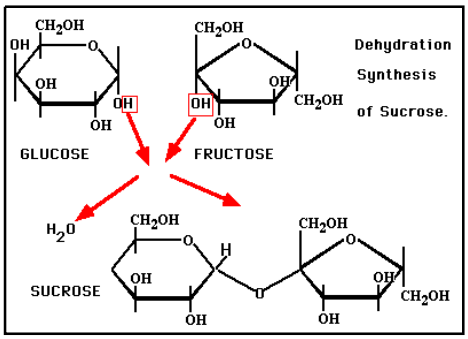
Sweet Poison 2008

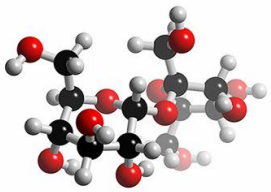
The Dangers of Artificial Sweeteners

Dr. R. Jay Shetlin; South Jordan, UT; May 2008 [draft 1.2]

What is the real difference between TRUE sweeteners and ARTIFICIAL sweeteners? To answer that we will have to take a look as molecular structure and will be talking about organic chemistry. Don't worry, it will be easier than you think.



Let's start from the beginning. Most people have a "sweet tooth" or at least appreciate the delicious and almost addictive nature of the palatable sweetness sugar delivers. Before chocolates and candies, the delightful and refreshing taste of fruit was used for desserts. FRUCTOSE or the simple sugar molecule found in most fruits is deliciously sweet and easy for the body to digest.



Sucrose (table Sugar)

Through the years, we, the human race, and especially Americans, have developed a growing 'casual addiction' to sweets. Molasses was used as a sweetener in early manufactured products. Through the years sugar cane and white processed sugar became less expensive to generate in large quantities and easier to use in countless products from cola beverages to canned goods. Today it is difficult to buy any processed, canned or bottled food or beverage without sugar additives. High Fructose Corn Syrup (HFCS) is an inexpensive and popular sweetener today. You even find it in canned vegetables.

100 year ago the average American ate less than 5 lbs of sugar per year…today over 158 lbs per year. That is a single person! Wow, what a big change!

With the increase of sugar intake in our society certain side-effects became noticeable in the general population... dental cavities, obesity (which of course leads to other health complications, hyperactivity and Type II diabetes were among those noticed.)

Since, "Necessity is the mother of invention." And it is just not human nature to 'devolve' to the habits of the past, something had to be done.

Artificial sweeteners are usually hundreds or thousands of times sweeter than natural sugars thus requiring less quantity and fewer calories per serving of sweet flavor. In the 70's, as people became more calorie conscious and with the rise of diabetes, artificial sweeteners or "sugar substitutes" had a marketing edge.

The food industry began using artificial sweeteners in more and more products, some from "natural sources" and others being man made. Some of the popular ones where discovered in laboratories strictly by accident.

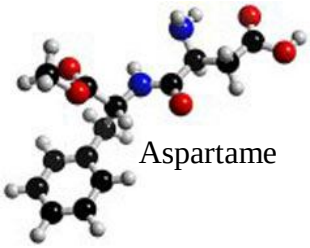
Sweet Poisons

In 1879 at John Hopkins University, two researchers were working with toluene derivatives and other toxic chemicals used in making gasoline, paint thinners, fingernail polish and the likes. One of the scientists spilled the toluene derivative onto his hand and later noticed his food at

Saccharin

dinner tasted oddly sweet. He traced the taste back to the chemicals and named the substance **saccharine** after the word saccharide, which means, complex sugar.[1] *[Surprisingly, saccharin may be the safest artificial sweetener on the market. However, there is correlation between saccharin and cancer, particularly bladder cancer. Hmm…what we don't know CAN hurt us.]*

