Sugar: Killing us Sweetly

By Gary Null, PhD

In September 2013, a bombshell report from Credit Suisse's Research Institute brought into sharp focus the staggering health consequences of sugar on the health of Americans. The group revealed that approximately "30%–40% of healthcare expenditures in the USA go to help address issues that are closely tied to the excess consumption of sugar."[1] The figures suggest that our national addiction to sugar runs us an incredible $1 trillion in healthcare costs each year. The Credit Suisse report highlighted several health conditions including coronary heart diseases, type II diabetes and metabolic syndrome, which numerous studies have linked to excessive sugar intake.[2]

Just a year earlier in 2012, a report by Dr. Sanjay Gupta appearing on *60 Minutes* featured the work of Dr. Robert Lustig, an endocrinologist from California who gained national attention after a lecture he gave titled "Sugar: The Bitter Truth" went viral in 2009. Lustig's research has investigated the connection between sugar consumption and the poor health of the American people. He has published twelve articles in peer-reviewed journals identifying sugar as a major factor in the epidemic of degenerative disease that now afflicts our country. The data compiled by Lustig clearly show how excessive sugar consumption plays a key role in the development of many types of cancer, obesity, type II diabetes, hypertension, and heart disease. His research has led him to conclude that 75% of all diseases in America today are brought on by the American lifestyle and are entirely preventable.[3]

Until the airing of this program, no one in the "official" world acknowledged anything wrong with sugar, here is a sampling of some the latest research available to them if they chose to look:

Consumption of Sugar-Sweetened Drinks Linked to Heart Disease
Lawrence de Koning, Vasanti S. Malik, Mark D. Kellogg, Eric B. Rimm, Walter C. Willett, and Frank B. Hu.Sweetened Beverage Consumption, Incident Coronary Heart Disease and Biomarkers of Risk in Men. *Circulation*, March 12 2012 DOI:10.1161/CIRCULATIONAHA.111.067017

How Fructose Causes Obesity and Diabetes
Takuji Ishimoto, Miguel A. Lanaspa, MyPhuong T. Le, Gabriela E. Garcia, Christine P. Diggle, Paul S. MacLean, Matthew R. Jackman, Aruna Asipu, Carlos A. Roncal-Jimenez, Tomoki Kosugi, Christopher J. Rivard, Shoichi Maruyama, Bernardo Rodriguez-Iturbe, Laura G. Sánchez-Lozada, David T. Bonthron, Yuri Y. Sautin, and Richard J. Johnson. Opposing effects of fructokinase C and A isoforms on fructose-induced metabolic syndrome in mice. *Proceedings of the National Academy of Sciences*, February 27, 2012 DOI: 10.1073/pnas.1119908109

Corn Syrup and Obesity
Bray, George et al. Consumption of high fructose corn syrup in beverages may play a role in the epidemic of obesity. *American Journal of Clinical Nutrition* Vol. 79, no. 4, p. 537-543, April 2004.

Soda and Sugary Beverages linked with Diabetes, Metabolic Syndrome V. S. Malik, B. M. Popkin, G. A. Bray, J.-P. Despres, W. C. Willett, F. B. Hu. Sugar Sweetened Beverages and Risk of Metabolic Syndrome and Type 2 Diabetes: A Meta-analysis. *Diabetes Care*, 2010

Fructose intake connected with an increased risk of cardiovascular illness and diabetes in teenagers
N. K. Pollock, V. Bundy, W. Kanto, C. L. Davis, P. J. Bernard, H. Zhu, B. Gutin, Y. Dong. Greater Fructose Consumption Is Associated with Cardiometabolic Risk Markers and Visceral Adiposity in Adolescents.*Journal of Nutrition*, 2011; 142 (2): 251 DOI:10.3945/jn.111.150219

Fructose consumption increases the risk of heart disease.
K. L. Stanhope, A. A. Bremer, V. Medici, K. Nakajima, Y. Ito, T. Nakano, G. Chen, T. H. Fong, V. Lee, R. I. Menorca, N. L. Keim, P. J. Havel. Consumption of Fructose and High Fructose Corn Syrup Increase Postprandial Triglycerides, LDL-Cholesterol, and Apolipoprotein-B in Young Men and Women. *Journal of Clinical Endocrinology & Metabolism*, 2011; DOI:10.1210/jc.2011-1251

The Negative Impact of Sugary Drinks on Children.
Lustig, RH, and AA Bremer. "Effects of sugar-sweetened beverages on children.." Pediatric Annals 41.1 (2012): 26-30. pubmed.gov. Web. 1 Apr. 2012.

Sugar and High Blood Pressure
Lustig, RH, and S Nguyen. "Just a spoonful of sugar helps the blood pressure go up.." *Expert Review of Cardiovascular Therapy* 8.11 (2010): 1497-9. *pubmed.gov*. Web. 2 Apr. 2012.

Sugar Consumption Associated with Fatty Liver Disease and Diabetes
Lim JS, Mietus-Snyder M, Valente A, Schwarz JM, Lustig RH. The role of fructose in the pathogenesis of NAFLD and the metabolic syndrome. *Nature Reviews of Gastroenterology and Hepatology* 2010; 7:251-64.

Fructose: metabolic, hedonic, and societal parallels with ethanol. Lustig RH. *Journal of the American Dietetic Association* 2010; 110:1307-21.
The Adverse Impact of Dietary Sugars on Cardiovascular Health
Johnson RK, Appel LJ, Brands M, Howard BV, Lefevre M, Lustig RH, Sacks F, Steffen LM, Wylie-Rosett J. Dietary sugars intake and cardiovascular health: a scientific statement from the American Heart Association.*Circulation* 2009; 120:1011-20.

Princeton Study Shows High Fructose Corn Syrup Promotes Weight Gain
Bocarsly, ME, et al.. "High-fructose corn syrup causes characteristics of obesity in rats: Increased body weight, body fat and triglyceride levels." *Pharmacology, Biochemistry and Behavio* 97.1 (2010): n. pag.*pubmed.gov*. Web. 1 Apr. 2012.

Rats Fed High Fructose Corn Syrup Exhibit Impaired Brain Function
Stranahan, Alexis M, et al.. "Diet-induced insulin resistance impairs hippocampal synaptic plasticity and cognition in middle-aged rats."*Hippocampus* 18.11 (2008): 1085-1088. *http://onlinelibrary.wiley.com*. Web. 2 Apr. 2012.

