

Our purpose

*We help people live life optimally by sharing
chiropractic
wellness principles through our guidance,
education, health service
delivery, and lifestyle resources.*



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CHIROPRACTIC AND MASSAGE
~NORTHWEST~



The Dangers of Sugar

Best of Me Workshop 2016



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Enemies of a healthy brain & body

(toxins, sugary malnutrition)



These are the same things to
your body – toxic!



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Carbohydrates

Carbohydrates are sugars that come in 2 main forms - **simple and complex**.

This is also referred to as simple sugars and starches.

The difference between a simple and complex carb is in how quickly it is digested and absorbed - as well as it's chemical structure.



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Simple carbohydrates

Simple carbohydrates are called simple sugars. Sugars are found in a variety of natural food sources including fruit, vegetables and milk, and give food a sweet taste. But they also [raise blood glucose levels quickly](#).

- Sugars can be categorised as single sugars (monosaccharides), which include glucose, fructose and galactose, or double sugars (disaccharides), which include sucrose (table sugar), lactose and maltose.
- Simple carbohydrates are simply sugar. They are made up of just one or two sugar molecules. As such, it doesn't take much for your body to break them down and absorb them (as glucose) into the bloodstream. For this reason, simple carbohydrates **raise blood sugar much faster and usually higher** than complex carbs.

Single sugars include:

- Fructose (found naturally in fruit and added to some processed foods as a sweetener) and
- Galactose (found in dairy products).
- Double sugars include:
- Lactose (found in milk and other dairy products)
- Maltose (found in some vegetables and grains).



Complex Carbohydrates

Complex carbohydrates are starches. They're made up of longer chains of sugar molecules, which makes them take longer to digest. Since complex carbs are digested more slowly than simple carbs, **blood sugars don't rise as high or as fast.**

- Just as with simple carbohydrates, some are healthier than others.
- The healthiest complex carbohydrates are the least processed. Whole grains (rather than refined grains), starchy vegetables and legumes are the best complex carbs.
- Examples of these foods are brown rice, oatmeal, other whole grains, whole wheat pasta and high fiber cereals. Potatoes and sweet potatoes, corn and legumes (kidney beans, chick peas), are also complex carbs.
- Whole grains, legumes and starchy vegetables all provide significant amounts of fiber. Fiber is an important part of your diet: it helps keep your blood sugar levels from spiking too high, it can help regulate your cholesterol levels and is important for intestinal health.
- Refined starches, on the other hand, such as refined grains, are quite low in fiber. They may have vitamins and minerals if they've been enriched, but whole grains naturally have vitamins and minerals in them because they have not been stripped through processing. Some examples of refined starches are breads, cookies and cakes.



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Sugar Consumption

- In 1822, the average American ate the amount of sugar found in one of today's 355 ml sodas (~39 grams) every 5 days. Now, we eat that much every 7 hours.
- Before food processing, when we got sugar mainly from fruits and vegetables, **we consumed about 25-30 grams per day**. By 1977, we consumed more than 70 grams per day, and by 1994, it was 110 grams.
- Today, Americans consume 15.5 % of calories from added sugars; in Canada, the figure is 10.7%
- **Canadians consume an average of 110 grams of sugar a day or 26 teaspoons.**
- This means the average Canadian eats approximately 88 lbs. of sugar per year.
- The average nine-year-old boy consumes 123 lb. of sugar per year and male teens consume 138 lb.
- The World Health Organization recently reduced its recommendation from 10% of calories from sugars to 5% or 100 calories from added sugars per day.





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7 Deadly SINS

- Smoking
- Sitting
- Sugar
- Stress
- Sleep (Lack of)
- Subluxation
- Slumping Posture



The sugar devastation

- The single greatest change in the North American diet was the increase in sugar intake from the mid-19th century onward
 - Less than 15 pounds/person annually in 1830's
 - 100 pounds/person annually in 1920's
 - After 1960's, things started changing drastically
 - 150 pounds/person annually by year 2000 (including HFCS)

