TOPIC: THE PERILS OF SUGAR

If a particular food product were known to be a factor in serious medical conditions such as high blood pressure, heart disease, diabetes, and kidney disease, you might expect it to be banned outright. Yet one such substance remains a fixture in our food supply, subjecting the entire population to its insidious health effects. The culprit is a simple sugar....

from The Sugar Fix, Richard J. Johnson, MD
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Bye-bye, Sugar!

It’s no secret that Americans consume too much sugar, particularly from soft drinks sweetened with high fructose corn syrup and HFCS hidden in foods. The American Medical Association first expressed concern about foods rich in sugar but poor in nutrition over 60 years ago. Then in the 1960s, the FDA issued a report based on a review of medical journal articles about sugar. They concluded that when sugar consistently accounts for 25-50 percent of caloric intake, the result is one or more serious health problems. Cardiovascular risk, diabetes and other sugar related conditions, behavioral changes, gallstones, excess calcium in the urine (a symptom of pending osteoporosis), and mineral deficiencies are implicated. Unfortunately, this is the average amount persons of all ages are currently eating.

Looking at the facts, we learn that, in addition to heart disease, cancer, and diabetes, birth defects are on the rise, children are not as strong as they were 50 years ago, incidences of ADHD, ADD, and autism are way up, allergies are rampant, and scholastic scores are falling. Further, the number of overweight and obese individuals (including children) continues to increase. As pointed out by the FDA report, every one of these developments is associated with eating sugar. True. Our bodies do need sugar. (We convert it into blood sugar, glucose.) Yes, we would die without it. However, we never need to eat anything sweet, not even a piece of fruit, to provide this. All the sugar we need is in complex carbohydrates like vegetables, whole grains, and legumes. (Plus, if needed, our bodies can make glucose from protein or fat.) Complex carbohydrates are loaded with healthy ingredients.

These include nutrients that help metabolize sugar and fiber that helps keep cholesterol down and regularity up. Plus, the body’s leisurely, natural breakdown of complex carbs slows the release of glucose into the bloodstream, bringing us an even flow of energy. Since we don’t need concentrated sweets or refined carbohydrates at all, what happens when we eat such large amounts of them? According to Nancy Appleton, PhD (Licking the Sugar Habit), eating just two teaspoons of sugar is enough to throw our blood chemistry out of balance for 6-8 hours. When you eat sugar (or other refined carbohydrates) morning, noon, and night, your body chemistry is in chaos 24 hours a day.
S.O.S: Systems Out of Sync

Tempting as it is, we cannot blame sugar or other refined carbohydrates for causing ill health. It’s on us. We’re the ones doing the eating. Worldwide, people celebrate by eating sweets, but few eat them on a daily basis as Americans do. It appears that our extensive health collapse is the result of a continuous internal glucose bath. We are profoundly undermining our basic biochemistry with our poor food choices. The effects of sugar are demonstrated by the following reactions: 1) stress response; 2) acidic pH; 3) immune suppression; 4) insulin imbalance; and 5) sugar-damaged proteins.

1 Too Much Stress

A good case can be made for stress as the root of all illness. Irritability, anxiety, feelings of overwhelm, insomnia, headaches, muscle tension, and even ulcers are markers. However, the real danger is from the cascade of chemicals the body produces during the “stress response.” There are two types of stress: acute and chronic. Acute stress is from the little stressors that can happen once, twice or dozens of times every day. (Think of driving in traffic.) Chronic stress is a long term condition of constant vigilance.

**Acute stress** stimulates the production of adrenaline while cortisol is the hormone of **chronic stress**. **Too much of either of these hormones can increase the risk of cardiovascular disease.** This includes high blood pressure, increased clotting factors in the blood, damage to the arteries, and a greater possibility of plaque formation, leading to atherosclerosis.

**Excess adrenaline** can cause arterial spasms and the overcontraction and rupture of the heart muscle fibers. **Excess cortisol** raises cholesterol and causes a loss of potassium (important to heartbeat regularity). The two types of stress frequently occur together, greatly increasing the damage.