High Fructose Corn Syrup Intake Linked with Mineral Imbalance and Osteoporosis.
Tsanzi, E,et al. "Effect of consuming different caloric sweeteners on bone health and possible mechanisms.."*Nutrition Reviews* 66.6 (2008): 301-309. Print.

Diet of Sugar and Fructose Impairs Brain Function
R. Agrawal, F. Gomez-Pinilla. 'Metabolic syndrome' in the brain: deficiency in omega-3 fatty acid exacerbates dysfunctions in insulin receptor signaling and cognition. *The Journal of Physiology*, 2012; 590 (10): 2485 DOI: 10.1113/jphysiol.2012.230078

With the rapid spread of information in today's internet age, more and more health-conscious consumers and watchdog groups are calling attention to the many studies demonstrating sugar's harmful effects, but many of us in the natural health community have been alarming the public for decades. In point of fact, I have been writing about the hazards of sugar extensively in books and articles since 1971. In 2002, my documentary "Seven Steps to Perfect Health" premiered on PBS stations including WETA in Washington, DC. As part of the PBS program, I poured sugar out of a bag which equaled the number of teaspoons that the average American teenager

consumes in a given day. The quantity was verified by my General Counsel, Mr. David Slater, who had measured the number of teaspoons earlier in the day. If anything, my demonstration understated the true amount of sugar we are consuming.

The program was very well received and the program director informed me that it was so successful that it had set a record for a non-primetime programming and that he intended on replaying it eight or nine times. However, the next day I was informed by him that he was sorry but he had bad news: not only would the program not be aired again, but I would not be invited back to present on the station. This was after I had presented five medically-vetted, original PBS programs over the years, some of which had set station records. The program director explained that this was because the new information I presented on the dangers of sugar had run smack up against the president of the station board, Sharon Rockefeller. I was told that Ms. Rockefeller had received a phone call from the sugar lobbying group representing soft drink makers and sugar consumers and the decision was made to pull my program. I was informed that my statements regarding sugar's damaging health effects were deemed inaccurate. As it turned out, Ms. Rockefeller was sitting on the board of Pepsi Cola's at the time.

That was my first personal experience of dealing with the politics of sugar, which was also the politics of PBS. In response to this, I wrote letters to the sugar industry, the WETA station board and Sharon Rockefeller contesting their suppression of my program and their claim that sugar was unrelated to American health epidemics. This was ten years ago. When we realize how many people since that time have developed diabetes, cardiovascular disease, cancer and many other illnesses after consuming these quantities of sugar, then should we not hold the major media, including Dr. Gupta and *60 Minutes*, morally responsible for having so much scientifically verified information on the dangers of sugar consumption and yet choosing to

accept the "official" statements from "official" medical groups, government agencies, trade groups, spokes persons, scientists-for hire-and in effect, accepting industry generated propaganda instead of seeking the truth? If we can find the truth with our limited resources, what possible excuse do Dr. Gupta and other respected physicians with unlimited research capacity have? Why has it taken 40 years since I first wrote about the dangers of sugar for them to finally discover this truth? And how many tens of millions of children and adults have suffered with diabetes, obesity, heart disease, cancers during these years all because of the arrogance, hubris and complicity of the medical establishment and media?

Financing Disease

A deeper look at the politics of the sugar industry reveals that huge sums are being doled out by government to prop up sugar companies. In a recent article in the *Wall Street Journal*, writer Alexandra Wexler explains that American taxpayers are currently responsible for shelling out $280 million to cover the cost of loans from the USDA which sugar producers are unable to pay back.[4] Given the undeniable evidence demonstrating the toxicity of sugar and its enormous toll on the wellbeing of Americans, why is it that our health agencies and elected officials are not calling for a much-needed overhaul of existing policies, which, in fact, offer generous support to the domestic sugar industry? Where is the outrage over bailing out the purveyors of what is likely the most dangerous staple in the American diet? For our answers we must follow the money-trail.

In May 2013, members of the US Senate voted 54-44 against an amendment to the Farm Bill introduced by Senator Jeanne Shaheen of New Hampshire that would have significantly curtailed federal lending to sugar processers. In an insightful analysis of the vote, Alan Farago of

Counterpunch.org, points out that lawmakers opposing the measure were significantly more likely to either represent states in which sugar is grown or to count the sugar industry among their best campaign donors. Though the reform was voted down by senators on both sides of the aisle, Democrats were apparently even more beholden to sugar interests than their Republican counterparts. Farago writes that

> In the final tally, Democrats opposed sugar reform by 55 percent to 40 percent (NJ Senator Frank Lautenberg did not vote.). U.S. senators from states identified as "healthy" but with sugar constituencies — Minnesota (D), Vermont (D, I), Colorado (D), North Dakota (D, R) and Hawaii (D) — all voted *against* reform. The website, Opensecrets.org, points out that the second highest recipient of campaign cash from sugar interests was progressive champion, Al Franken (D-Minnesota). Franken in 2013 received $27,999. "Sugar is the only industry in the entire agribusiness sector that has consistently supported Democrats during the past two decades." [5]

The fact is that the authorities we look upon as "official" are often compromised by lobbyists inside the Beltway while the mainstream media, in thrall to its advertisers, is still unwilling to report the whole truth about sugar. In order to raise public awareness about this critical issue, this article will provide an in-depth examination of sugar as a both a toxic food and as a thoroughly corrupt extension of Big Business.

The Most Current Research

In his latest published study, Lustig and his colleagues unearthed a strong relationship between the incidence of diabetes and sugar availability in populations around the world. Published in the online journal, PLOS ONE in February 2013, the study showed that those places in which sugar was more available had a greater incidence of type-2 diabetes.[6] Examining data

from 175 countries over the last 10 years, the authors investigated whether the availability of other food groups including, oils, meats, cereals and fibers as well as socioeconomic factors such as income, urbanization and aging were related to diabetes prevalence, but only found statistically significant evidence of a sugar-diabetes link. In a piece for the *New York Times* columnist Mark Bittman offered his perspective on Lustig's latest research:

> This is as good (or bad) as it gets, the closest thing to causation and a smoking gun that we will see. (To prove "scientific" causality you'd have to completely control the diets of thousands of people for decades. It's as technically impossible as "proving" climate change or football-related head injuries or, for that matter, tobacco-caused cancers.) And just as tobacco companies fought, ignored, lied and obfuscated in the '60s (and, indeed, through the '90s), the pushers of sugar will do the same now.[7]

In an article published in February 2012 in the journal *Nature*, Lustig and his co-authors state the following:

