



1650 E. Colonial Dr
Orlando, Florida 32803
Phone: (407) 370-4444
Fax: (407) 370-4488
www.sensychocolate.com

**America is facing a health crisis every bit as big as the current financial crisis,
But no one is addressing the real issues.**

Poor lifestyle choices are a major contributor to this crisis.

Out of many Poor Lifestyle Choices that Americans make,

the High Consumption of Refined Sugar is one of the biggest problems.

It is associated with numerous significant health problems including the listed ones.



Major Chronic Metabolic Imbalances & Diseases / Health
Contrary to Sugar's Harmful Effects, **Xylitol Does Not** Cause or Contribute to:

- Increased Blood Sugar Levels (it helps to modulate / stabilize them)
- Increased Insulin Secretion or Insulin Resistance (it helps to prevent and counter it)
- Diabetes (it has actually been used as a safe alternative for diabetics for decades)
- Cardiovascular Disease (since there is no impact on blood sugar, there is no contribution to CVD whatsoever)
- Cancer (since there is no impact on blood sugar, there is no contribution to Cancer whatsoever)
- Increased Acid Production / Acidity (rather, it has an alkalinizing effect)
- Osteoporosis / Bone Demineralization (it actually appears to enhance bone re-mineralization)
- Xylitol does not require insulin to enter the cell

High refined sugar (which has a high glycemic index) consumption increases blood sugar levels which:

1. Leads to stimulation of the pancreas to secrete large amounts of insulin
 - A. This leads to a strong propensity to increase fat stores and obesity (clearly an epidemic in America), also
 - i. Obesity is clearly associated with a wide array of health issues, disease conditions, and reduced life expectancy.
 - B. Over time this leads to the development of insulin resistance (believed to affect 50% of Americans) and;
 - i. Insulin Resistance is associated with increased lipid deregulation, cardiovascular disease, hormonal issues, etc.
 - C. Ultimately leading to the development of diabetes in a certain percentage of people (diabetes has reached epidemic levels in US)
2. Refined sugar metabolizes leaving an acid residue, i.e., increased acidity throughout the body (this in turn puts stress on the body's acid buffering system and leads to an environment that supports the growth of certain harmful microbes, pre-cancerous cells, and cancer cells.
 - A. Many harmful microbes prefer an acidic environment, as do cancer cells. In fact, both tend to increase acidity directly as a result of being dependent on anaerobic (without oxygen) metabolism.
 - B. This increased acidity in the tissues contributes to bone demineralization as the body pulls calcium-phosphate from the bones as it uses the phosphate to buffer the acidity.
3. The high intake of essentially empty calories (since the refined sugars are devoid of other vital nutrients) contributes to multiple nutrient deficiencies.



GI-Related Problems:

Intestinal Dysbiosis
Candida Albicans Overgrowth
Reduced Beneficial Bacteria
H. Pylori Infection / overgrowth
Hypo or Achlorhydria (low stomach acid)
Poor intestinal absorption of key minerals (esp calcium and magnesium)

GI-Related Problems

Contrary to Sugar's Harmful Effects on the Gastrointestinal System, **Xylitol Does Not Support:**

- The Growth of Harmful Intestinal Microbes
- The Overgrowth of Candida / yeast species
- Intestinal Dysbiosis
- H. Pylori Growth and Proliferation

Xylitol supports:

- Increased mineral absorption by the body
- Beneficial Intestinal Bacteria
- Healthy Intestinal Wall Cells

High refined sugar consumption (especially in conjunction with a relatively low fiber diet) also:

1. Creates an intestinal environment that leads to:
 - A. Overgrowth of Candida Albicans which
 - i. competes with the beneficial bacteria thereby suppressing the levels of the beneficial species
 - ii. produces a whole host of toxins leading to a plethora of unpleasant symptoms
 - B. Intestinal Dysbiosis, which is related to a variety of imbalances of the 400+ microbial species that inhabit the human gut
 - C. An increased propensity for infection by H. Pylori and its growth which is associated with:
 - i. Stomach ulcers;
 - ii. Reduced stomach acidity (necessary for proper digestion and assimilation of proteins and key minerals);

Adequate stomach acid (hydrochloric acid) is essential for the proper, efficient absorption of vital minerals including calcium.

Contrary to conventional wisdom, most "acid indigestion" like symptoms are actually due to too little stomach acidity. Although refined sugars lead to increased systemic acidity (largely due to increased production of lactic acid by microbes), they also interfere with the stomach's ability to produce acid (hydrochloric acid) that is made by the parietal cells in the stomach.