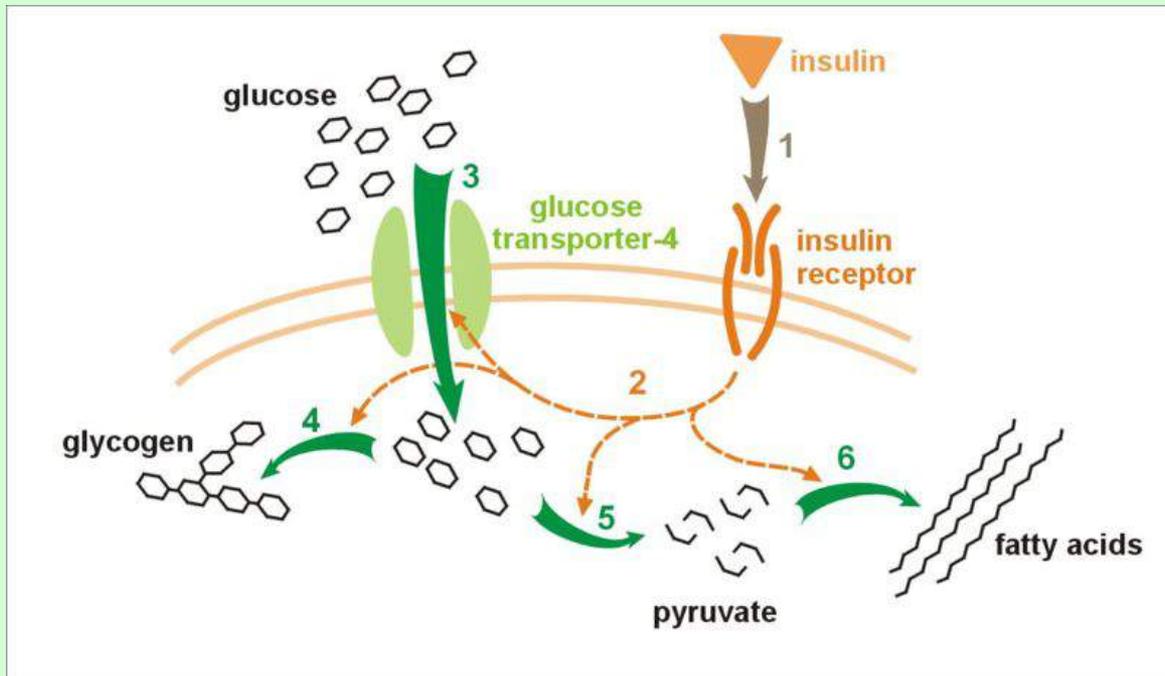
Cleave, TL. Campbell, GD. 1966. Diabetes, Coronary Thrombosis, and the Saccharine Disease

How your body handles the carbohydrate (CHO) component

- Absorption of simple sugars in gut
- Insulin release is proportional to how much sugar enters at a given moment
- Eating a high CHO diet or CHO alone
 - → ↑ sugar in portal vein → ↑ insulin level
- Simple sugar + insulin into liver
- Liver processes sugar = protective pathway

Stimulation of insulin release

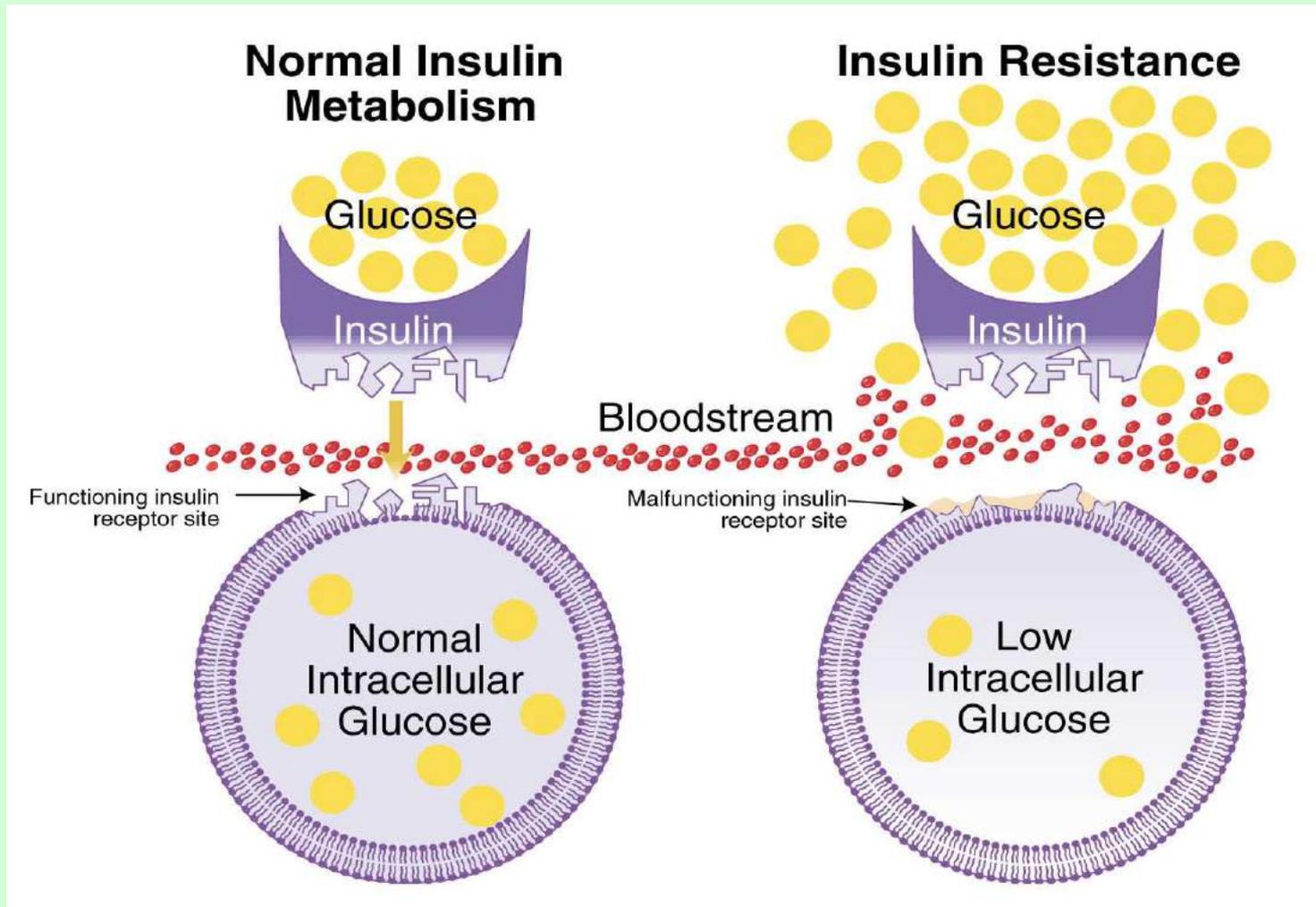
- Blood glucose from dietary foods and amino acids (specifically alanine, glycine, & arginine). These trigger a release of insulin from your pancreas every time you consume them.