> Regulating sugar will not be easy…We recognize that societal intervention to reduce the supply and demand for sugar faces an uphill political battle against a powerful sugar lobby, and will require active engagement from all stakeholders. Still, the food industry knows that it has a problem…With enough clamour for change, tectonic shifts in policy become possible. Take, for instance, bans on smoking in public places and the use of designated drivers, not to mention airbags in cars and condom dispensers in public bathrooms. These simple measures — which have all been on the battleground of American politics — are now taken for granted as essential tools for our public health and well-being. It's time to turn our attention to sugar.[8]

The connection between America's epidemic of chronic diseases and sugar grows clearer each day. A recent study by nutritional biologist Kimber Stanhope of The University of California, Davis, associated higher intake of high fructose corn syrup with higher levels of LDL (bad) cholesterol as well as an increased risk of cardiovascular disease. In the study, test subjects were required to replace 25% of their caloric intake with sugary drinks. The study offered further

proof that all calories are not created equally and that those coming from sugar are artery-clogging and actually promote weight gain. [9]

Stanhope's findings corroborate the results of another study in the American Heart Association's journal *Circulation* that was published in March 2012. The study found that men who drank one 12 ounce beverage sweetened with sugar a day were 20% more likely to develop cardiovascular disease than men who did not consume any sugary drinks.[10] Another recent study recently appearing in the *Journal of the American Society of Nephrology* linked the intake of excess quantities of fructose with cardiovascular illness, diabetes, chronic kidney disease as well metabolic syndrome. [11]

The damaging effects of sugar on cognitive health have been the subject of several recent studies. In September 2012, scientists at the David Geffen School of Medicine at UCLA uncovered that rats that were fed a diet high in fructose performed poorly in tests using mazes which were designed to assess memory and learning when compared to the control group.[12] In a 2012 article entitled "Food for thought: Eat your way to dementia", researchers at Brown University discussed their findings that a diet high in sugary foods disrupts insulin levels and may trigger the buildup of toxic amyloid proteins, the protein directly implicated in the progression of dementia, in the brain.[13] These conclusions are reinforced by the results of a Mayo Clinic study released in October 2012 which showed that seniors who consumed a diet high in sugars and carbohydrates had a significantly greater risk of developing mild cognitive impairment and dementia when compared to seniors whose diet contained more fat and protein.

Sugar's Harm on Your Body

When we think of sugar, we often only think about the refined white sugar bought in paper packages or cubed for tea. If we're worried about too much sugar, maybe we'll check the nutritional information on the backs of processed sweets before we make a purchase. But really, sugar is often underestimated because of its incredible predominance in a lot of what we eat every day.

The American Heart Association (AHA) and the USDA share this broader definition of sugar and the amount of sugar we consume each day. In a *AHA Statement to Healthcare Professionals*, the group provided a broad definition of what constitutes "sugar":

> There are many, sometimes confusing, terms used in the literature. Simple carbohydrate (sugar) refers to mono- and disaccharides; complex carbohydrate refers to polysaccharides such as starch. Common disaccharides are sucrose (glucose+fructose), found in sugar cane, sugar beets, honey, and corn syrup; lactose (glucose+galactose), found in milk products; and maltose (glucose+glucose), from malt. The most common naturally occurring monosaccharide is fructose (found in fruits and vegetables). The term dextrose is used to refer to glucose. Intrinsic or naturally occurring sugar refers to the sugar that is an integral constituent of whole fruit, vegetable, and milk products; extrinsic or added sugar refers to sucrose or other refined sugars in soft drinks and incorporated into food, fruit drinks, and other beverages.[14]

The latest statistics tell us that the average American consumes a 130 pounds of sugar each year- or more than one-third of a pound every day.[15] The average amount of sugar consumed by Americans today is shockingly excessive. As we shall see, this sugar excess contributes to the modern epidemics of obesity, diabetes, heart disease, and even cancer.

Sugar and health:

Refined sugar only really became a major part of human diet over the last few hundred years. As reported by the authors of *Sugar Busters!*, refined sugar has only been around during a "mere blink of time in man's digestive evolution."[16]

It is quite logical that we should have added refined sugar to the priority list of things that are, or may be, "Hazardous To Your Health" when you see the increase in disease caused by our huge consumption of refined sugar and certain other carbohydrates. Sugar just may be the number one culprit in lowering the quality of life and in causing premature death. There is certainly enough evidence to bring us to that conclusion.

Historical Deception

As far back as 1942, the American Medical Association stated it would be in the interest of public health to limit the consumption of sugar in any form when it is not combined with significant proportions of foods high in nutritious quality. Lately, however, the AMA and other medical organizations have been largely silent about sugar consumption. A recent Gallup poll indicates that nearly half of all Americans consume soft drinks on a daily basis and that those who do drink soda, average about 2.6 glasses per day.[17]. Despite these and many other health risks, the soft drink industry consistently portrays its product as being positively healthful. In 1997 Coca-Cola spent $277 million in advertising targeted towards children. The advertising placed their logos and products within easy reach of children, and Pepsi, Dr. Pepper, and Seven-Up have licensed their logo to the baby-bottle manufacturer Munchin Bottling, Inc.[18]

In 1998, Ron Lord wrote in the *Agricultural Outlook Forum* that sugar had once "had a rather negative public image."[19] Families generally viewed excessive sugar as a health risk and avoided processed sweets. "Then in the 1980s," Lord goes on, "public attention became focused on fat as something to avoid; and about the same time a rather successful advertising campaign to promote the healthy and natural aspects of sugar was conducted."[20] This resulted in intense an intense increase in carbohydrate—and especially sugar—consumption. As more sugar found its way into foods not even thought to be sweet, such as fast food and processed goods, this sugar intake has simply ramped up.

Our society is now experiencing the results of the sugar industry's successful advertising campaign to promote the "healthy and natural aspects of sugar." But let's take a look at the negative aspects together. As you'll see, a diet based in natural foods like vegetables, grains and legumes is a healthy alternative to this troubling explosion in sugar dependency.

