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The Science of RealW8

Dwight Lundell M.D.

Over the last 20 years, obesity rates have dramatically increased in the United States, (1) and of the approximately 2/3 adults in the United States who are overweight, more than half of them—more than 72 million—are considered obese (2,3).

In the last decade alone the rate of diabetes cases has nearly doubled (4). Most alarming is the increase in overweight and obese children. It is now estimated that one in five children in the United States is overweight (5).

Obesity is closely associated with myriad chronic diseases; heart disease, type II diabetes and some cancers as well as psychiatric disorders such as depression and hopelessness. (6, 7, 8) The health care costs in the United States alone are $147 billion, the costs in absenteeism and lost productivity is at least that much. (9)

- While the physics of "calories in calories out" is not in question, it does not explain the why.
- Why do we eat more that we burn?
- Why do we ignore the health consequences associated with excess fat storage?
- Why does the medical advice to "eat less move more" not work?
- Why are some calories more uniquely fattening than others?
- Why do people who can control many other aspects of their lives not achieve control over their caloric intake?
- Why, with all the advances in science, computers, and miracles of modern medicine have we not been able to solve this excess weight problem?
- Why, when our bodies control everything in narrow ranges to achieve normal metabolism do we not have symptoms when blood sugars are out of the normal and healthy range?
- Why and how do these elevated blood sugars harm tissues, organs and DNA?
- Why are we so fat and what can we do about it?

Over the last 50,000 years humans have benefitted from an ability to store fat, and this ability has been the key to man's survival. The ability to store fat meant that man could carry enough energy to survive when food was scarce. Seasonal variations in food quality, quantity and variety could be sustained by the ability to carry large stores of calories as fat.

In the last 100 years changes in the human diet and lifestyle, with abundant food and increased productivity, have overwhelmed our genome's ability to adapt to these changes. As a consequence, billions of people around the world are now overly fat (10).

The thing that has most drastically changed in our environment over the last 200 years is the amount of sugar we consume. In 1811 we consumed about 20 pounds of sugar per person, in 1911 we consumed about 90 lbs per person and in 2011 we consumed 180 pounds of sugar per person per year (11).

This amount of sugar in the diet has clearly overwhelmed the ability of the body to control blood sugar and fat storage.

Sugar in the diet is rapidly digested and absorbed into the bloodstream as glucose, blood glucose or blood sugar.

To facilitate the complex electrochemical reactions that constitute life, the reagents must be controlled in a narrow range both inside and outside of the cell. There are chemical and hormonal mechanisms to regulate these elements, and if they get very far from the normal range,

symptoms, dysfunction and even death of tissue or the whole organism can occur.

One must only hold their breath for a few moments to experience the powerful forces that regulate oxygen levels in the blood or experience a fever to know the symptoms when body temperature varies from normal.

Blood sugar is controlled primarily by the hormones insulin and glucagon, normally in narrow range. If blood sugar falls too low, symptoms of fainting, lightheadedness, blackouts and even death occur. However, blood sugar can be elevated far beyond normal without symptoms. From an evolutionary view this would be acceptable; not to have a negative consequence for doing the very thing that would ensure survival—consuming quantities of food when available to be stored for later use. Even if there was some injury it would be worth the damage for the greater goal of survival. If Paleolithic man came upon a beehive full of honey or a large quantity of fruit in season he consumed it and would not expect to be made ill by that consumption as temporary elevation of blood sugar facilitated the conversion of the glucose to fat for storage in the fat cells.

The modern diet with excess quantities of sugar and refined grains creates a challenge for the metabolism. If this only happened occasionally it would not create adverse health consequences, but when it happens multiple times per day, heart disease, dyslipidemia, obesity, premature aging, and hypertension are common (11)

A glucose tolerance test to diagnose diabetes is done by giving the patient a maximum of 75 grams of glucose after a 12 hour fast and then testing the blood sugar over the next 2 hours. If the blood glucose is over 200mg/dL at 2 hours, a diagnosis of diabetes is warranted. Ideally the glucose would not go over 120mg/dL at 2 hours. Fasting blood glucose over 100mg/dL is abnormal and a level over 120 is considered diagnostic for diabetes. Normal fasting glucose should be between 70 and 85 mg/dL.

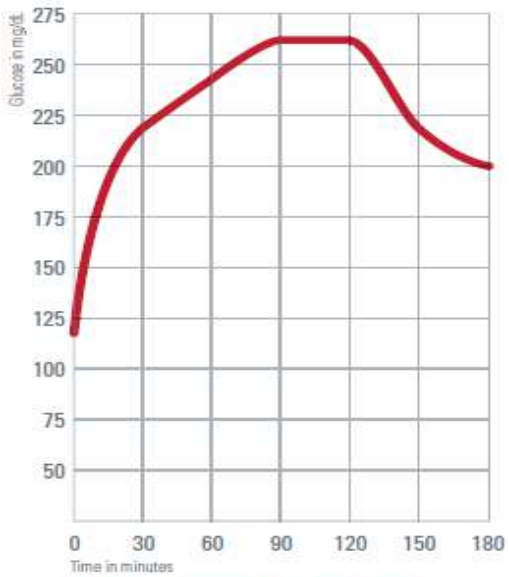
When we consider that the 20 oz soft drink contains 65 grams of sugar and a medium order of fries has 45 grams and that the common 44 oz soft drink contains 128 grams, we often get a super maximal glucose tolerance test multiple times per day without medical supervision.