- iii. A propensity / increased risk of stomach cancer



Sex Hormone-Related Problems / Challenges:
Xylitol Does Not Cause an increase in Blood Sugar levels, Insulin Release, or Insulin Resistance, it therefore **Does Not Cause:**

- Estrogen Dominance / Overproduction
- Androgen Overproduction
- Reduced Progesterone Production
- Poly Cystic Ovary Syndrome
- Early Onset of Menstruation
- Early Breast Development
- Hormonal Imbalances

High refined sugar consumption leads to obesity, increased body fat, and insulin resistance (as well as alteration of systemic mineral relationships) which leads to:

1. Increased body fat leads to increased production of estrogen (fat cells make estrogen);
2. Increased estrogen leads to:
 - A. An imbalance between estrogen and progesterone, the other major female hormone;
 - B. Leading to a state known as Estrogen Dominance / Overproduction which is associated with:
 - i. Early Breast Development
 - ii. Early Onset of Menstruation

This leads to an increased lifetime exposure to estrogens with inadequate opposition by progesterone which is associated with an increased risk of Breast Cancer

3. Insulin Resistance is associated with an increased incidence of Poly Cystic Ovary Syndrome (PCOS) and non-ovulation during menstrual cycles which leads to further disruption of a female's delicate hormonal balance / rhythm:
 - A. Further increases of in estrogen production;
 - B. Decreased production of progesterone which contributes to the relative estrogen dominance situation;
 - C. Increased production of androgens



Infections / Inflammation / Immune System Challenges:

- Gum disease (gingivitis & periodon
- Dental Decay
- Sinusitis
- Otitis Media (ear infections)
- Allergies
- Asthma
- Compromised Immune Efficiency

High refined sugar consumption feeds the bacteria that cause or contribute to:

1. Gum disease (gingivitis & periodontitis)
2. Dental Decay
 - A. These bacteria also produce:
 - i. Sticky substances that form dental plaque which contributes to the oral pathology
 - ii. Lactic acid as a byproduct which creates an acidic environment, that further supports the growth of numerous other harmful microbes, in addition to directly eroding the tooth enamel
3. Otitis Media (ear infections) which are obviously a huge problem for school age children and their parents
4. Allergies & Asthma secondary to an environment that is conducive to the growth of harmful microbes at the expense of the beneficial ones
This, in turn, leads to chronic inflammation and a vicious oxidation cycle that weakens the immune response and makes the tissues hyper-irritable.
5. Compromised Systemic Immune Functional Efficiency / i.e., Suppressed Immune Function
6. Chronic inflammation which leads to a plethora of secondary problems.



Xylitol Possesses the following characteristics:

- Anti-cavity / Anti-cariogenic * Anti-bacterial * Re-mineralization of teeth and bones / strengthening of tooth enamel
- Increases mineral absorption (particularly calcium & magnesium) * Linked to bone re-mineralization / strengthening
- Provides energy without a rise in blood sugar levels or causing a rise in insulin * Has a glycemic index of 7!
- Safe for consumption by diabetics, enhances their blood sugar regulation * Calorie content of 2.4 cal/gm vs sugar's 4 cal/gm (40% less)
- A significant proportion of it is not absorbed and feeds healthy gut flora thereby enhancing overall health as well as the health of the GI cells
- What is absorbed is absorbed slowly thereby providing a slow, long-lasting source of energy
- 85% of what is absorbed is used by the liver to make glycogen (stored energy the live can use to perform a myriad of metabolic processes); 10% goes for use by the kidneys; the balance is used by blood cells, lungs, the testes, brain, and adipose cells.
- Humans naturally produce about 15 gms per day from normal metabolic reactions
- Naturally occurs in many foods, esp: plums, raspberries, and cauliflower * Has a mild laxative effect when consumed in larger amounts
- Has a protein-stabilizing effect thus protecting proteins from damage
- Not metabolized by lactic acid-producing, harmful bacteria (therefore it does not increase systemic acidity like sugar does)
- Can be used as an energy source following major trauma when glucose is poorly utilized (has been used this way clinically)
- Inhibits muscle wasting via a strong anti-catabolic effect associated with its ability to provide vital liver glycogen which prevents the body from breaking down muscle for energy
- Improves fat utilization * Can aid in a weight loss / control program
- Slows stomach emptying which increases satiety and reduces overall food intake
- Enhances glutathione (the body's primary anti-oxidant) levels in Red Blood Cells
- Can help to compensate for G-6-PD deficiency* in those that have it
- May play a valuable role in those looking to add lean body weight / muscle and lose body fat via its ability to increase ATP, increase fat release and utilization, replenish liver glycogen levels, be anabolic in general, anti-catabolic, an anti-oxidant, and to help fight muscle fatigue.
- Consumption shown to increase skin thickness and collagen content in animals. Skin lotions that contain *Xylitol*, have been shown to reduce bacteria and increase dermal hydration, with its high moisture affinity.
- Interestingly, premature infants possess the possess the ability to fully metabolize xylitol.