Insulin-
Glucose
Metabolism
pathway(s)



Consequence of high refined CHO consumption?



Insulin Resistance Syndrome (IRS)

- Varying degrees of impaired glucose tolerance
- Depressed HDL *(here comes high cholesterol)
- Elevated triglycerides
- Hypertension
- Truncal (mid body area) obesity
- Elevated fasting glucose

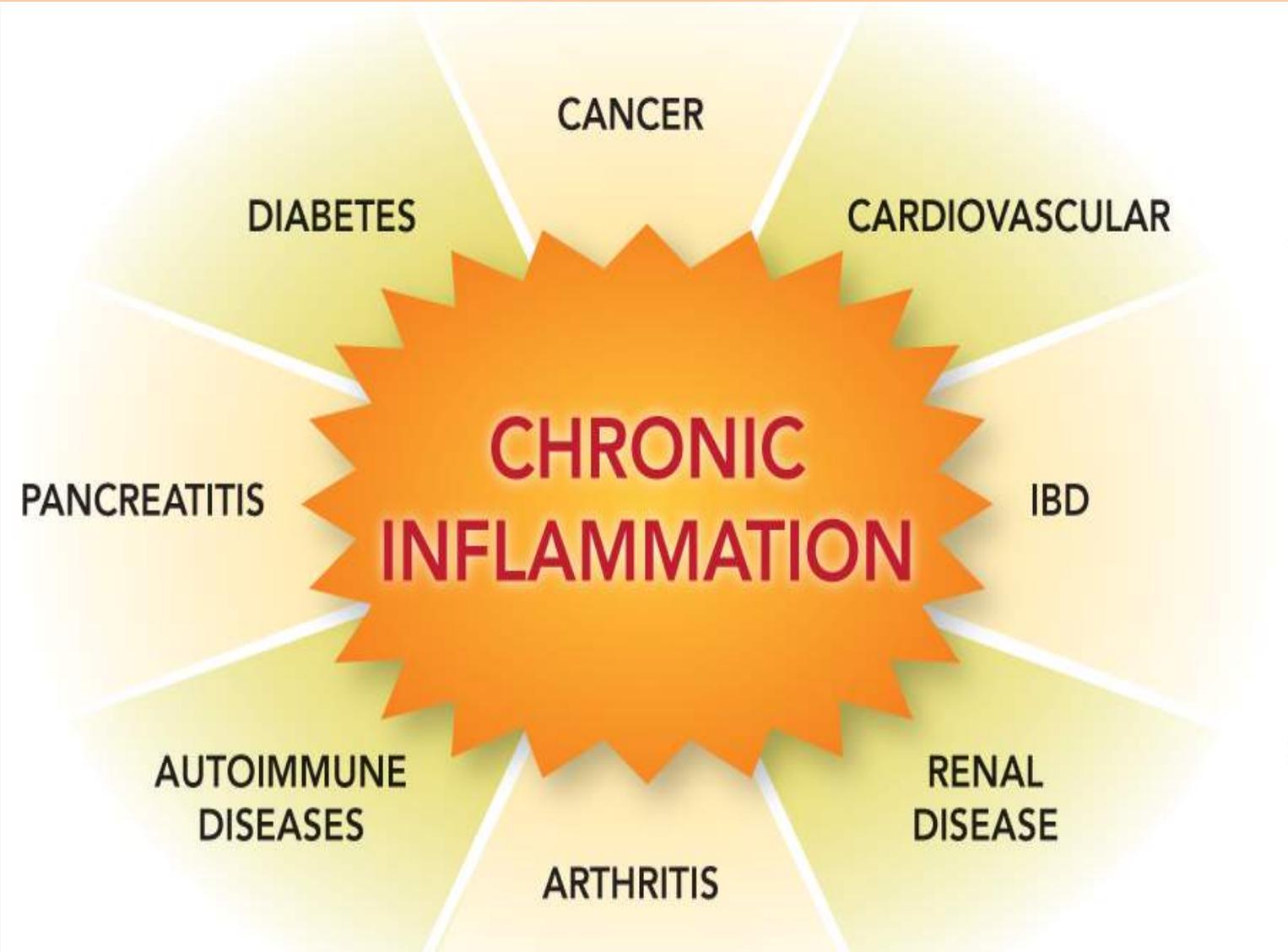


Metabolic syndrome defined

3 or more of the following signs:

- Central obesity – “apple” shape
- High triglycerides > 150 mg/dL
- Low HDL-C <40 mg/dL (men); <50 mg/dL (women)
- High blood pressure >135/85 mmHg or medicated
- High fasting glucose levels >100-110 mg/dL





What are markers of chronic inflammation in our body?