These sugar spikes often go undetected because there are no symptoms, and testing is usually done only in a fasting state, not after meals or snacks.

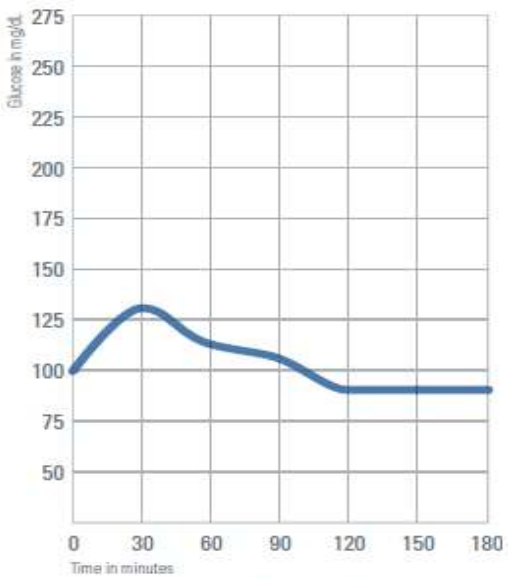
The frequency of the spikes and the damage caused is well documented (12-19). For example, the risk of heart attack increases by 58% for each 21mg/dL increase in after-meal blood sugar (18).

Over 80% of adults have fasting blood glucose over 85mg/dL, which many consider abnormal and would reflect severely elevated blood sugars throughout a normal day of frequent high-sugar meals and snacks (20, 21).

The evidence is clear that sugar spikes are common, especially with current diet and lifestyles.



Diabetic Glucose Tolerance Curve



Typical Glucose Tolerance Curve
With Only One Ingredient Of RealW8

What are the consequences of these sugar spikes?

Diabetes is characterized by frequent and significantly elevated blood sugar spikes, and diabetes is marked by a unique set of tissues that are damaged by these sugar spikes. The tissues most vulnerable to elevated blood sugar are those in the eye, the kidney, the nerve and the lining of the blood vessel. Elevated blood sugar bathes all cells in the body with excess glucose and most cells can control the amount of glucose entering because of insulin receptors. However, due to the lack of the most common insulin receptors these cells are at the mercy of the blood glucose, with the levels in the cells the same inside as outside. The common pathway for the damage is oxidative stress because the energy-producing mitochondrion is overloaded with fuel and produces excess free radicals (22).

The oxidative stress leads to cell damage and death, which triggers the inflammatory cascade in these tissues. This is exacerbated by inflammation from the overloaded fat cells that are injured, dying and producing inflammatory cytokines that are then circulated throughout the body.

The evidence is then clear that the sugar spikes (postprandial hyperglycemia) induce damage to tissues and organs and are central to the storage of excess fat, yet even with that knowledge we cannot seem to control the sugar spikes.

An increasing body of evidence is accumulating that shows these sugar spikes are also addictive (23).

Addiction is often used as a synonym for dependence. Drug dependence is characterized by compulsive, sometimes uncontrollable, behaviors that occur at the expense of other activities and intensify with repeated access, as defined by DSM-IV-TR, American Psychiatric Association.

Dependence is diagnosed when three or more of the following seven criteria are met;

1) Tolerance, as defined by either of the following: a) a need for markedly increased amounts of the substance to achieve desired effect, b) markedly diminished affect with continued use of the same amount of the substance.
2) Withdrawal, as manifested by either of the following: a) characteristic withdrawal symptoms for the substance, b) the same substance is taken to relieve or avoid withdrawal symptoms.
3) The substance is often taken in larger amounts or over a longer period of time than was intended.
4) There is a persistent desire or unsuccessful efforts to cut down or control the substance use.
5) A great deal of time is spent in activities necessary to obtain the substance, use the substance, or recover from its effects.
6) Important social, occupational, or recreational activities are given up or reduced because of substance use.
7) The substance use is continued despite the knowledge of having a persistent or recurrent physical or psychological problem that is likely to have been caused or exacerbated by the substance.

The Yale Food Addiction Scale (YFAS) has recently been developed and validated as a reliable tool to assess addictive behaviors in a population that would typically deny or minimize those behaviors (24).

The behavioral and neurochemical changes in the brain are very similar to those of drug addiction and can be demonstrated by typical changes in dopamine release and receptors, opioid receptors and blockers and acetylcholine systems. These alterations can be demonstrated biochemically and with brain imaging (23).

With clear evidence that sugar spikes, or more properly postprandial hyperglycemia, are common, damaging and addictive (25-29), the obvious question is what can be done about them.