Sugar and Addiction

People often say they have a "sweet tooth." You may have a friend who excitedly rushes off for a "sugar fix." But the links between sugar and addiction are actually well-documented in a number of studies. Dr. C. Colantuoni, an obesity researcher, showed that excessive sugar intake causes serious dependence and that the removal of sugar creates withdrawal symptoms. He and his colleagues showed that withdrawal from sugar is qualitatively similar to withdrawal from morphine or nicotine.[21] Similar findings concerning sugar addiction have been published by numerous researchers. Using MRI scanners measuring the brain's reaction the sugar, scientists at

the Oregon Research Institute established that sugar has a very similar affect on the brain as highly addictive drugs such as cocaine.[22]

Sugar and Aging

Of particular concern to those reaching the andropause and menopause stages of life, sugar's effect on aging should be considered alongside its health risks. Anti-aging research has begun to show that sugar is one of the most powerful aging substances known. One of the most integral negative aging effects to consider is the bonding between glucose and collagen, called glycation, which can result in many negative effects, including thickened arteries, stiff joints, pain, feeble muscles and failing organs.

According to researcher L. Melton, diabetics age prematurely because the sugar-driven damage of glycation cannot be stopped. Diabetics suffer a very high incidence of nerve, artery and kidney damage because high blood sugar levels in their bodies markedly accelerate the chemical reactions that form advanced glycation products. According to Melton, "after years of bread, noodles and cakes, human tissues inevitably become rigid and yellow with pigmented glycation deposits."[23]

Sugar and Appetite Suppression:

Researchers have also shown that a lifetime of sugar intake can actually lower your intake of necessary nutrients by suppressing your appetite. Anderson, etal., reasoned that a primary mechanism by which carbohydrates are thought to regulate satiety and food intake is through their effect on blood glucose. They found that food intake and subjective appetite are

inversely associated with blood glucose response in the 60 minutes following consumption of carbohydrates. That's why candy bars are recommended by advertisers to hold you over until you eat a meal. Your body may not be getting any of the nutrients it needs, but it is being tricked into thinking it has ingested the proper amount of energy.[24] Anderson's study concluded that sugary foods cause appetite suppression and prevent people from achieving a balanced diet with proper nutrients unavailable in sugary products.[25] In other words, sugary snacks have the potential of leading to malnutrition.

Sugar and Cancer

In the 1930s, Otto Warburg, Ph.D., a Nobel Laureate in medicine, discovered that cancer cells have a fundamentally different energy metabolism compared to healthy cells. He found that increased sugar intake could increase cancer cell production. The more primitive nature of cancer cells requires a direct supply of glucose, not being able to master the more complex synthesis of glucose from larger molecules. The build up of lactic acid and an acidic pH from direct consumption of glucose in cancer cells is a diagnostic factor for cancer.[26] This means that there is a direct relationship between sugar ingestion and the risk of cancer.

An epidemiological study in 21 modern countries (in Europe, North America, Japan and others) and revealed that sugar intake is a strong risk factor that contributes to higher breast cancer rates, particularly in older women.[27] A four-year study in the Netherlands at the National Institute of Public Health and Environmental Protection compared 111 biliary tract cancer patients with 480 controls. The study concluded that cancer risk associated with the intake of sugars had more than doubled for the cancer patients.[28]

These findings are mirrored in the research of Michaud, et al., at the National Cancer Institute, who followed up on two large studies conducted over the past 20 years on approximately 50,000 men and 120,000 women. They concluded that obesity significantly increased the risk of pancreatic cancer and that physical activity appears to decrease the risk of pancreatic cancer, especially among those who are overweight. Preventing obesity by dietary intervention and exercise is by far the best way to avoid pancreatic cancer.[29] But the Michaud team continued their investigation of the triggers of pancreatic cancer and found that evidence from both animal and human studies suggested abnormal glucose metabolism plays an important role in pancreatic carcinogenesis. They investigated whether diets high in sugar were to blame. They found that a diet high in sugar may increase the risk of pancreatic cancer in women who already have an underlying degree of insulin resistance.[30]

Sugar and Cardiovascular Disease:

On July 23, 2002, the American Heart Association released a report on "Sugar and Cardiovascular Disease." The report concluded that scientific data indicates that sugar consumption is detrimental to human health, that no data indicates that sugar consumption is advantageous, and that high sugar intake should be avoided. The report also stated that obesity is a definite cause of cardiovascular disease and death.[31]

A study in August, 2000, from the State University of New York at Buffalo reported that excess sugar in the blood increases the production of free radicals, which have been linked to aging and heart disease. Healthy adults who were given a drink containing 75 grams of pure glucose, the equivalent of two cans of cola, experienced a significant rise of free radicals in the

blood one hour after the drink, and a doubling of free radicals after two hours. The sugar drink also produced an increase in a part of an enzyme that promotes free radical generation and a four percent decrease in levels of Vitamin E. Dr. Paresh Dandona concluded, "We believe that in obese people, this cumulatively leads to damage and may cause hardening of the arteries."[32] Numerous other studies have repeatedly documented the relationship between high blood sugar levels and increased heart disease.[33]

In a 2001 UN report commissioned by the World Health Organization and the Food and Agricultural Organization, a team of global experts identified the excessive consumption of sugar from snacks, processed foods, and drinks, as one of a few major factors causing worldwide increases in cardiovascular diseases, cancer, diabetes, and obesity. In 2001, such chronic diseases contributed approximately 59% of the 59.6 million total reported deaths in the world and 46% of the global burden of disease.[34]

Sugar and Children's Behavior

Parents often joke about their children being on a sugar high, especially when those children act up or seem to be out of control. But several important studies have actually confirmed the relationship between sugar consumption and behavioral changes in children. Between 1973 and 1977, Dr. William Crook showed that a majority of children could have their behavior affected by the removal of particular foods.[35] This was one of the first studies to confirm a link between diet and behavior, but was only a stepping stone to what came later.

Dr. Stephen Schoenthaler conducted diet research on children for almost 30 years. His original seminal studies eliminated sugar and junk foods from the lunch programs of one million

school children in over eight hundred New York schools during a seven-year period (1976-1983). Learning performance was established first, and then in 1979, diet changes were introduced. High sucrose foods were gradually eliminated or reduced and there was a gradual elimination of synthetic colors and flavors and selected preservatives (BHA and BHT). There was a 15.7% gain (from 39.2% to 55%) in learning ability compared with other schools during the years in which these changes in diet were introduced. Schoenthaler also noted that out of 124,000 children who had once been unable to learn grammar and mathematics, 75,000 were able to perform these basic tasks after dietary changes alone.[36] In other words, removing sugary foods made children smarter! Much of this change in learning ability, however, has to do with changed behavior in the classroom and during their studies as a result of removing the excess sugar in their diet. It should be noted that today, sugar intake in children and teens is much higher than it once was. A corresponding spike in behavioral problems and dropout rates should trouble concerned parents who see that diet is important to their children's future.