- High BMI; waist circum > 35 women, > 40 men
- Elevated h.s. C-RP in blood tests
- **Low adiponectin levels;** Vitamin D₃ level tests
- Salivary pH (< or = 5.6 high risk; 7.4 = good)
- **High blood pressure (> 130/85)**
- **Weight 10lb over ideal; waist hip ratio poor**
- Stress levels (indic. by sleep hrs per night <6)
- **Metabolic syndrome (> rest bld.gluc.; > t.glyc.; < hdl)**



Markers of aging

1. Loss of muscle mass
2. Strength
3. Basal metabolic rate
4. Body fat %
5. Aerobic capacity
6. Blood glucose tolerance
7. Cholesterol/HDL ratio
8. Blood pressure
9. Bone density
10. Temperature regulation



Epigenetics

Environment changes genetic activity

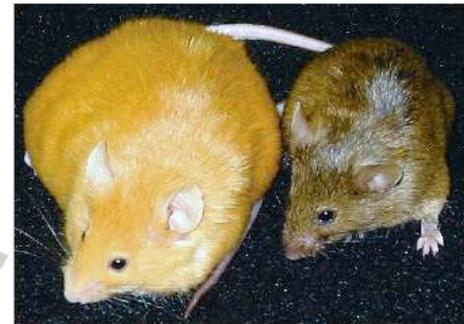


Two generations at once are exposed to the same environmental conditions (diet, toxins, hormones, etc.). An epigenetic changes has been documented in the mother and the progeny

Permanent Epigenetic Changes in the fetus

Epigenetics Research at Florida A&M University is supported by grants from the NIH, National Institute on Minority Health and Health Disparities, (8-12MD007582-28 and 1P20 MD006738-01)

These Two Mice are Genetically Identical and the Same Age



While pregnant, both of their mothers were fed Bisphenol A (BPA) but DIFFERENT DIETS:

The mother of this mouse received a **normal mouse diet**

The mother of this mouse received a diet **supplemented** with choline, folic acid, betaine and vitamin B12



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Epidemic of insulin insensitivity & the metabolic continuum

- Stage 1 = insulin sensitive
 - Able to use all of the extra glucose for energy
 - No weight gain
- Stage 2 = insulin sensitive
 - Loss of LBM
 - Elevated TG as storage of extra glucose and energy
 - Gradual weight gain
- Stage 3 = insulin resistance
 - Extra glucose spills into blood
 - Elevated insulin, elevated TG, elevated blood glucose?
 - Significant weight gain

Schwarzbein, D. and Deville, N. 1999. The Schwarzbein Principle. Deerfield Beach, FL: Health Communications, Inc.



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TOXIC EFFECTS OF SUGAR

Speeds aging process
Suppresses immunity
Disturbs mineral balance
Raises cholesterol & triglycerides
Increased risk of alzheimer's
Diabetes & hyperglycemia
Tooth decay/periodontal disease
Weight gain & obesity
Candidiasis - yeast infections
Kidney disease
Hyperactivity
Depression & anxiety
Several types of cancer
Weakened eyesight
Osteoporosis

Coronary heart disease
Crohn's disease and ulcerative colitis
Asthma
Arthritis
Gallstones and kidney stones
Hormonal imbalances
Appendicitis
Multiple sclerosis exacerbation
Decreased growth hormone
Emphysema
Atherosclerosis
Fatty liver
Constipation
Fluid retention
Headaches & Migraines



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Diabetes and cardiovascular disease