The willful reduction in dietary carbohydrate intake should be obvious. This has been written about since Banting's Letter on Corpulence was published in 1869 and was continued by many others until the 70's when it was overwhelmed by the low fat theory and carbohydrates were promoted as "Heart Healthy" by medicine, governmental authorities and by the big food manufacturers who heavily

produced and promoted high-sugar and carbohydrate-processed foods to their great profit.

Against this background of a decidedly hostile environment, it seemed that the solution would be to intervene in a way that prevented or moderated the sugar spikes, thereby solving the problem of addiction, fat storage and ill health.

A search for natural compounds that would modify the digestion, absorption and metabolism of glucose was undertaken.

Five plant based products were identified; each had a significant body of scientific evidence indicating that they would change the digestion, absorption and metabolism of glucose.

The first compound is a concentrated extract of the raw or unroasted coffee bean. The extract has been shown to lower sugar spikes (30), reduce diabetes (35, 39) and generally modify glucose metabolism to reduce sugar spikes (31-51).

The second is an extract of a specific seaweed that reduces the digestion of both fat and glucose, (55) and provides key antioxidants (56-60).

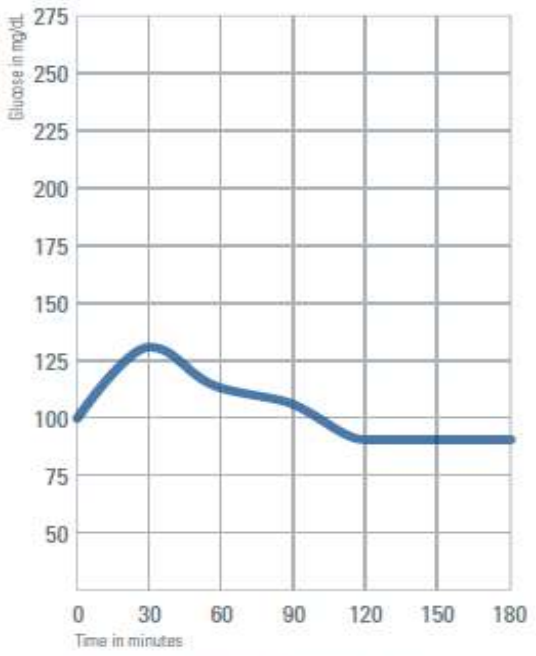
The third is from the prickly pear leaf, which has been shown to reduce diabetes, LDL oxidation and provide key antioxidants (61-152).

The fourth is berberine, which has been used for thousands of years by Chinese Traditional medical practitioners as a tool to assist people with digestive issues and diabetes. Berberine caught worldwide attention when it's purified and concentrated form was clinically researched and found to have the same results as one of the most popular prescription medications, without any of the devastating adverse side effects. Berberine works in several ways to delay the absorption and improve the metabolism of carbohydrates.

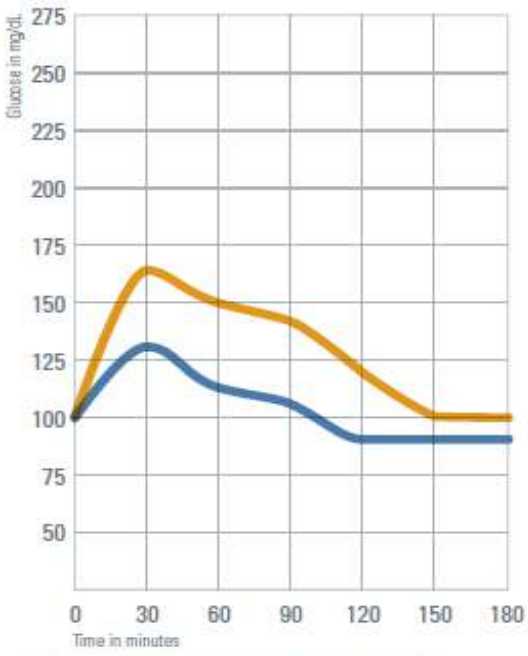
The fifth is Phaseolus Vulgaris (an extract from white kidney beans). Phaseolus Vulgaris works by drastically inhibiting the key enzyme that breaks down sugar and carbohydrates so they can be absorbed from the intestine, this forces them to be broken down in a different place and in a different way, thus avoiding those deadly "sugar spikes" that normally would occur with the consumption of simple carbohydrates. Improved extraction and purification methods have recently enhanced its effectiveness.

RealW8 is the first weight loss supplement to combine these five clinically proven compounds in a way that maximizes their efficacy.

RealW8 is the only weight loss supplement that attacks the problem of sugar spikes (post prandial hyperglycemia) to promote a reduction in the addictive properties of carbohydrates and the health consequences that follow from the consumption of them.



Typical Glucose Tolerance Curve
With Only One Ingredient Of RealW8



Typical Glucose Tolerance Curve
After Carbohydrate Meal

Typical Glucose Tolerance Curve
With Only One Ingredient Of RealW8

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