In his classic *Sweet and Dangerous*, British researcher John Yudkin, MD, reported a study in which **volunteers ate a sugar-rich diet** for two weeks. Results showed that fasting insulin levels were up about 40 percent. That’s bad enough, but **cortisol levels increased by 300-400 percent!** This means that habitually eating sugar and refined carbohydrates creates a state chronic stress with all its dangers.
Incidentally, aerobic exercise is one means of lowering cortisol levels. That’s one reason people feel so good during and after a stress-releasing run.

2 pH Distress

All foods contain minerals. Minerals can be either acid or alkaline. When we metabolize food, residues from the minerals influence the acidity or alkalinity of our bodily fluids. The term pH means potential hydrogen and refers to an acid-alkaline measurement. This is a range from most acidic to most alkaline (also called base) on a scale of 1 to 14.

The cells and tissues of the body prefer to be bathed in a slightly alkaline solution of 7.4, about the same as sea water. The lower (acid) limit at which a person can survive is 6.8, while the upper (base) is 8.0. The correct pH balance regulates breathing, circulation, digestion, elimination, hormone production, immune defense, and communication between and within the cells. It follows that an imbalance in either direction is detrimental to these critical biochemical functions.

Contrary to our bodies’ needs, the average Western diet is acid. Most of our bodies are constantly neutralizing those acids to maintain pH balance and keep systems working efficiently. In fact, a healthy pH is so important that the body will steal calcium (an alkaline mineral) from our bones in order to achieve it, a set up for osteoporosis.

An acid pH causes weight gain, inhibits the metabolism of both glycogen (stored glucose) and adipose tissue (stored fat), has a corrosive effect on veins, arteries, and heart tissue, encourages cholesterol plaque, disrupts blood pressure, inhibits electrolyte activity, keeps oxygen from the tissues, impedes cellular regeneration and DNA/RNA synthesis, promotes free radical damage, and accelerates aging. (Yikes!) With time, the body is no longer able to neutralize the acid wastes and begins to deposit them first in the connective tissues and, later, in the organs. This leads directly to degenerative disease, including diabetes, obesity, heart disease, neurological disorders (such as MS and MD), immune deficiencies, and cancer.

3 Immune Suppression

“Sugar paralyzes the immune system,” writes author and nutritionist Ann Louise Gittleman in her helpful and informative book Get the Sugar Out: 500 Simple Ways to Cut the Sugar Out of Any Diet. She consolidates the evidence of immune suppression with the following five points: 1) When we eat sugar the ability of white blood cells to kill germs is...
destroyed for up to 5 hours: 2) It reduces the production of antibodies (protein bits that inactivate foreign invaders in the body, such as bacteria); 3) It uses the same pathway as vitamin C, one of the most important immune nutrients, interfering with its transport; 4) It causes mineral imbalances which, in turn, undermine enzyme function, inhibiting every system in the body; 5) It inhibits the action of essential fatty acids, major components of cell membranes, leaving the membrane more permeable, and, thus, more vulnerable to invasion by allergens and microorganisms. Remember, the impact of the total of these events is greater than the sum of the parts.

4 Adding Insulin to Injury

When we digest carbohydrates, the sugar from them is released into the bloodstream. This stimulates the pancreas gland to secrete insulin, a hormone that tells the cells to take up blood sugar (glucose). Any extra glucose is converted into glycogen, a high energy fuel stored in the liver and muscles. Once the glycogen stores are full, the remaining glucose is stored as fat.

When blood sugar levels are low, the pancreas secretes another hormone called glucagon. This one converts the glycogen back into glucose. When the glycogen stores are empty, the body uses fat as its energy source. In this way, the body controls our blood sugar levels.

Blood sugar balance begins with diet. When sugars or refined carbohydrates such as rice cakes and bagels are eaten, they are quickly broken down into sugar, causing glucose to flood into the bloodstream. We may feel a burst of energy, but the body is thrown into a panic, dumping too much insulin into the mix.

Glucose is absorbed so quickly that the result is low blood sugar. That is why shortly after eating, we feel fatigued, out of sorts, or even hungry. The usual response is to eat more quick energy foods, and the damaging cycle continues.

Eventually, a condition called insulin resistance develops. In this condition, insulin levels remain high but the cells won’t receive glucose. This leaves too much glucose in the blood. Over time, both cholesterol levels and weight begin to creep up. The excess insulin and glucose are a major source of free radical production.

