ACTA SCIENTIFIC MEDICAL SCIENCES (ISSN: 2582-0931)

Volume 3 Issue 12 December 2019

Short Communication

Sugar – its Not Just About Weight!!

Holly Fourchalk*

HT Natural Medicine, Choices Unlimited for Health and Wellness, Canada

***Corresponding Author:** Holly Fourchalk, HT Natural Medicine, Choices Unlimited for Health and Wellness, Canada.

Received: October 31, 2019; **Published:** November 05, 2019

DOI: 10.31080/ASMS.2019.03.0462

Monosaccharides (glucose and fructose), disaccharides (two monosaccharides joined together – glucose plus fructose equals sucrose; or glucose plus galactose equals lactose; or 2 glucose equals maltose) and polysaccharides (a chain of monosaccharides, cellulose, glycogen) are the three categories of sugars. Although the sugars can also be grouped according to the number of carbons in the chain. For instance, the 3 carbon (trioses), 5 carbons (pentoses) and 6 carbons (hexoses) are the most common.

Some are toxic to the body and some are required. For instance, the 5 carbon sugars (ribose and deoxyribose) are required in DNA and RNA. Pentose, another 5 carbon sugar, is found in nuclei acids.

Sugars can also be named according to what is attached to the base. For instance, if the sugar has an aldehyde group attached to it, it is called aldose. If there is a carbonyl C internally, then it is a ketose.

Some sugars have the same chemical formula but the atoms are arranged differently. For instance, fructose, galactose and glucose all have the same chemical formula.

Some sugars have a linear molecular layout whereas others have a circular or a ring format. Many five and six carbon sugars can function as a linear chain or a ring form.

Glucose is an interesting sugar. It is a six-component sugar and can be in ring or linear form. In the ring form, it can function with the hydroxyl group either up (beta) or down (alpha).

We know that a huge challenge to our Western diet is the amount of sugar ingested. We could say that if the sugar is natural and unprocessed then it is not a toxin. But that would be false. Too much fructose, found in fruit, can be very toxic to the body.

So let's understand what the group of compounds called sugar do in the body:

1. Excess sugar can obviously cause weight gain for many metabolisms. However, there are many thin people who eat high amounts of sugar and other unhealthy foods that remain thin.
2. Excess sugar in the body puts an added stress load on the body in the following ways:
    a. Excess sugar provokes the creation of AGEs – there are over 100 different advanced glycation endproducts. They attach to cells and cause a variety of dysfunctions including cellular death (necrosis) and cancer
    b. AGEs lead to amyloids – protein accumulates. There are many types of amyloids. They typically block blood vessels and interfere with neural function
3. Sugars destroy telomeres [1]. Sugars along with free radicals [2] When born you have about 1500 telomere units at the end of each DNA strand. They help to keep the DNA organized and support the cell replication process. Many things shorten the telomeres, various toxins, free radicals, metal toxicity, insufficient nutrients, etc. glutathione provokes the telomere enzyme that actually helps provoke new telomeres!! But sugar will shorten the telomeres causing premature cellular aging [3].
4. Energy - sugar creates fatigue. Sugars can initially spike your insulin and energy levels, but then the hypoglycemic drain afterwards creates the 'sugar crash'[4]. Sugar can also decrease the amount of time you spend in the deep healing sleep.

5. High blood pressure and heart disease – sugar can lead to inflammation, high triglycerides, and blood pressure issues all of which are major risk factors for heart disease. Historically, table salt was the major concern for high blood pressure, but now it is recognized that sugar may even be a worse culprit [5]. Sugars cause issues with the heart, the blood vessels and the kidneys.
6. Cholesterol – high sugar content raises your LDL and lowers your HDL and impacts the enzymes that break down the cholesterols [6].
7. Inflammation – whether due to the glycogen in the liver; or the access free radicals; or the access AGEs; or the amyloids – all are associated with inflammation [7].
8. Fatty liver – sugars, and especially fructose – is linked with a fatty liver. The liver converts fructose into energy or stores it as glycogen. If too much glycogen gets stored, then the liver turns it into fat. Now we have a non-alcoholic fatty liver disorder with inflammation and scarring in the liver. Considering the liver supports all organs and systems in the body, anything can happen [8].
9. Depression – blood sugar swings affect the neurotransmitters in the brain and results in neural inflammation, depression and anxiety a long with irritability and frustration [9].
10. Aggression – both hyper and hypo glycemia, meaning both the initial sugar high and the resulting sugar low can cause abnormal irritability, frustration, anger and rage - resulting in physical aggression – none of which are pretty.
11. Dementia – high sugar content can certainly cause a variety of dementias – whether it be the sugar in the blood; or the AGEs attacking brain cells; or the beta amyloids blocking the system – sugar is a huge toxin to the brain [10].
12. Diabetes – while only 30% of those overweight have diabetes, 80% of those with diabetes have a weight issue – so one might question what is really causing what. However, we do know that high sugar consumption drives 'insulin resistance' and eventually the pancreas just can't produce anymore insulin [11].
13. Cancer – high amounts of sugar increases cancer in the esophagus, small intestine and the cavity surrounding the heart and lungs [12].
14. Kidneys – high sugar levels can cause damage to the small blood vessels in the kidneys causing kidney disease and kidney stones [13].
15. Acne – blood sugar spikes cause an increase in androgen secretion, oil production, inflammation and they all play a role in acne [14].
16. Accelerated aging processes in the skin. The resulting AGEs damage collagen and elastin – proteins that keep the skin looking youthful [15].
17. Dental issues – high sugar content alters the pH of the mouth and support the bad bacteria in your mouth. Then both the bad bacteria and the acidity can rot your teeth [16].
18. Gout – when your body breaks down fructose, you release purines – purines in turn create a uric acid build up in the blood – the uric acid hardens and forms crystals that lodge in your toes, knees and other joints.

