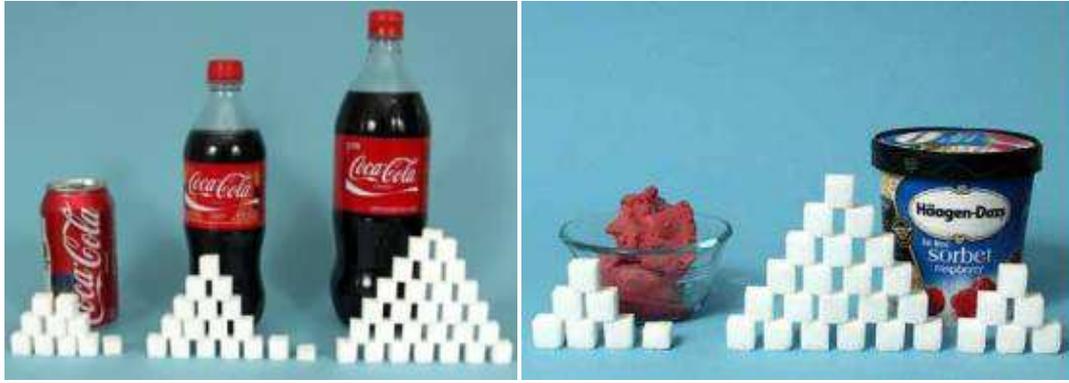


SUGAR - THE NEMESIS OF OPTIMAL HEALTH

By Alicia Melrose and Pip Martin for

A Vital Journey, an internet course on health and nutrition, run by Belmont Park Retreat.



You are about to understand why refined sugar, in all its guises, is definitely one of the worst foods you can give your body. William Dufty calls it "The Sweetest Poison of All" ¹

DEFINITION

Carbohydrates consist of simple sugars, and complex sugars (starches). Carbs are used for fuel (calories) by the body. (For weight loss purposes, fat is a better form of fuel). A carbohydrate is a substance of neutral compounds of carbon, hydrogen and oxygen. Carbohydrates are classified into mono-, di-, tri-, polysaccharides etc.

The smallest (simple) carbohydrates are monosaccharides. Examples of monosaccharides include glucose (also called dextrose or corn sugar), fructose (fruit sugar or levulose), and galactose. Monosaccharides are the building blocks of disaccharides, and polysaccharides (such as cellulose and starch). Glucose is a sugar usually found in combination with other sugars in fruits and vegetables. It is key in the metabolism of all plants and animals. The body breaks down most sugars and starches into glucose, which the body can then use to fuel its cells, especially the brain. Dextrose, also called "corn sugar", is derived synthetically from starch.

Disaccharides include sucrose, lactose and maltose (malt sugar). Sucrose, the refinery sugar from sugar cane and sugar beets, is made up of glucose and fructose. Lactose (milk sugar) is made up of glucose and galactose.

Starch, cellulose, chitin and glycogen (stored in the liver and muscles) are polysaccharides with long chains. They can be large and even indeterminate in length and do not dissolve in water. Starches occur in grains (eg rice, wheat, and maize) and potatoes, kumara etc. You can see the presence of starch by dropping iodine onto the food. Cellulose is found in plant walls and algae. It makes paper. Some animals, like cows (and termites), can digest cellulose with the help of micro-organisms that live in their guts. Humans can digest cellulose to



HISTORY OF SUGAR

Any discussion of carbohydrates needs to start with the history of sugar. Originally thought to come from New Guinea, sugar cane moved around the globe. In 500 BC we know that India had a way of extracting the sugar. By the Middle Ages sugar had become an available but expensive product in Europe.

With the advent of the Industrial Revolution and the exploitation of slaves, the sugar industry boomed. Much of the sugar was produced in the 'Deep South' of America.

Refining plants became more mechanized, endeavouring to get maximum return from the sugarcane or sugar beet production. However it was not until 1872 that the first factory in California found a profitable way of extracting and manufacturing sugar from sugar cane or beet. Sugar now became a very affordable product and the beginning of our downfall.

The fast growing food processing industry started to use sugar as a hidden ingredient in all its food products. The pleasing taste for the consumers guaranteed profitable sales. Processed foods, refined foods, fast-foods, convenience foods all became laden with sugar.

PRESENT DAY CONSUMPTION OF SUGAR

It has been estimated that in 1872 in the USA, 8 grams of sugar would have been consumed in a day as opposed to 150 grams per person today. That means we have an estimated intake of 70 kilos per person per year, or 22 teaspoons a day, with many children taking up to 32 teaspoons a day. (National Health and Nutrition Examination Survey, 2004). New Zealand figures are no doubt very similar.

Sucrose addiction is something new in the history of the human animal. We are hard-wired to like sugar so we can lay down fat in times of plenty. It is understandable that the over- consumption is so apparent. In just the last ten years, sugar consumption has gone up by over 23%.

We are programmed to think that if we have low blood sugar, we should snack on vending machine chocolate and sugared drinks in order to raise our blood sugar level. This is the worst thing to do. (The best thing to do is to eat some protein like a piece of cheese or meat, or your crispy nuts and seeds (see Recipe, Week 2.) Eating refined sugar causes violent swings in levels of blood sugar which shows up as mood swings/bad temper and erratic behaviour (hypoglycaemia) among other things. Do you see this in yourself, your children and other family members, and friends?

There is a fine way to deal with this: AVOID SUGAR.

People who kick sucrose addiction and stay off sucrose find that the glucose level of their blood returns to normal and stays there. Sugar craving disappears.