Schoenthaler continued his work by studying thousands of juvenile delinquents on junk-food-free diets. The removal of these sugary foods always resulted in the same end product: an observed dramatic improvement in mood and behavior.[37] With regard to sugar intake in particular, Schoenthaler worked with the Los Angeles Probation Department Diet-Behavior Program and observed 1,382 incarcerated delinquents at three juvenile detention halls. When trying a low sucrose diet, these young delinquents showed an averaged 44% drop in antisocial behavior. The greatest reductions, however, were seen in particular groups: repeat offenders (86% drop in antisocial behavior), narcotics offenders (72%), rape offenders (62%), burglars (59%), murderers (47%) and assault offenders (43%).[38]

The second part of his study followed 289 juvenile delinquents at three juvenile rehabilitation camps. They exhibited a 54% reduction in antisocial behavior after sugar consumption was reduced. A similar Alabama Diet Behavior study by Schoenthaler observed 488 incarcerated delinquents for 22 months. The decline in antisocial behavior resulting from reduction in sugar consumption ranged from a low of 17% to a high of 53% (an average of 45%) depending upon gender, race and type of offender.[39] Schoenthaler's work with juvenile delinquents and sugar intake offers up pretty unflattering evidence of the effect a sugary diet has on children's behavior. As we often think about the effects of drug abuse on teen delinquency, it may be time we begin to consider what our kids are snacking on as well.

The sugar industry usually cites four very small-scale studies to deny any link between consumption of sugar by children and hyperactivity.[40] Although there were many flaws in those studies, the conclusions are used to suppress any objections to the increasing amount of sugar in children's diets. Problems with these studies included a number of issues that weaken their claims. For instance, the amount of sugar used was too small to warrant a reaction, the size of the trial was very small, the observation times were short, the control group was denied a nutritious alternative to sugar, and artificial sweeteners—which had their own unmeasured effects—were used as the placebo controls.

One of the sugar industry's favorite studies used an average of only 65 grams (13 teaspoons) of sugar daily for a trial group of 21 persons.[41] This is the average amount of sugar in a single ten-ounce can of soft drink. A milkshake alone has 30 teaspoons of sugar, and a sugar-loaded birthday party can net a child as much as100 teaspoons of sugar within several hours. If one were going to measure the overall effect of too much sugar on children, you would think a researcher would start at a higher rate. Some researchers have calculated that a growing pre-teen

may consume on average as much as 50 teaspoons of sugar a day, far more than the meager 13 teaspoons used in the study. A clinical study based on giving children only 13 teaspoons of sugar, or about 25% of their normal daily consumption of sugar, should not have produced any appreciable results. Once the study was finished it hadn't. Yet, by giving the children less sugar than they usually absorb in a day, this study concluded that the mothers of these children were wrong in saying their children were hyperactive as a result of the sugar they consumed.

Further, in the four central studies most often quoted by sugar promoters, the trial size were quite small, using only 10 to 30 children, and followed them only for a period of a few hours. In contrast, in one of Schoenthaler's studies, 800,000 schoolchildren were studied over a greater length of time. In six of his other studies, 5,000 juvenile delinquents were studied.[42] Schauss, in two studies, examined over 2,000 juvenile delinquents.[43] As anyone who has followed political polling or any other type of statistics knows, you get closer to the facts when you survey the greatest number.

It is important to note that the more trustable studies performed by Schoenthaler and Schauss both showed how diets high in sugar can lead to juvenile delinquency and behavioral problems in children. Their studies were also conducted over a period of several years, not just a few hours as was the case with some of the "pro-sugar" studies. For instance, Behar's pro-sugar study gave 21 males their 13-teaspoon sugar drink and observed them for only five hours on three mornings. Wolraich observed his 32 hyperactive school-age boys for only three hours before concluding that consumption of sugar has no effect on human behavior.[44]

Other criticisms of the pro-sugar studies include that there were usually no controls on the childrens' normal diets. Thus, the studies were performed with children who were told not to

eat any breakfast in the morning. They would then go to school where they would be given a sugared drink and then tested for changes in behavior. Yet, for these children, the drink was equivalent to their missing breakfast, and would therefore not necessarily cause any changes in behavior.

As we can see, there is a general consensus among studies championed by the sugar industry: children's behavior is unaffected by sugar. But there is an opposite consensus among researchers unassociated with the sugar industry and its lobby. That consensus holds that sugar does have an effect on children, causing behavioral problems that range from hyperactivity to delinquency. The best choice is a diet that removes unnecessary sugar and processed foods, one which has no negative effect on children's behavior and creates a positive effect of lifetime health.

Sugar and Dental Caries

Studies have repeatedly confirmed that sugar causes dental caries—the cause of tooth decay and cavities. Dr. A. Sheiham, a professor of epidemiology and public health, found that sugars, particularly sucrose, are the most important dietary cause of dental caries. Both the frequency of consumption and the total amount of sugars are important factors that cause caries. The evidence establishing sugars as a cause of dental caries is overwhelming, with the foundation in the multiplicity of studies rather than the power of any one. In fact, we take it as a rule of thumb that sugar is bad for our teeth.

According to Sheiham, the intake of sugar beyond four times a day leads to an increased risk of dental caries. Further, sugars above 60 grams per person per day increases the rate of

dental caries. Sheiham concludes that the main strategy to further reduce the levels of dental caries is to reduce the frequency of sugars in the diet.[45]

Jones, et al., studied over 6,000 fourteen-year-olds to examine the association between the consumption of different drinks and dental caries. The study concluded that consumption of sugary and carbonated drinks was associated with significantly higher levels of dental caries. Drinking unsweetened tea was associated with lower levels of caries.[46] A host of other studies establish that the consumption of sugar significantly increases the incidence of dental caries, tooth decay and cavities.[47]

As we age, our teeth often become weak from a lifetime of sugar damage, calcium depletion and wear. Dental bills stack up. Painful cavities can be ignored and grow worse. The best way to keep from causing all this unnecessary damage is to remove excess sugar from the diet and focus your meals on nutrient-rich foods.

Sugar and the Immune System

As we've discussed in other chapters, the immune system—though often overlooked when we consider our health—is one of the most important layers of our body's interconnected structure. The better our immune system, the better so many other systems. That's why so much of the advice in this book is aimed at bringing optimal health to the immune system: by keeping away from hormone-treated meats, pesticides, and other toxins. But another key way to immune system health is regulating sugar intake.

