

# THE BITTERSWEET TRUTH<sup>©</sup>

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## Types of Artificial Sweeteners Approved by the FDA:

1. Saccharin- artificial sweetener
  - Discovered 1879
  - Not absorbed in the GI tract, probably safest common artificial sweetener
2. Aspartame (Equal) (NutraSweet)- composed of phenylalanine and aspartic acid. FDA refused allowance for 16 years. Donald Rumsfeld (ex GD Serle) appoints new FDA commissioner
  - Breaks down into Formic acid (fire ant venom), methanol (wood alcohol), and formaldehyde (embalming fluid). A cellular neurotoxin.
  - See 1,000-page book called *Aspartame Disease* by H.J. Roberts, M.D.,
3. Acesulfame (Sweet One)
  - Not metabolized
  - Does not break down with cooking
4. Sucralose- artificial sweetener
  - Sucrose molecule (glucose and fructose) with three chlorines replacing hydrogen
  - McNeil stated over 100 studies affirming safety
  - 6 trial on humans as of 2005 and 2 were completed
  - Largest trial had 36 humans and 23 actually got Sucralose. Trial lasted 4 days and did not cause tooth decay within the 4 day trial. FDA approval from these trials
6. Stevia - Chrysanthemum family used for over 100 years in Paraguay and Brazil
  - Mid 1980's declared dangerous food additive so cannot be sold as a sweetener
  - Does not raise blood glucose but 300 to 500 times sweeter than glucose
  - Some estrogenic effects
7. Xylitol (and also Erythritol, 60-70% as sweet as sugar)
  - 5 Carbon sugar alcohol, usually made from Birch trees
  - Slow absorption and metabolism (1/3 calories of other sweeteners)
  - Does not need insulin to get into cells
  - May cause osmotic diarrhea if used in large amounts (less so with erythritol)

## Intro to Sugar

Sugar History:

1700's: 4 lbs sugar per year

1800: 18 lbs per year

1900: 90 lbs per year

2009: eating ½ lb per day = 180 lbs a year

1893: 3/100,000 diabetic 2007: 23.6 million people (7.8 percent of the population) have diabetes.

1890: 3.4 % obesity rate and now it is 32% and an additional 1/3 overweight

Sugar is an anti-nutrient. Françoise Magendie, French physiologist proved eating sugar is worse than not eating anything at all with dog studies.

Sugar depletes nutrients such as B vitamins and calcium from the bones.

Generates AGE's (Advanced Glycation Endproducts) like the browning on a bun (Maillard reaction with proteins) but in the arteries. 7x the amount  
Dextrose, glucose and fructose are all monosaccharides  
Sucrose is a disaccharide made of glucose and fructose (table sugar)  
HFCS is either 55% fructose (and 20% sweeter than table sugar) or 42%, depending on how it is made. HFCS is 1/3 the cost of sucrose! (Also a HFCS 90)  
HFCS now the #1 source of calories in the USA  
Agave syrup is usually highly processed and nearly all fructose  
Honey is around 53% fructose but with health benefits, especially if raw  
Six mos old babies are now overweight so not diet and exercise (formula can be 43% corn solids and > 50% sugar)

## Two Types of LDL

LDL is not all the same: Pattern A LDL (from dietary fat) and Pattern B VLDL (sugars)  
Triglyceride to HDL best indicator for adverse heart problems. Should be below

**Fructose:** 173% sweeter, Glycemic Index 19, 6 C sugar in 5 C ring, stereoisomer of glucose  
100 years ago ate 15 gms/day. Today it is 73 gms/day  
10,673 % increase of HFCS between 1970 and 2005 according to USDA  
Potential unsafe mercury levels in HFCS from production  
Much HFCS is from GMO corn

## Dr. Robert Lustig: Pediatric Prof in Endocrinology Dept UCSF

100% of fructose broken down by liver and turned into VLDL, FFA and triglycerides  
Alcohol? 80% to liver (30 cal for VLDL), 10% to body and 10% to brain  
Glucose? 20% broken down by liver and rest immediately used by body  
Fructose is most lipophilic carb. Fructose > glycerol (g-3-p) > triglycerides (fat)  
120 calories of fructose? 40 calories stored as fat vs. 1 cal for glucose  
FFA stored as fat in liver and skeletal muscles causing insulin resistance  
Glucose suppresses ghrelin and increases leptin through insulin. Fructose does NOT do this as no insulin released = Gluttony  
Fructose metabolism makes waste products including uric acid > increased BP/gout

## *The Sugar Fix: The High-Fructose Fallout That Is Making You Sick* by Dr Robert Johnson

As cells process fructose it robs the phosphate from ATP > uric acid blocks endothelial nitric oxide synthase so no NO and thus HTN. Why allopurinol lowers HTN kids

## What To Do:

1. Use stevia or xylitol/erythritol
2. Succinate (organic dried cane juice)
3. Raw honey in moderation
4. Avoid ALL artificial sweeteners
5. Avoid agave syrup
6. Avoid sports drinks
7. Increase fiber intake
8. Exercise: It increases skeletal muscle insulin sensitivity, reduces stress and cortisol

## Justification For Low Fat Diet

Seven Counties study by Ancel Keys, a Minnesota epidemiologist. Time magazine cover 1980. Problem: saturated fat and sugar were comingled in this study. No differentiation in type of fats. Conclusion: Dietary fats dropped from 40 to 30% and carbs (sugar) went up from 40 to 55%