Effects of Sugar on Our Bodies: The Good, the Bad, and the Options

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Disclosures

* No financial interest in any food or medication companies
Objectives

- Identify the effects of sugar on metabolism, brain function and chronic disease development.
- Identify the connection between our diet and our well being, vitality, and energy level.
- List options for those of us that love to eat sugar.
What is Sugar?

* Sugars are carbohydrates – they break down into energy in the body
* Some carbohydrates cause blood glucose to spike, others more stable
Natural Sugars

- Fruit – fructose, glucose
- Vegetables – fructose, glucose
- Milk – lactose (galactose and glucose)
Glucose is obtained from three sources:

- Intestinal absorption of food
- Glycogenolysis
- Gluconeogenesis
Insulin has a number of effects on glucose metabolism, including:

- Inhibition of glycogenolysis and gluconeogenesis
- Increased glucose transport into fat and muscle
- Increased glycolysis in fat and muscle
- Stimulation of glycogen synthesis
Sugar (glucose) in the blood spikes or raises - the pancreas releases insulin

- Insulin puts glucose into cells
- Insulin causes fat storage
- Insulin inhibits fat burning
- Insulin spikes stimulate an increased food intake at the next meal
The > 50 names for Sugar

* Anything ending in “ose”; i.e. dextrose, lactose, etc.
* Syrup
* Fruit juice
* Cane sugar
* Beet sugar
* Brown rice sugar
* Malt
* Molasses

* Cane syrup
* Brown rice syrup
* Honey
* Agave nectar
* Barley malt
* Caramel
* Corn sweetener
* Corn syrup etc...
Glycemic Index

- Glycemic Index = Compares how much carbohydrates in different foods raise blood glucose.

- Glucose = 100
- Fruit roll-ups = 99/24
- White rice = 89/43
- White bread = 75/10
- Wheat tortilla = 30/8
Takes into consideration the amount and quality of the food.

- **GL High / Medium / Low Guidelines**
  - Low (good) = 10 and below
  - Medium (acceptable) = 11-19
  - High (avoid / limit) = 20+
GI and GL Chart

- High GI: 70 & Above
- High GL: 20 & Above
- Medium GI: 56 - 69
- Medium GL: 11 - 19
- Low GI: 55 & Below
- Low GL: 10 & Below
Consider sugar as a drug? – there is no RDA for sugar intake.

* The AHA recommendations focus on all added sugars, without singling out any particular types such as high-fructose corn syrup.

* AHA - no more than 100 calories per day, or about 6 teaspoons of sugar for women. For men, it’s 150 calories per day, or about 9 teaspoons
What About White Flour?

* White bread is 70 on the glycemic index
* Sugar is 58
* A good rule of thumb is to avoid white food: rice, bread, pasta, etc.
How Does Sugar Affect Our Body?

* Too much glucose $\rightarrow$ insulin $\rightarrow$ sugar is stored as fat $\rightarrow$ cells become resistant to insulin $\rightarrow$ diabetes/obesity

* Obesity leads to heart disease, joint problems, high blood pressure
Diabetes

* Blood glucose (sugar) becomes high from food intake
* Pancreas secretes insulin but not enough - or - Cells become resistant to insulin
* Need insulin from other sources (injections) or medications by mouth
* Too much glucose in the blood leads to coma and death
Many people report feeling better after decreasing or eliminating added sugar from their diet:
- More energy
- Exercise more
- Sleep better
- Lose weight
- Happier
How Does Sugar Affect Our Brain?

- Tongue – sweet receptors
- Brain stem
- Cerebral cortex – reward system is activated
- Gut – insulin response
- Dopamine release
- Increased tolerance to sugar, cravings, loss of control
- Similar to drug, socializing, and sexual responses in the brain
Sugar Vs. Cocaine - And the winner is...
What About Sweeteners?

- They help replace calories of sugar intake
- They can help people maintain healthy weight
- They may have the same addictive qualities as sugar
- Our brains get used to the intense sweetness so natural sugar taste may decline
- Truvia is not as intense – about 70% as sweet as sugar
- FDA: regarded as safe
Stevia and Truvia

* Stevia - from stevia plant
* No calories
* Have been used for 100’s of years
* Truvia – stevia extract plus a sugar alcohol
* Neither have effects on blood sugar or insulin
* FDA rates them safe
What is inulin? – Inulin is a type of fiber found in certain plants.

Your small intestine does not absorb inulin. When it reaches the colon, bacteria ferment it.

Helps with constipation, other GI issues

Promotes healthy gut bacteria growth
What About Alcohol?
Options
Tips on Cutting Back Sugar Consumption

* Toss the table sugar
* Swap out soda and juices for low calorie drinks and water
* Compare food labels and choose ones with lowest amount of added sugar
Tips on Cutting Back Sugar Consumption

- Add fruit instead of sugar to cereal or oatmeal
- Use extracts: vanilla, almond, orange, lemon
- Use spices: cinnamon, clove, ginger, nutmeg
- Use unsweetened applesauce in recipes instead of sugar
Snacks

* Berries and almond/soy milk (try vanilla)
* Bananas (not too ripe) and almond/soy milk
* Apples, almonds, cinnamon with soy milk or yogurt
* Yogurt and flaxseed, cinnamon, spoonful of granola
* Power snacks – Sprouts (cocoa and goji berry)
* Apple with cinnamon
Feel Better!

- It’s hard to give up added sugar
- Dedication
- Motivation
- Exercise
- Easier to sustain because you will feel better!