Several studies confirm a strong link between a high consumption of sugar and the suppression of the body's immune system. For instance, in one study, 10 healthy people were assessed for fasting blood-glucose levels and the phagocytic index of neutrophils, which measures immune-cell ability to envelop and destroy invaders such as cancer. Eating 100 grams (24 teaspoons) of carbohydrates from glucose, sucrose, honey and orange juice all significantly decreased the capacity of neutrophils to engulf bacteria; the neutrophils became "paralyzed." Complex carbohydrates from starch, on the other hand, did not have this effect.[48] More recently, Yabunaka found that sugar caused an increase in a protein that inhibits macrophage activity.[49] This also weakens the immune system's ability to function. Elevated levels of blood sugar have also been linked to bacterial invasion and infectious diseases, such as sepsis and vaginal candidiasis.[50] Overall, excessive sugar intake has been shown on many levels to deplete and weaken the immune system. As we know, overall health and a sense of well-being during the andropause and menopause stage depends heavily on one's immune system functioning at its best.

Sugar and Obesity

Obesity in American children is becoming an epidemic. In December, 2001, The Journal of the American Medical Association presented a comprehensive national picture of weight trends among children over a twelve-year period. From 1986 to 1998, the number of overweight non-Hispanic white children doubled from 6% to 12%. Roughly one in five, or 20% of African-American and Hispanic children are overweight, a 120% increase during the 12-year study period.[51] Several other studies faithfully document that since 1995, there has been a dramatic rise in obesity in American children.[52] This is an alarming change in the overall health of our

children, and will soon impact a growing number of adults with the negative effects obesity brings to middle age.

The relationship between increased sugar consumption and obesity in children is well documented in an abundance of recent studies. In the late 1990s, The Children's Hospital of Boston and the Harvard School of Public Health conducted the first long-term study to examine the impact of soda and sugar-sweetened beverages on children's body weight. The study involved 548 sixth and seventh graders over a 21-month period. During this time, 57 percent of the children increased their daily intake of soft drinks, and more than half of them by nearly a full serving. The results showed that the odds of becoming obese increased 1.6 times for each additional can of soft drink consumed above the daily average. According to government studies, soft drinks are the leading source of added sugars in the diet of young Americans. In a six-year period, soft drink consumption by adolescent males rose from 11.7 ounces per day to 19.3 ounces per day.[53]

More recently, Ludwig, et al., supported by Bellisle's work, found that one daily soda increases the risk of obesity by 60%. He found that about 65% of adolescent girls and 74% of adolescent boys consume soft drinks daily. The amount of sugar added to the diet by soda is 36.2 grams (9 tsp) daily for adolescent girls and 57.7 grams (14 tsp) for boys. It was said that Ludwig's was the first study of its kind in spite of the fact that the majority of American children have been consuming empty caloric sodas from an early age.[54]

Adult obesity is also at record levels. Researchers at the CDC report that in 2000, most Americans were overweight (more than 56%), nearly 20% of adults were obese, 7.3% had diabetes and about 3% were both obese and diabetic. They said that diabetes rates could be as

high as 10% if undiagnosed cases are considered.[55] Whitaker surveyed 9,000 people over a 17-year period and found that more than 25% of American adults are obese in their 30s, and over 60% are overweight.[56] The total number of individuals that are morbidly obese (generally at least 100 lbs overweight) rose from 0.78% in 1990 to 2.2% in 2000.[1] Dr. Mokdad, a researcher of obesity, cautions that, "Obesity continues to increase rapidly in the United States." To alter these trends, Dr. Mokdad argues that "strategies and programs for weight maintenance as well as weight reduction must become a higher public health priority."[57]

Another group of researchers found that "there are existing data on the metabolic and endocrine effects of dietary fructose that suggest that increased consumption of fructose may be detrimental in terms of body weight and adiposity and the metabolic indexes associated with the insulin resistance syndrome."[58] In other words, high consumption of sugar has an indelible effect on weight gain and obesity.

The medical authors of Sugar Busters! summarize how increased sugar in the blood causes increased secretions of insulin, which leads to obesity:

> Carbohydrates are broken down to glucose (sugar) in our body, and the glucose raises our blood sugar. Insulin is then secreted by the pancreas to lower our blood sugar, but in the process, insulin causes the storage of fat and also increases cholesterol levels. Insulin also inhibits the mobilization of (loss of) previously stored fat.[59]

According to Public Health Journal, obesity raises the risk of heart disease, osteoarthritis, diabetes, high blood pressure and certain types of cancer.[60] Researchers have shown that hypertension, Type 2 diabetes mellitus (80% are obese), gallbladder disease, hyperlipidemia, and

sleep apnea are other complications of obesity. Other risks include coronary artery disease, knee osteoarthritis, gout, breast cancer, endometrial cancer, colon cancer, and low back pain.[61]

Sugar and Diabetes

Various anthropological studies have demonstrated that upon the introduction of refined sugar to a culture, the incidence of diabetes increases after a latent period of about 20 years. According to T.L. Cleave, author of The Saccharine Disease, the "virtual absence of diabetes in primitive communities who live on complex carbohydrates such as various grains and tubers compared with populations eating carbohydrates which are refined is anthropological proof that sugar is a leading cause of diabetes."[62] But as we know, the link between too much sugar and diabetes is another of those rules of thumb. Yet, like sugar's effect on dental health, we tend to ignore this shared wisdom when confronted with sugary sweets.

Studies demonstrating the undeniable link between sugar consumption and diabetes are well documented. Salmeron, et al., at the Harvard School of Public Health examined the relationship between glycemic (i.e., sugar) diets, low fiber intake, and the risk of non-insulin-dependent diabetes mellitus. They found that diets with a high glycemic load and a low cereal fiber content increase risk of diabetes in women.[63] A host of additional studies demonstrate that sucrose added to the diet of laboratory animals or increased in the diet of healthy volunteers has been shown to be associated with impaired glucose tolerance, retinopathy and nephropathy, and reduced insulin sensitivity of the tissues.[64] These are all major factors of diabetes.

And now there is an increase in adult-onset diabetes in children. One in four extremely obese children under the age of 10 and one in five obese adolescents under the age of 18 in the

US have impaired glucose tolerance—a precursor to type 2 or adult-onset diabetes, which increases the risk of heart disease, kidney failure, blindness and limb amputations. Adult onset diabetes is a chronic degenerative disease that is typically seen in people past the age of 60.[1] The fact that children are now suffering from this debilitative disease would have shocked health professionals a generation ago.