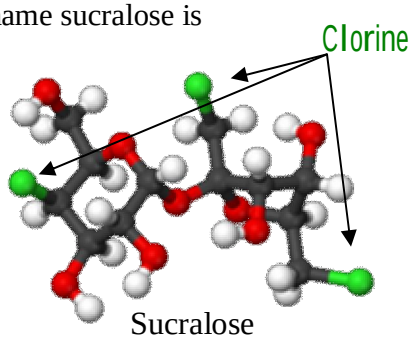
Aspartame was discovered in 1965. It dominated the artificial sweetener market until Splenda came along in the late nineties. Aspartame goes by several other names including NutraSweet® and Equal®. "Today it is sold in over one hundred countries, found in over six thousand products, and is consumed by over 250 million people. It's found in most diet sodas and a good portion of chewing gum."[2] It too was discovered by accident in a lab. A scientists working on a drug to treat peptic ulcer disease licked his finger to pick up a piece of paper and got the first taste of aspartame.


Aspartame

Interestingly, 10% of the molecule is methanol aka. "wood alcohol." The majority of the molecule is made up of two amino acids.

When these two amino acids are found in normal food with other amino acids there is no problem. When they are alone and in high concentration, they seep into the nervous system acting as nerve toxic agents. They create excessive firing of brain neurons. This is called *excitotoxicity* by Dr. Russell Blaylock. This can cause headaches, mental confusion, depression, balance problems and seizures.[3] It functions as one of the best ant poisons. How? It is a neurotoxin so it most likely kills the ants by interfering with their nervous system. *[Other research has shown links to brain tumors, lymphatic cancer,[4] irreversible genetic damage, fatigue, chest tightness, sleeping problems, burning skin, fertility problems, low birth weight and memory problems such as Alzheimer's symptoms.[5] Personally, I suspect it is a contributing factor to gulf-war syndrome from cans of diet drinks sitting in the sun prior to consumption by troops.]*

Splenda is one of the greatest public dupes in history. Marketing spins such as "made from real sugar," lead the public to believe it is safe and natural. Splenda is the brand name for **sucralose**. Even the name sucralose is misleading (on purpose) to look similar to sucrose which is table sugar. However, sucralose is a chlorinated artificial sugar. It's proper name is, "1/6-dichloro1,6dideoxy-beta-D-fructofuranosyl-4-chloro-4-deoxy-alpha-D-galactopyranoside."[6]

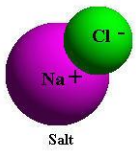


Sucralose

Cloride vs. Clorine

The fact that there are 'little green attachments' on the sucralose molecule image shown above should be troubling to any reader. These represent chlorine.

Clorine gas is one of the most toxic chemicals known to man and is not found in nature. It was used as a poisonous gas in WWI, killing almost 100,000 solders and hospitalizing over 1 million.[7]



Without getting overly scientific…to manufacture Splenda, hydrogen atoms are artificially replaced with chlorine. These bonds are unstable (unlike NaCl or table salt which is found in nature and is quite stable). The

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[1] *Sweet Deception*, Dr. Joseph Mercola; 2006 & W. Duke, "Saccharin: A Real Look at an Artificial Sweetener," web1.caryacademy.org

[2] *Sweet Deception*, Dr. Joseph Mercola; 2006

[3] Russel Blaylock, *Excitotoxins:The taste That Kills*. MD Health Press (NM) 1996

[4] Wikipedia- Sugar substitute, www.wikipedia.com

[5] *Sweet Deception*, Dr. Joseph Mercola; 2006, p. 62-63

[6] Mercola & H.C. Grice and L.A. Goldsmith, "Sucralose-An overview of the Toxicity Data," *Food and Chemical Toxicology* 38 (2000):S1-S6

[7] http://www.spartacus.schoolnet.co.uk/FWWgas.htm

unstable chlorine bonds of sucralose can deliver toxic clorine directly into our cells.[8] *[Some of the side-effects proven and still in question include: damaging cellular DNA, fertility issues, cancer, decreased urination, enlarged colon, enlarged liver and brain; shrunken ovaries, enlarged and calcified kidneys, increased adrenal cortical hemorrhaging, abnormal liver cells, growth retardation, and damage to the immune system.]*[9]

Why are people willing to subject their bodies to these chemicals? Two simple reasons:

1. Marketing has done such a good job leading the public to think that artificial sweeteners are "good for you." We as a public now think they are great for diabetics and the low calorie count will help everyone else lose weight.
2. Most often it is because the public does not understand the true risks behind the pseudo rewards.