Together, insulin resistance and the unhealthy conditions that often accompany it are called Metabolic Syndrome (previously Syndrome X). The symptoms are glucose intolerance, abnormally high insulin levels, high triglycerides (fat in the blood), too low levels of HDLs (“good cholesterol”),

Junk Food Paradox

Why is it that eating junk food helps us feel better when we are “stressed out” or “down”? There is a biochemical reason for this. When we eat too much refined carbohydrate, insulin is secreted to balance our blood sugar levels. However, binging on these foods causes cortisol levels to increase. Cortisol interferes with insulin. The elevated cortisol levels overcome insulin, releasing stored glucose/sugar and increasing the production of glucose from protein. This helps us maintain our “sugar high,” and with it the illusion that we have risen above the stress. Like all illusions, it is a lie. We are actually generating more stress and, ultimately, more damage.
and high blood pressure. Metabolic Syndrome is frequently accompanied by obesity. It is the chief predictor of adult onset diabetes and encourages the development of heart disease.

5 Protein Damage

Advanced Glycation (or glycosylated) End-products is the ultimate result of sugar poisoning. Appropriately known as AGES, these products occur when excess glucose binds with certain proteins, including DNA. AGES cause tissues to stiffen and become hard instead of flexible. Our skin wrinkles and our internal tissues are affected (in the lungs and along vessel walls, for example). AGES are thought to be the first step in cholesterol plaque formation. They injure DNA, causing the cells to become less efficient in reproducing themselves and in repairing damage.

This age-promoting process of sugar poisoning is taking place at varying rates in all of us, depending on the amount of refined carbohydrates we eat. In fact, measuring the amount of glycosylated hemoglobin in the red blood cells has become a routine test for diabetic status. The higher the measure, the greater the risk of heart and circulatory problems.

It is no surprise that free radicals are involved. Excess glucose oxidizes itself (a kind of spontaneous combustion), emitting large quantities of them. In addition, German research has shown that the formation of AGES causes a release of free radicals. By reducing glycation and free radicals, we reduce the risk of degenerative disease, including heart disease, diabetes, arthritis, and cancer.

Eat Your Way Out of It

The answer to health and healing is to replace refined carbohydrates with whole foods. The fresher, the better. Eat lots of veggies. Purchase whole grain breads and pastas. Take advantage of organic foods when possible. Read Nutrition News, “Put Food On The Table”.

Stay away from sugary food and other refined carbohydrates. All soft drinks, including diet soda, radically upset pH. Instead, drink water. (A tablespoon or two of liquid chlorophyll into a quart helps maintain your body’s alkaline balance.) If you insist on coffee, match each cup with an equal amount of water. Like sugar, caffeine causes glucose to be released into the bloodstream, making it part of the problem.

It will take about three weeks for sugar cravings to pass - although supplements can help. If you have children, it may be very difficult to get them off sugar and onto the right tract. Time and ingenuity are called for. As with you, their health - and their very lives - are at stake. It’s worth it.
… a supplement bottle, that is. Cravings are reduced when the body’s nutritional needs are met. Supplements are going to be very helpful in achieving that.

Besides a multivitamin-mineral formula, be sure to take 2-3 grams of vitamin C. Remember, sugar uses the vitamin C pathway. Replacing sugar with vitamin C helps keep your spirits up, and helps to quench the free radicals that are a part of the detoxification process.

Happily, vitamins C, E (400 IU), B3, and B6 (in your multi-), plus the mineral selenium (yeast type) have all been shown to inhibit the glycation process, almost completely stopping the formation of AGEs. Carnosine (a different amino acid from carnitine,) and alpha lipoic acid are also AGEs inhibitors.

Alpha lipoic acid has been shown to stimulate insulin activity in diabetic persons, increasing insulin sensitivity and glucose tolerance. In addition, it enhances the effects of vitamins C and E in the cell.

Vanadium as found in vanadyl sulfate also improves insulin sensitivity. Four other minerals that are important to the efficient metabolism of sugar are chromium (especially effective as glucose tolerance factor), magnesium, zinc, and manganese.

Another helper is the amino acid glutamine. As glutamic acid, glutamine has long been recognized for its ability to curb sugar cravings. Along with glucose, it works as brain fuel. Start with 500 mg 3x/d.

Good luck, dear reader, it starts with us. (For more comments, see “Siri Says” at AboutNutritionNews.com.)