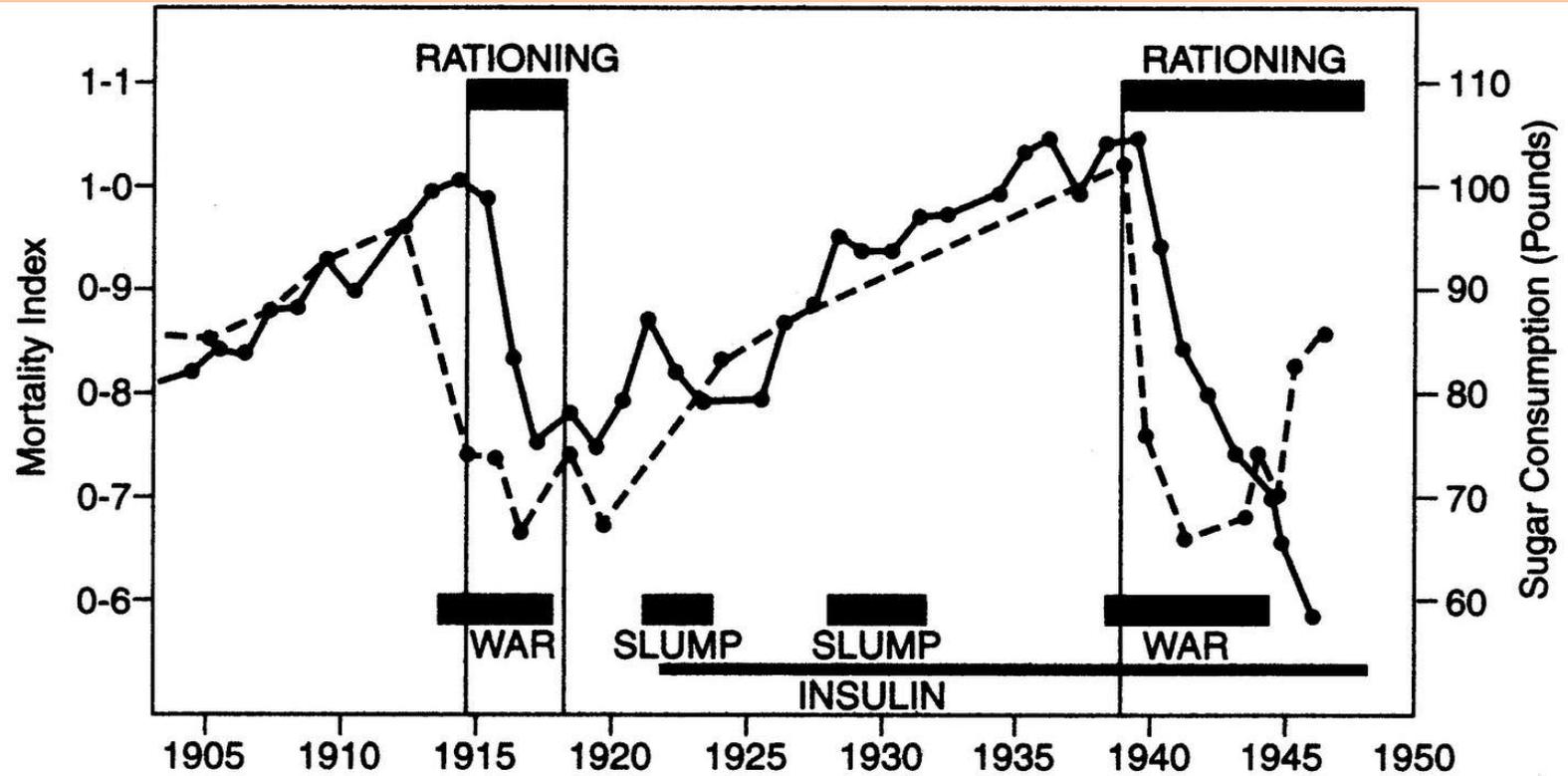
- Diabetics have a high incidence of heart disease
- Something about diabetic condition that causes heart disease?
 - Atherosclerosis process is accelerated
 - High insulin, insulin resistance, high blood glucose, high triglycerides, low HDL, and small dense LDL
 - Metabolic syndrome (Syndrome X)
- If any disease increases with metabolic syndrome, then insulin and/or blood glucose plays a role

Insulin and cancer

- Tumor cells survive without oxygen
 - Tumors burn 30X more glucose than normal cells
- Cancer-causing mutations are unavoidable side effect of aging
- Insulin and IGF accelerate the process by which a cell becomes cancerous



The refined carbohydrate connection to mortality



Peter Cleave's chart showing the relationship between diabetic mortality rate (with the 1938 rate equal to 1) and the amount of sugar consumed per capita in England and Wales. The dotted line is sugar consumption. The solid line is diabetes mortality.



Insulin and Insulin-like Growth Factor

- When food is plentiful insulin and IGF increase and pushes the organism to grow and reproduce
- When food is scarce insulin and IGF decrease and long-term survival is favored over reproduction