Obesity and diabetes are also causing birth defects that destroy a child's chance of a normal life. Researchers studied 23,000 pregnant women and found that obese women who also have type 2 diabetes are three times more likely than non-obese non-diabetic women to have a baby with a birth defect, and seven times more likely of giving birth to a child with a craniofacial defect such as cleft palate, or abnormal limb development. Nearly 6% of all women with type 2 diabetes had babies with major defects, compared with 1.34% of women without diabetes.[65]

Socioeconomic Impact:

Though it does not directly affect health, it is always good to know the facts behind the products we take for granted. Often, when we consider a product we may be ready to do without, finding out the moral costs of that product helps to solidify our decision. As with the moral problems raised by meat consumption, sugar has its own moral complications. The sugar industry has a long and sordid history of using both slave labor and child labor to harvest sugar, refine it, and bring it to market. In an October 17, 2001 article for Creative Loafing, senior editor John Sugg reported the current exploitation of child labor by the sugar industry:

> While we're talking sweet, take a hard look at your sugar bowl. Much of the sugar on American tables comes from the Dominican Republic. The Rev. Kirton recalls seeing cane-cutters, *braceros*, as young as 6 labor dawn-to-dusk shifts. And it's not a Dominican

company that works the children. 'Those plantations were owned by Gulf & Western, the same people who make movies at Paramount studios,' Kirton says. (In 1985, Gulf & Western sold its 240,000 acres of plantations—along with a posh resort—to the politically powerful Fanjul family of Palm Beach. That clan is often accused of widespread abuses of labor in its fields in the Everglades, so it is unlikely to have improved conditions in the Dominican Republic.)[66]

The sugar industry was also one of the largest exploiters of slave labor. The University of Calgary, in its applied history tutorial "The Sugar and Slave Trades," provides a concise review of sugar production's historical origins:

Sugar cane cultivation had its origins in Southwest Asia. From there it was carried to Persia and then to the eastern Mediterranean by Arab conquerors in the twelfth and thirteenth centuries. Shortly after sugar cane's introduction to the Mediterranean, it was being grown on estates similar to the later plantations of the Americas. By the fourteenth century Cyprus became a major producer using the labor of Syrian and Arab slaves. Eventually sugar made its way to Sicily where a familiar pattern of enslaved or coerced labor, relatively large land units, and well-developed long-range commerce was established. The Portuguese and the Spanish both looked to Sicily as a model to be followed in their own colonies in the Atlantic, and in 1420 Prince Henry sent to Sicily for cane plantings and experienced sugar technicians.

An innovation in sugar production, the roller mill, was introduced to the Mediterranean (perhaps by the Sicilians) and the Atlantic Islands in the fifteenth century. The roller mill reduced the time and labor needed to prepare the sugar cane, thereby increasing the mill's capacity. It was this technology, combined with the system of production developed in the Mediterranean, which was transplanted and expanded to the Atlantic Islands. The final component necessary for the industry's growth was satisfying its requirement of a large labor force. The solution was the incorporation of African slaves.[67]

Herbert Klein, in his book African Slavery in Latin America and the Caribbean (1990), traces the history of the sugar industry and compares it to other exploiters of African and indigenous Indian slavery:

Once we enter the more familiar history of the "Atlantic Islands", sugar and slavery become the economic foundation for European imperialism, even more so than the cotton and tobacco industries. Before the cotton and tobacco plantations there was the sugar industry in Brazil. When the Dutch became the direct competitors of their former Brazilian partners in 1630, their first step was to deny Brazil access to its sources of African slaves because slavery was the pivotal component of the sugar industry. So much so, that the Brazilians were forced to enslave the indigenous Indian populations of the interior regions of Brazil. Dutch Brazil then became "the source for the tools, techniques, credit and slaves which would carry the sugar revolution into the West Indies, thereby eliminating Brazil's monopoly position in European markets and leading to the creation of wealthy new American colonies for France and England.[68]

According to Klein, by the 1650s, with the decline in Brazilian production, the Dutch were forced to bring their slaves and sugar-milling equipment to the French and British settlers in the Caribbean. When the Dutch themselves migrated to the Caribbean, the sugar plantation system took hold on the islands and by the 1670s sugar became a larger commercial operation than tobacco and indigo. The accompanying slave trade led to a declining population of indentured whites and soon blacks outnumbered whites on Barbados for the first time. By 1700 every year saw the arrival of at least 1300 black slaves and Barbados, with 50,000 slaves, became the most densely populated region in the Americas.-[69]

Kretchmer and Hollenbeck, authors of Sugars and Sweeteners (1991), estimate that in the four centuries prior to the abolishment of slavery, the transport of slaves involved 22 million people, 12 million of whom were utilized in the Americas. The remainder died on board ship or shortly after arrival. Further, "a number of historians state that sugar was responsible for 70% of the traffic of slavery."[70] The critical historical role that slavery played in the development of the sugar industry in the Americas has also been well established in several other scholarly volumes on the subject.[71]

Kevin Bales noted in his book, Disposable People: New Slavery in the Global Economy (2001), that even today, large amounts of slave labor exists in Africa, Asia, Pakistan, Brazil, and the Carribean, among other places. As a result of globalization and the international commodities markets, products tainted with slavery are being broadly distributed throughout the world. According to Bales, "Maybe 40 percent of the world's chocolate is tainted with slavery. The same is true of steel, sugar, tobacco products, jewelry - the list goes on and on. Thanks to the global economy, these slave-produced products move smoothly around the globe."[72] Banes points out that the global market in commodities, such as cocoa and sugar, functions as a money-

laundering machine. Cocoa, for instance, coming out of West Africa and entering the world market almost immediately loses its 'label.' If you're a buyer for a candy maker, you don't say, 'I'd like to buy six tons of Ghanaian cocoa.' You just say you want six tons of cocoa. When the cocoa is delivered to your factory, you can't tell where it's from, so you may be passing on a slave-tainted product without knowing, and consumers will buy it without knowing. The same is true of sugar and other commodities, where the source is not easily identifiable.[73]

Peter Cox in the New Internationalist (November, 1998) asked the question, "Slavery on sugar plantations is a thing of the past. Or is it?" Cox's investigation revealed the following:

'We suffered all kinds of punishment,' one witness told the Brazilian Justice Ministry. 'We were hit with rifle butts, kicked and punched. I tried to escape, so did my uncle. He was shot and killed by farm gunslingers.'