It is important to note, however, that the potential side-effects far outweigh the risk of putting artificial sweeteners in your body.

Research by the University of Texas Health Science Center at San Antonio showed that, rather than promoting weight loss, the use of diet drinks was a marker for increasing weight gain and obesity. Those that consumed diet soda were more likely to gain weight than those that consumed naturally-sweetened soda.[10]

My thoughts on artificial sweeteners and weight gain have long been in agreement with UTHSCSA research findings. *I suspect that beverages with artificial sweeteners may have fewer calories in them but the artificial sweetener molecules still fool the body into thinking that blood sugar levels are elevated. For a* ***non****-diabetic the body will then release insulin. Since we rarely have a diet drink by itself, the next thing we eat goes straight to storage or fat. I don't know how many times I have seen an obese person with a diet drink and a snickers bar or a diet drink and a value meal. That snickers or that value meal gets processed straight to fat storage…the exact opposite of what the individual is trying to accomplish by 'reducing their calorie intake' with a diet beverage.*

What I have recently learned may surprise you… "Labeling laws allow putting, "sugar-free" on the label if the serving size is less than .5 grams of sugar and "calorie-free" if the serving size is less than 5 calories. Thus**, all artificial sweetener packets are at least 96 percent sugar!** Even worse, Splenda® No Calorie Sweetener is 99 percent sugar and only 1 percent sucralose."[11]

Diabetics beware! Artificial sweeteners are not all they are cracked up to be.

Stevia. "If you've ever tasted stevia, you know it's extremely sweet. In fact, this noncaloric herb, native to Paraguay, has been used as a sweetener and flavor enhancer for centuries. But this innocuous-looking plant has also been a focal point of intrigue in the United States in recent years because of actions by the U.S. Food and Drug Administration.

The subject of searches and seizures, trade complaints and embargoes on importation, stevia has been handled at times by the FDA as if it were an illegal drug.

Since the passage of the Dietary Supplement Health and Education Act (DSHEA), stevia can be sold legally in the United States, but only as a

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[8] Dr. James Bowen, "The Lethal Science of Splenda, A Poisonous Chlorocarbon," May 2005, www.wnho.net/splenda_chlorocarbon.htm

[9] *Sweet Deception*, Dr. Joseph Mercola; 2006

[10] *Drink More Diet Soda, Gain More Weight? Overweight Risk Soars 41% With Each Daily Can of Diet Soft Drink*, By Daniel J. DeNoon, Reviewed by Charlotte Grayson Mathis MD, WebMD medical News, accessed 2007-06-25

[11] *Sweet Deception*, Dr. Joseph Mercola; 2006

"dietary supplement." Even so, it can be found in many forms in most health-food stores, and is also incorporated into drinks, teas and other items (all labeled as "dietary supplements"). It cannot, however, be called a "sweetener" or even referred to as "sweet." To do so would render the product "adulterated," according to the FDA, and make it again subject to seizure."[12]

"According to Dr. Zoltan Rona, MD - a source who Martini quotes in her article - there has never been a reported case of any adverse reaction to stevia." [13] To date, this seems to be the safest alternative, especially for diabetics. Time will tell.

I ask you, Do you really believe your body, your 'organic temple' with it's innate wisdom for self healing and presentation was designed to eat *any* artificial sweetener hundreds to thousands of times sweeter than sugar without having health consequences? Dr. Mercola asks you…"to open your mind to the possibility that the manufacturers of these chemical compounds may NOT have your best health interests at the top of their priority list. Take all of this into account so you can make the best decision for your own health and the health of your family."[14]

The following table is copied directly from wikipedia:

"The three primary compounds used as sugar substitutes in the United States are saccharin (e.g., *Sweet'N Low*), aspartame (e.g., *Equal*, *NutraSweet*) and sucralose (e.g., *Splenda*). In many other countries cyclamate and the herbal sweetener stevia are used extensively.