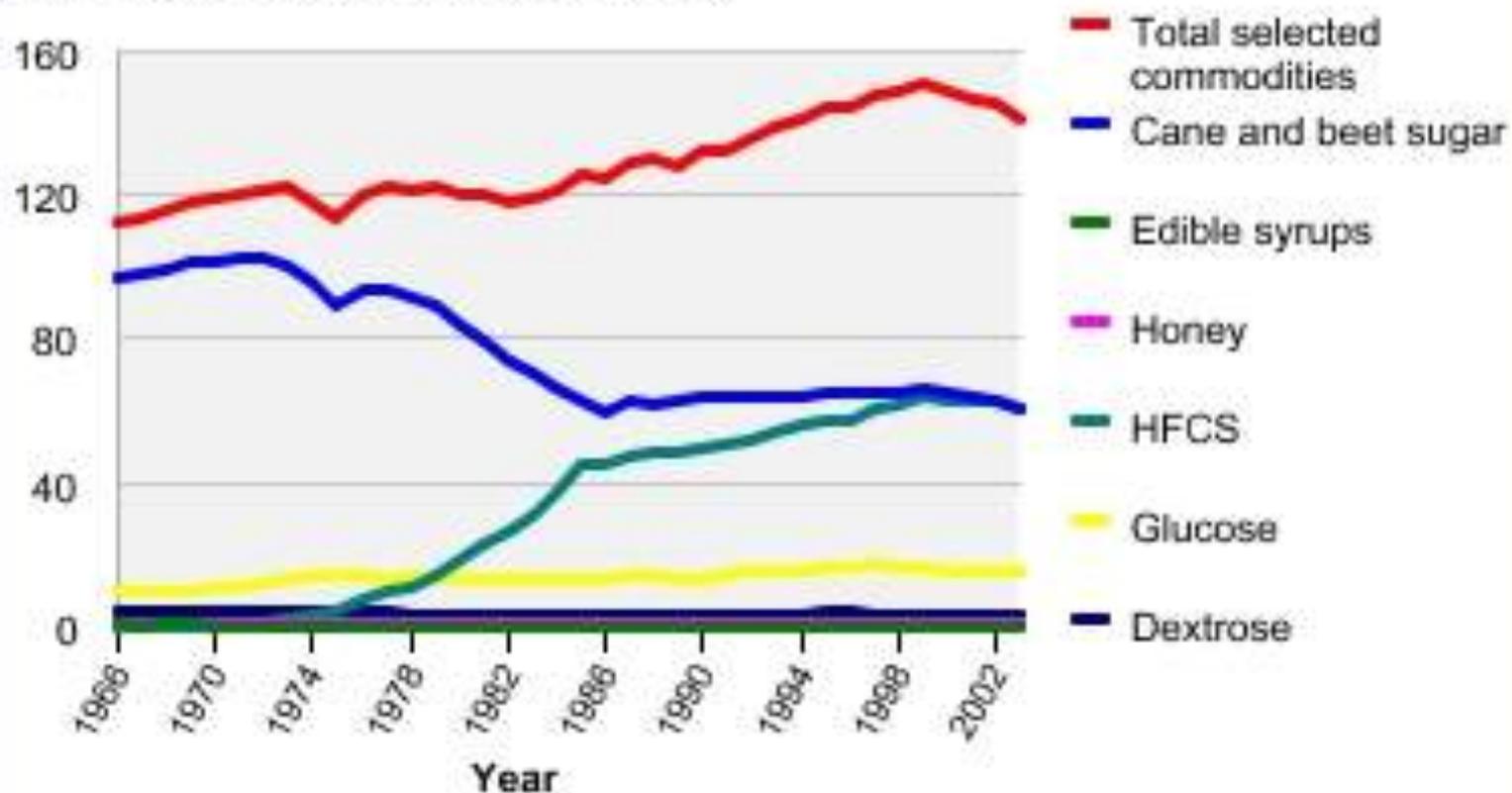


The rise of sugar consumption

- From 1960's onwards, consumption rose again & increased with **fructose-enhanced corn syrups**
- HFCS (aka Frankenstein sweetener)
 - Effectively identical to sucrose, marketed as better
 - Sucrose had the bad reputation and because fructose is predominant sugar in fruit, it appeared healthier by virtue of association

U.S. per capita food consumption Sugar and sweeteners (individual)

Dry weight, pounds per capita per year



HFCS stands for high fructose corn syrup. Calculated from unrounded data.

Source: USDA/Economic Research Service. Last updated Dec. 21, 2004.

Adverse effects of fructose sugar

- Fructose is a potent reducing sugar
 - *Aging, diabetes, renal, cardiovascular concerns*
- Non-alcoholic fatty liver disease
 - Fructose is difficult to metabolize
- Functional bowel disturbances
- Fructose-induced lipogenesis (fat building effect)
 - Increased triglycerides and subsequent LDL
- Fructose-induced insulin resistance
- Fructose-induced hypertension
- Increase triglyceride levels

Fructose-induced lipogenesis (fat building)