> The word is *peonage* - a vicious system of forced labor, common in many parts of Latin America, Asia and even in the southern US. A recruiter entices the poor and the homeless with promises of employment, good wages, food and shelter. Then they are trucked long distances to toil on remote plantations where they are held prisoner and compelled to work at gunpoint. The victims aren't paid cash—they receive notional 'credits,' which are offset by extortionate charges for the tools they use and the hammocks they sleep in.
>
> 'Life for these people is worse now than it was under slavery,' says Wilson Furtado, of the agriculture federation in Bahia state, Brazil. 'Then the owners had some capital tied up in their slaves so it cost them if one died, but now they lose nothing.' No matter how

hard the victims work - cutting sugar cane or felling trees—they can never break even. A loaded rifle keeps them in line, but it's debt that keeps them working.[74]

However, Cox points out an irony for those countries relying on sugar as a cash crop while the sugar industry focuses on more research and development into artificial sweeteners. According to Cox, the plight of non-Western nations whose economies are dependent on cash crops such as sugar is identical to the position of the victims of *peonage.* Both are held to economic ransom by a system that ensures they can never free themselves of debt - no matter how hard they try. The more they produce, the more indebted they become. In 1981 the Dominican Republic earned $513 million from its sugar exports, yet by 1993 its income had dropped almost by half—to $263 million, despite increasing its production by 84,000 tons. This disastrous decline in income saw the Dominican Republic's debt swell from $600 million in 1973 to a staggering $2,400 million in l983. And not only sugar producers are crippled: plummeting prices for commodities in general have impoverished many Third World economies, leading to widespread starvation.[75]

Cox also investigated how one of the richest islands of the Philippines could become the setting for another Ethiopia-type famine, where an estimated 85,000 Philippine children under six were suffering from moderate or severe malnutrition. Partly, according to Cox, this was because the corrupt Marcos regime mismanaged the industry. Also, the U.S. market for Philippine sugar had disappeared (being replaced by corn syrup), throwing a quarter of a million sugar workers out of their jobs. And the land—rich and fertile—was exclusively used for sugar cane which prevented self-sufficiency in food production. Cox concludes that a disaster was waiting to happen.[76] Quite a few other authors have documented exploitations of modern slavery, and its variants, by the sugar industry. [77]

Sugar and the Environment:

Sugar production also causes stress on our natural environment. As cash-crop economies vainly struggle to repay their debts environmental devastation becomes another consequence of the modern sugar industry. In 1997, American University in Washington, D.C. issued a special-case study on the environmental consequences of the sugar industry on the environment of the Philippines:

The relationship between sugar production and environmental damage is found in deforestation, soil erosion, and consequent bio-diversity loss caused by forest conversion to sugar cane field. Forest clearing caused widespread soil erosion and had a devastating effect on the ecology, wiping out a third to a half of the known species of snail and birds in the Philippines.

In the overall Philippines, cultivated upland areas increased from 582,000 hectares in 1960 to over 3.9 million hectares in 1987. Soil erosion was estimated at about 122 to 210 tons per hectare annually for newly established pasture, compared to less than 2 tons per hectare for land under forest cover. Forest cover declined from 50 percent of the national territory in 1970 to less than 21 percent in 1987.[78]

The deforestation rate of the Philippines, driven in large part by the sugar industry, is now pegged at 25 hectares an hour or 219,000 hectares a year. Experts say the country can expect its forests to be gone in less than 40 years.[79]

The Multinational Corporations:

Quite a few large multinational companies are invested in the sugar industry. One example, explored by Daniel Hellinger and Dennis Brooks in their book The Democratic Façade (1991), is Gulf and Western. They write:

> Gulf+Western came to the Dominican Republic in 1966, two years after an invasion by U.S. Marines. Aided by major tax concessions granted by President Balaguer to foreign investors, economic penetration of the country quickly followed U.S. military and political intervention. With loans from Chase Manhattan Bank, Gulf+Western gained a foothold in the island's economy with its purchase of the South Puerto Rico Sugar Company. By 1976, its investment had grown to $300 million in sugar, meat, citrus, tourism, and tobacco. Other transnational corporations also operated in the Dominican Republic, but Gulf+Western dominated the economy as the country's largest landowner, employer, and exporter. Because the yearly revenues of Gulf+Western were greater than the Dominican Republic's Gross National Product, it could accurately be called 'a state within a state.'

Immediately on entering the country, Gulf+Western broke the sugarcane workers' union, Sindicato Unido. Denouncing the union as communist controlled, the corporation fired the entire union leadership, annulled its contracts, and sent in police to occupy the plant while the American Institute for Free Labor Development (an agency financed in part by the CIA) formed a new union that obtained immediate acceptance from the Dominican president. The possibility of free unions on Gulf's sugar plantations disappeared (along with dozens of labor leaders), with the result that of the country's 20,000 cane cutters, only one out of ten is Dominican. Most of the

cane workers are Haitian immigrants paid $1.50 to $3.00 a day to do what Dominicans call 'slave work." [80]

Hellinger and Brooks also describe how Gulf+Western set up the first of the industrial free zones that thrive in the Dominican Republic. Often called 'runaway shops' (because businesses relocate there from U.S. communities) or 'export platforms,' such zones offer a low-wage labor force, government subsidies, and freedom from taxes and environmental regulations. Unions are not permitted in these zones, and so in the mid-1980s, 22,000 workers earned an average of 65 cents per hour working in factories surrounded by barbed wire and security guards. Dominican Law 299 grants corporations a 100 percent exemption from Dominican taxes and also provides them with a 70 percent government subsidy of plant construction costs to set up business in the zones. Bestform, Esmark, Milton Bradley, Ideal Toys, Fisher Price, and North American Phillips are among the U.S. corporations that take advantage of the free zones to assemble and manufacture their products for export back to the United States.[81]

Conclusion

Excess sugar ingestion is rampant in today's society. We are eating sugar in foods that don't even warrant sweeteners. Sugary drinks and candies thrive in the business world. But this excess sugar has saddled us with alarming health risks like obesity and diabetes. The sugar industry, with its carelessness for workers and the environment, cannot be trusted to tell us the facts about the health of their product. But that doesn't stop them from pushing to assure us that constant sugar ingestion is just a part of life.

The truth is, all this sugar doesn't have to be a part of our everyday life. We can dump sugary products and take up a diet focused on nutrient-rich natural foods. Diets centered on vegetables, legumes and whole grains provide everything a body needs for optimal health, and helps to suppress the addictive desire for sweets. The best choice for those moving into the andropause and menopause stage of life is to drop sugar and pick up healthy alternatives to ensure a long and happy life.

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