Natural sugar substitutes

1. Brazzein — Protein, 800× sweetness of sucrose (by weight)
2. Curculin — Protein, 550× sweetness (by weight)
3. Erythritol — 0.7× sweetness (by weight), 14× sweetness of sucrose (by food energy), 0.05× energy density of sucrose
4. Fructose — 1.7× sweetness (by weight and food energy), 1.0× energy density of sucrose
5. Glycyrrhizin — 50× sweetness (by weight)
6. Glycerol — 0.6× sweetness (by weight), 0.55× sweetness (by food energy), 1.075× energy density, E422
7. Hydrogenated starch hydrolysates — 0.4×–0.9× sweetness (by weight), 0.5×–1.2× sweetness (by food energy), 0.75× energy density
8. Lactitol — 0.4× sweetness (by weight), 0.8× sweetness (by food energy), 0.5× energy density, E966
9. Lo Han Guo - 300× sweetness (by weight)
10. Mabinlin — Protein, 100× sweetness (by weight)
11. Maltitol — 0.9× sweetness (by weight), 1.7× sweetness (by food energy), 0.525× energy density, E965
12. Maltooligosaccharide
13. Mannitol — 0.5× sweetness (by weight), 1.2× sweetness (by food energy), 0.4× energy density, E421
14. Miraculin — Protein, does not taste sweet by itself, but modifies taste receptors to make sour things taste sweet temporarily
15. Monellin — Protein, 3,000× sweetness (by weight)
16. Pentadin — Protein, 500× sweetness (by weight)
17. Sorbitol — 0.6× sweetness (by weight), 0.9× sweetness (by food energy), 0.65× energy density, E420
18. Stevia — 250× sweetness (by weight)
19. Tagatose — 0.92× sweetness (by weight), 2.4× sweetness (by food energy), 0.38× energy density
20. Thaumatin — Protein, 2,000× sweetness (by weight), E957
21. Xylitol — 1.0× sweetness (by weight), 1.7× sweetness (by food energy), 0.6× energy density, E967

Artificial sugar substitutes

Note that because many of these have little or no food energy, comparison of sweetness based on energy content is not meaningful.

1. Acesulfame potassium — 200× sweetness (by weight), Nutrinova, E950, FDA Approved 1988
2. Alitame — 2,000× sweetness (by weight), Pfizer, Pending FDA Approval
3. Aspartame — 160–200× sweetness (by weight), NutraSweet, E951, FDA Approved 1981
4. Salt of aspartame-acesulfame — 350× sweetness (by weight), Twinsweet, E962
5. Cyclamate — 30× sweetness (by weight), Abbott, E952, FDA Banned 1969, pending re-approval
6. Dulcin — 250× sweetness (by weight), FDA Banned 1950
7. Glucin — 300× sweetness (by weight)
8. Neohesperidin dihydrochalcone — 1,500× sweetness (by weight), E959
9. Neotame — 8,000× sweetness (by weight), NutraSweet, FDA Approved 2002
10. P-4000 — 4,000× sweetness (by weight), FDA Banned 1950
11. Saccharin — 300× sweetness (by weight), E954, FDA Approved 1958
12. Sucralose — 600× sweetness (by weight), Splenda, Tate & Lyle, E955, FDA Approved 1998
13. Isomalt — 0.45×–0.65× sweetness (by weight), 0.9×–1.3× sweetness (by food energy), 0.5× energy density, E953"[15]

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[12] http://www.stevia.net/
[13] http://www.steviacafe.net/dangers-of-stevia
[14] *Sweet Deception*, Dr. Joseph Mercola; 2006

[15] http://en.wikipedia.org/wiki/Stevia