[17] Unfortunately too many of our foods are high in sugar content, even foods thought to be healthy.

1. Soda, energy drinks, sports drinks,chocolate milk, flavoured coffees, iced tea, vitamin water, bottled smoothies, liquor
2. Fruit juice [18].
3. Junk food: Deserts, chocolate bars, puddings, ice cream, candies, pancakes,
4. Fast foods:
5. Condiments: BBQ sauce, ketchup, sweet relish, mayonnaise, salad dressings
6. Processed foods: Spaghetti sauce, pre-made soups, breakfast cereals
7. Canned food: Canned fruit, baked beans
8. But what about so called healthy foods?
    a. Yogurt – watch for the sugar content
    b. Granola bars
    c. Protein bars
    d. Cereal bars
9. Fruit: Bananas, cherries, pomegranates, grapes, figs, dried fruit,
10. Vegetables: Rutabaga, beets, squashes, green peas, corn.
11. Nuts: Almond paste, roasted chestnuts, pistachios, dry roasted nuts,

Healthy foods instead:

1. Fruit: Hard tart apples, olives, avocados, berries (strawberries, raspberries, blackberries, cranberries, blueberries), pears, cooked tomatoes, real chocolate
2. Vegetables: Mushrooms, bell peppers, watercress, leafy greens (spinach, beet, kale, turnip), lettuces, bok choy, collards, celery, broccoli, cauliflower, seaweed, yams, Brussel sprouts, asparagus, carrots,
3. Breakfast cereals: Cream of wheat, steel cut oats
4. Dairy: Many cheeses – especially the ones with high bacterial count; low sugar Greek yogurt
5. Fermented and pickled foods;
6. Herbs and spices: Cilantro, garlic, ginger,
7. Legumes: Good for proteins – most of them should be soaked first and properly prepared
8. Nuts: Almonds, walnuts, hazelnuts, pecans
9. Seeds: Flax, hemp, chia.

Meat

Eggs; unprocessed – gently cooked organic meat and poultry, fish and seafood (trout vs salmon)

Sugar can be very toxic to the body. But healthy foods can support a healthy body and mind.

Bibliography

1. https://learn.genetics.utah.edu/content/basics/telomeres/
2. Key mechanisms of cancer, aging and inflammation uncovered.
3. Jiunn-Liang KO., *et al*. "The association of occupational metals exposure and oxidative damage, telomere shortening in fitness equipments manufacturing workers". *Industrial Health* 55.4 (2017): 345-353.
4. Stabilizing low blood sugar is key to many autoimmune, inflammatory, and brain-based disorders.
5. https://www.webmd.com/hypertension-high-blood-pressure/video/sugar-vs-salt-whats-worse-for-blood-pressure
6. https://www.webmd.com/heart-disease/news/20100420/high-sugar-diet-linked-lower-good-cholesterol
7. https://www.healthline.com/nutrition/sugar-and-inflammation
8. https://www.fattyliverfoundation.org/sugar
9. https://www.healthline.com/health/depression/sugar-and-depression#sugar-addiction
10. https://neuro.hms.harvard.edu/harvard-mahoney-neuroscience-institute/brain-newsletter/and-brain-series/sugar-and-brain
11. https://www.medicalnewstoday.com/articles/305567.php
12. https://www.medicalnewstoday.com/articles/320156.php
13. https://www.niddk.nih.gov/health-information/diabetes/overview/preventing-problems/diabetic-kidney-disease
14. https://www.forbes.com/sites/quora/2017/01/20/does-eating-sugar-really-cause-acne/#4db785905af4
15. https://www.ncbi.nlm.nih.gov/pubmed/20620757
16. https://www.dentalchoice.ca/dangers-sugar-teeth/
17. http://blog.arthritis.org/gout/fructose-sugar-gout/
18. https://www.consumerreports.org/cro/news/2014/03/why-fruit-juice-is-nearly-as-bad-for-you-as-soda/index.htm

Volume 3 Issue 12 December 2019