* G-6-PD (glucose 6-phosphate dehydrogenase) deficiency is the most common inborn error of metabolism. It results in a reduced ability of red blood cells to make NADPH (via the pentose phosphate pathway) which is necessary to make reduced glutathione (the body's primary protector against free-radical / oxidative damage). This can lead to both severe chronic and /or acute hemolytic anemia. Most with this condition are not aware of it until a crisis is precipitated by some stress (typically a drug or toxin).

Overview of the Beneficial Properties of Xylitol

Naturally occurs in many foods, esp: plums, raspberries, and cauliflower.	Can be a valuable aid in weight loss & weight control programs.	Anti-bacterial with regard to harmful species so it inhibits the growth of bacteria that cause a
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		host of health challenges. See below.
Naturally produced in the human body during normal metabolic reactions, about 15 gms / day.	Slows stomach emptying which increases satiety and reduces overall food intake.	Anti-cavity / Anti-cariogenic & cariostatic since it inhibits the bacteria that cause dental plaque and erosion of dental enamel.
Has a very low glycemic index of 7!	Improves fat utilization.	Supports re-mineralization of teeth and bones / strengthens of tooth enamel.
Has a calorie content of 2.4 calories per gm vs. sugar's 4 calorie gm (i.e., 40% less)	Has a protein-stabilizing effect thus protecting proteins from damage.	Increases mineral absorption (particularly calcium & magnesium) by forming stable mineral complexes thereby aiding absorption.
Partially absorbed (30-75% depending on volume consumed); the more consumed in a short period of time, the less absorbed.	Inhibits muscle wasting via a strong anti-catabolic effect associated with its ability to provide vital liver glycogen which prevents the body from breaking down muscle for energy.	Is not metabolized by lactic acid-producing, harmful bacteria (therefore it does not increase systemic acidity as other sugars do).
What is absorbed is absorbed slowly thereby providing a slow, long-lasting source of energy.	Enhances glutathione (the body's primary anti-oxidant) levels in the Liver, Muscles, & Red Blood Cells (helping to protect these cells).	A significant proportion of it is not absorbed and feeds healthy gut flora thereby enhancing overall health & GI tract health.
Provides energy without causing a rise in either blood sugar levels or insulin.	Can help to compensate for G-6-PD deficiency* in those that have it.	Has been shown to reduce the incidence and severity of allergies & allergic reactions.
85% of what is absorbed is used by the liver to make glycogen (stored energy the liver uses to perform a myriad of metabolic processes); 10% goes for use by the kidneys; the balance is used by blood cells, lungs, the testes, brain, and adipose cells.	May play a valuable role in those looking to add muscle and lose fat via its ability to increase: ATP, fat release & utilization; replenish liver glycogen levels; be anabolic in general; be anti-catabolic (re: muscle); anti-oxidant properties, and to help fight muscle fatigue.	Helps to support a healthy immune system via its ability to inhibit the growth of various pathogenic bacteria. This helps to spare the immune system for engaging in numerous fights that would deplete it.
Safe for consumption by diabetics; actually enhances their blood sugar regulation.	Has a mild laxative effect when consumed in larger amounts.	Has been shown to reduce the incidence, frequency, and severity of asthma.
Can be used as an energy source following major trauma when glucose is poorly utilized (and it has been used this way clinically).		
When Xylitol is used in place of other refined sugars it both provides the above benefits and counters sugar's other negative health effects as below:		
Xylitol can help to prevent all of the negative health consequences associated with a diet containing high amounts of refined sugars including: Gum disease (gingivitis and periodontitis), dental plaque, dental decay, gastric ulcers, sinus infections & sinusitis, and ear infections, Intestinal Dysbiosis (inc. Candidiasis), Insulin Resistance, Diabetes, Lipid abnormalities (high cholesterol / triglycerides), Hypertension, Osteoporosis, Cardiovascular disease, Cancer, and various sex-hormone related problems (estrogen dominance, progesterone insufficiency, early breast development, early onset of menstruation, poly cystic ovary syndrome, and androgen overproduction in females).		