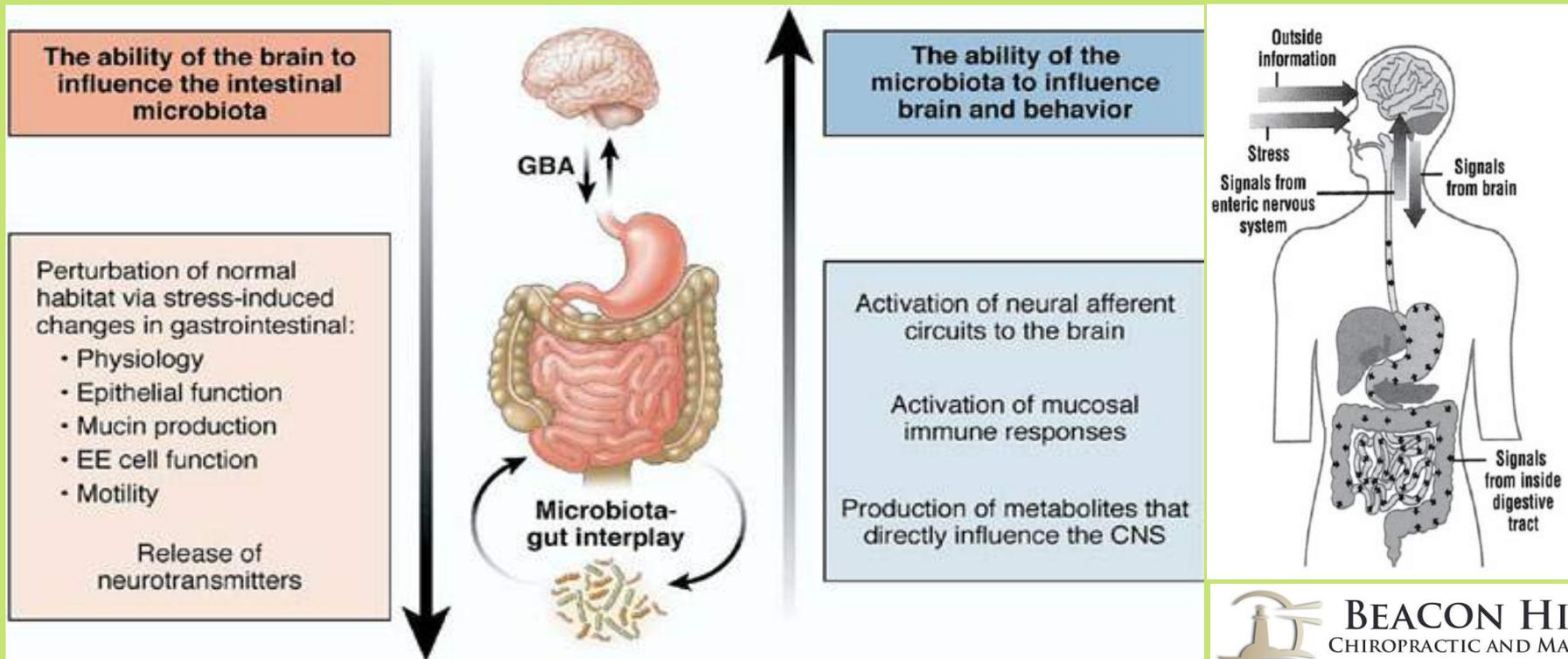
- Fructose is a metabolic load on the liver
- Fructose blocks glucose metabolism in liver and synthesis of glucose into glycogen
- High fructose diets in the long term can induce high insulin levels, high blood glucose, and insulin resistance
 - Even though short-term fructose has little effect on glucose or insulin



The “mind – gut” relationship

The gut is a “2nd Brain”

- Up to 95% of our Serotonin hormone is produced by the gut, in the gut itself!
- Gut bacteria influence brain chemistry & our behavior



Low Glycemic
(Sugar) Brain

Sugar
Junkie



“The regulation of glycaemia (Blood sugar levels) improves the quality and duration of intellectual performance”

J Nutr Health Aging. 2006 Sep-Oct;10(5):386-99. PMID: 17066210 below



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Formula for a bad gut



- **Poor diet habits**
 - **High sugar intake**
 - **Low fiber intake**
 - **Highly acidic foods and drinks**
 - **High intake processed foods**
- × Bad substance habits like alcohol & drugs
 - × Contact to smoke & toxic environments
 - × Vaccines
 - × High stress levels
- × Poor spinal health
 - × Spinal subluxations in digestive areas
 - × Lowered gut function
 - × Changes in acidity/regularity
 - × Lack physical activity

Traits of “inflammation” causing diets

- Commonly contain wheat, rye, or barley based grain carbohydrates rich in **phytic acid**, and proteins like toxic **GLUTEN**.
- High acidity in sweetened, preserved foods and beverages
- Low soluble and insoluble fresh fiber content
- Low water intake or low H2O content foods
- **Grain fed meats** like beef or pork and certain farmed fish



A.G.E. particles – NOT aging!

- A.G.E. (Advanced Glycation End-Product)
 - What are they?
 - They come from **SUGAR CONTAINING FOODS**, processed foods, and high heat cooked foods
 - <https://www.youtube.com/watch?v=oWRgEMDB45s>
 - <https://www.youtube.com/watch?v=apYimomvwik>





Grande Vanilla Soy Latte

Sugar Sleuth Math



16oz of Soy Milk = 26 Grams of Sugar



4 Pumps of Vanilla = 38 Grams of Sugar

64 Grams of Sugar!!

What's in your drink?

What's hidden inside a bottle of fruit juice

Acidity (pH level) Sugar (teaspoons per pint)



How they compare



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Would you believe it?

- **130 pounds of sugar equals about 1,767,900 Skittles.** The equivalent to filling an industrial dumpster with Skittles.
- A 15.2 oz. bottle of Minute Maid 100% Apple Juice contains 49 grams of sugar. This is about the same amount of sugar in 10 Oreos. While sugar occurs naturally in fruit, the body processes both types of sugar in the same way. One benefit of eating whole fruit is eating fiber, which is generally lost in the process of making juice.
- Artificial Sweeteners may actually cause weight gain. People drink diet sodas and sugar free drinks, but do they really help? They are found to be a major cause of weight gain because they cause increase in appetite and hence more munching.
- The scientists who discovered sucralose (Splenda) were trying to make an insecticide. An assistant thought he had been instructed to “taste” a sample he had been asked to “test”.





What's Safe and What's Not!!

