingredients:** unbleached wheat flour, sucrose, soybeans, fructose, garlic, chicken, mannitol, water, corn syrup, xylitol, lactic acid, potassium carbonate, starch, molasses, natural flavors.

- A. 4
- B. 5
- C. 6
- D. 7

**4. The average sweetened beverage contains roughly 150 calories and \_\_\_\_\_ teaspoons of sugar.**

- A. 5
- B. 6
- C. 8
- D. 10

**5. Many “low-fat” versions of snack foods tend to be higher in sugar. Sugar-free foods that contain artificial sweeteners may send a confusing message to the brain and cause overeating.**

- A. Both statements are true.
- B. Both statements are false.
- C. The first statement is true, the second false.
- D. The first statement is false, the second true.

**6. When an individual consumes refined sugar, the excess can increase levels of pro-inflammatory messengers called \_\_\_\_\_.**

- A. Cytokines
- B. Ketones
- C. Chylomicron
- D. Cholesterol

- 7. All of the following are changes to the new food label EXCEPT?**
- A. Serving sizes have been updated to reflect what people actually eat and drink.
  - B. Calories are now in larger and bolder font.
  - C. Calories from fat have been removed because research has demonstrated the type of fat consumed is more important than the amount.
  - D. Added sugars are combined with natural occurring sugars as a percentage Daily Value.
- 8. Which of the following condiments have the lowest amount of added sugars?**
- A. Ketchup
  - B. Mustard
  - C. Barbecue sauce
  - D. Mayonnaise
- 9. Which of the following marketing labels would most likely have the least amount of added sugars?**
- A. Natural
  - B. Plain
  - C. Organic
  - D. Low-calorie
- 10. The ingredient list on the new food label will contain all of the following EXCEPT?**
- A. Bullets separate individual ingredients
  - B. Food colors listed by name
  - C. Neutral background with black font
  - D. Sugars are identified in bold font
- 11. Added sugars in foods rather than the fat in our diet may cause major contributing health risk. Refined sugars cause type 1 and 2 diabetes.**
- A. Both statements are true.
  - B. Both statements are false.
  - C. The first statement is true, the second false.
  - D. The first statement if false, the second is true.
- 12. The American Heart Association recommended limits for daily sugar intake includes \_\_\_ teaspoons for women, \_\_\_ teaspoons for men, and \_\_\_ teaspoons for children.**
- A. 6, 9, 3-6
  - B. 7, 10, 2-4
  - C. 8, 12, 5-6
  - D. 9, 13, 6-7
- 13. Which of the following foods have little effect on blood glucose levels and are considered a low-glycemic index choice?**
- A. Watermelon
  - B. Turkey
  - C. Pumpkin
  - D. Potatoes

## References

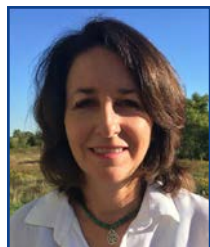
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## Additional Resources

- No Additional Resources Available

## About the Author

### Diane Verneti-Callahan, RDH, MS Ed



Diane Verneti-Callahan is a dental hygiene faculty at Madison College, Madison, Wisconsin, since 2000. She received her BS degree from Marquette University and her MS degree from University of Wisconsin, Platteville. Diane was an associate professor at the University of Minnesota, School of Dental Hygiene, where she began her teaching career. She has a combined 30 years' experience in education and clinical practice with an interdisciplinary background in health and wellness. In addition to teaching, Diane is a regular contributor to Procter and Gamble's continuing education courses as well as a published author in

ADHA Access magazine on the topic of Nutrigenomics. Diane is the Program Coordinator for "More Smiles Wisconsin" and a Board Advisor for Madison College Honors Program.

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