SUGAR SUBSTITUTES



© 2005 Howstuffworks



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Sugar Substitutes

The truth about sugar substitutes

- Before you sprinkle that packet of artificial sweetener into your coffee, consider this: researchers have found that sugar substitutes may leave you craving *more* sugar, making it harder - not easier - for you to control your weight. Experts warn you never get out of the sense of needing something sweet, and eventually you'll reach out for the real stuff.



4 General Categories

- **Artificial sweeteners**-aspartame(diet sodas, Equal, Nutrasweet), sucralose (Splenda), Saccharin (Sweet'N Low) and acesulfame potassium
- **Natural Sweeteners**- Honey and Agave syrup, coconut sugar
- **Sugar Alcohols-xylitol**, sorbitol, mannitol etc.
- **Other**- Stevia, Lo Han



Concerns with popular artificial sweeteners

Aspartame

- Studies show changes in appetite and indicate greater weight gain than regular sugar consumption
- Biochemical breakdown in body converts to formaldehyde-influence on DNA and tissues in body
- Symptoms of intolerance vast and affect all systems

Sucralose

- Has been shown to destroy up to 50% of your gut microbiome esp. beneficial bacteria
- When heated releases chlorinated compounds into body known as DIOXINS
- Alters levels of glycemic response and insulin clearance
- Adverse responses many/ varied



What is best to use instead?

- **Natural Sweeteners?** Typically very high in fructose contributing to metabolic syndrome and NAFLD
- **Plant Alcohols?** Xylitol is better bet. Fewer calories but not calorie free. Not completely absorbed by body therefore GI upset. **POISON TO PETS!!**
- **PURE STEVIA** is the best choice!! Not the same as Truvia/BP influence?



Sugar: The Drug

SUGAR ADDICTION: THE PERPETUAL CYCLE

1. YOU EAT SUGAR

- YOU LIKE IT, YOU CRAVE IT
- IT HAS ADDICTIVE PROPERTIES

2. BLOOD SUGAR LEVELS SPIKE

- DOPAMINE IS RELEASED IN THE BRAIN = ADDICTION
- MASS INSULIN SECRETED TO DROP BLOOD SUGAR LEVELS

3. BLOOD SUGAR LEVELS FALL RAPIDLY

- HIGH INSULIN LEVELS CAUSE IMMEDIATE FAT STORAGE
- BODY CRAVES THE LOST SUGAR 'HIGH'

4. HUNGER & CRAVINGS

- LOW BLOOD SUGAR LEVELS CAUSE INCREASED APPETITE AND CRAVINGS
- THUS THE CYCLE IS REPEATED



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Sugar is 8 times as addictive as cocaine.

And what's interesting is while cocaine and heroine activate only one spot for pleasure in the brain, sugar lights up the brain like a pinball machine.

- Dr. Mark Hyman

thetruthaboutcancer.com



©NOTSALMON.COM

SUGAR IS THE NEW CIGARETTES!

SUGAR INCREASES INSULIN.

INSULIN INCREASES FAT STORAGE.

AND IT'S ADDICTIVE.

93% OF LAB RATS CHOSE SUGAR WATER OVER COCAINE.

- via the movie FED UP



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Cold Turkey or Slow and Steady?

Can you beat your sugar addiction by going cold turkey? Some sugar detox plans urge you to eliminate everything sweet - including fruit, dairy and all refined grains - to purge your system of sugar. Diet changes like this can be too drastic to be realistic. Experts warn if you attempt something that is not sustainable - that you can only do for the short-term - you risk ultimately going back to your old habits.

Retrain your taste buds

- You don't need sugar as much as you think you do. Experts say if we wean ourselves off sugar, we can train our taste buds to enjoy things that aren't as sweet. Try eliminating one sugary food from your diet each week. Pass on dessert after dinner. Slowly reduce the sugar in your coffee or cereal. Over time, you should lose your dependence on that sensation.



How to Avoid Sugar

- The best way to cut back on sugar is to simply **avoid processed foods** and satisfy your sweet tooth with fruits instead.
- This approach doesn't require math, calorie counting or obsessively reading food labels all the time.
- However, if you're simply unable to stick to unprocessed foods for financial reasons, then here are some tips on how to make the right choices:
 - If a packaged food contains sugar in the first 3 ingredients, avoid it.
 - If a packaged food contains more than one type of sugar, avoid it.
 - Be aware that other sugars often labelled healthy like agave, [honey](#), organic cane sugar and [coconut sugar](#) fall into the same category.
- **Warning:** You MUST read nutrition labels! Even foods disguised as "health foods" can be loaded with added sugars.



-Drink water instead of soda or juices and don't add sugar to your coffee or tea.

-Instead of sugar in recipes, you can try things like cinnamon, nutmeg, almond extract, vanilla, ginger or lemon.

-Eating protein and Fibre will help you feel satiated and help minimize cravings for sugar.

-Be creative and use google to find recipes. You can eat an endless variety of amazing foods even though you eliminate sugar from your diet.

-A natural, zero-calorie alternative to sugar is [Stevia](#).

Be your own food detective and read ingredient labels. Know exactly how many pumps of syrup are in your morning coffee drink? Does sugar loom in the salad dressing you are about to pour over that virtuous salad?

See the handout provided for the various names of sugar to watch for!

Final thoughts