REFINED SUGARS IN OUR FOODS



The most obvious products containing sugars are soft drinks containing up to 13 teaspoons of sugar per can. This keri drink for kids has 22g sugar – more than 4 tsp. Alcohol can have a lot of sugar. But added sugar is also found in items not so obvious: tomato sauce, peanut butter, sausages, French fries, mustard, spaghetti sauce, salad dressings, bacon and luncheon meats, bouillon cubes, tinned food and many frozen microwaveable foods (which we don't want to eat anyway!). Sugar is also included in hamburger meat and poultry used in restaurants, added to canned salmon and added to animal feed prior to slaughter for flavour enhancement.

BEWARE LABELLING

Many labels that shout "FAT-FREE" in bold letters have had the nutritious fats replaced by sugar to make the food more palatable. It is not just the fast foods that are responsible for over consumption of sugar. Many foods marketed as "HEALTHY" such as fruit drinks, fruit leathers, fruit juices etc should also be avoided, including freshly squeezed juices, as each glass contains about 8 teaspoons of sugar (usually as fructose, unless the commercial brands have added high fructose corn syrup). The fibre in fruit which slows the absorption of the sugars is not there.



The Center for Science in the Public Interest (CSPI) has petitioned the FDA to require accurate sugar content of food to be declared on all labels and to set a maximum intake of 40 grams (10 teaspoons of sugar) per day. Each food item would then be required to state its percentage of the maximum.

"Made from natural ingredients" the television sugar-pushers tell us about product after product. Even refined sugar is made from natural ingredients. That four-letter word "from" hardly suggests that 90 per cent of the cane and beet has been removed. Heroin, too, could be advertised as being made from natural ingredients. The opium poppy is as natural as the sugar beet. It's what man does with it that tells the story.

SUGAR – THE NEMESIS OF OPTIMAL HEALTH

The white sugar refined from sugar cane or sugar beets is stripped of all of the vitamins, minerals, protein and fibre while retaining industrial contaminants from the chemical processes. It is the only food that we consume that has no nutritional value. The lack of nutrients causes the body to pull the missing nutrients from its own stores to enable the sugar to be metabolised. Alkalisating minerals like calcium and magnesium are used to maintain correct pH.) Note that a big consumption of any foods containing high levels of simple sugars can set up the body to develop deficiencies – sugars like high fructose corn syrup (HFCS), dextrose, high amounts of fructose in fruit, as well as sucrose can cause big problems.



MAGNESIUM AND SUGAR

A diet of processed, synthetic foods with high sugar content all "waste" magnesium, as a lot of it is required for the metabolism of these largely fake foods. The body requires at least 28 molecules of magnesium to metabolise a single molecule of glucose. A list of effects of magnesium deficiency looks like a more comprehensive version of the list below. When we are low in magnesium, the body may be forced to deposit calcium into soft tissues instead into our bones (including teeth!). 3 Minerals in our food have fallen dramatically. In the UK from 1940 to 2002, milk lost 21% of its magnesium resulting in 38% less magnesium in cheddar, and 70% less in parmesan.

MOST MAJOR MODERN DISEASES ARE ASSOCIATED WITH REFINED SUGAR CONSUMPTION AND A HIGH CARBOHYDRATE DIET

Effects of sugar:

- Fatigue and decreased energy
- Hypoglycaemia (sugar swings from low to high); Sugar blues!
- Diabetes and weight issues
- Premature aging
- Cancer
- Osteoporosis
- Aggravating arthritis and asthma

- Yeast infections and Candida overgrowth
- Inability to handle alcohol
- Immune system suppression
- Heart disease
- Increased triglyceride levels (and cholesterol to repair the damage)
- Promotes the growth of gall stones
- Allergies
- Insomnia
- Weakened endocrine system (all the glands)
- Behaviour issues
- ADD and ADHD
- Tooth decay and gum problems
- Digestive issues

According to the American Dietetic and Diabetic Associations and many researchers, the increased consumption of sugar is one of the top causes of degenerative disease.

In the 1940s, Dr John Tintera re-examined the vital importance of the endocrine system, especially the adrenal glands. In 200 cases under treatment for low adrenal/cortico hormone production, he discovered that the chief complaints of his patients were often similar to those found in persons whose systems were unable to handle sugar: fatigue, nervousness, depression, apprehension, craving for sweets, inability to handle alcohol, inability to concentrate, allergies, low blood pressure. Sugar blues! Dr Tintera insisted that all his patients submit to a four-hour glucose tolerance test (GTT) to find out whether or not they could handle sugar. The results were so startling that the laboratories double-checked their techniques. He laid out a sweeping permanent injunction against sugar in all forms and guises. When Tintera dared to suggest in a magazine of general circulation that "It is ridiculous to talk of kinds of allergies when there is only one kind, which is adrenal glands impaired... by sugar", he could no longer be ignored.

Tintera stated: "Nobody, but nobody, should ever be allowed to begin what is called "psychiatric treatment", anyplace, anywhere, unless and until they have had a glucose tolerance test to discover if they can handle sugar".

GAPS AND THE SPECIFIC CARBOHYDRATE DIET (SCD)

Dr Natasha Campbell McBride has had excellent results in helping many conditions including autism, ADD/ADHD, dyslexia, bi-polar disorder, schizophrenia, depression, allergies, heart disease etc. A critical part of her programme, *GAPS – Gut and Psychology Syndrome*, includes drastic changes to carbohydrate consumption with restoration of nutrient-dense food based on the work of Dr Weston A Price in the 1930s, www.westonaprice.org and that of Dr Sidney Haas and colleagues (1950s) who developed the Specific Carbohydrate Diet (SCD). These doctors had excellent success in helping all kinds of gut issues including Crohn's disease and ulcerative colitis. Their many years of research showed that patients with severe digestive disorders could tolerate fats and proteins quite well, but complex carbohydrates in grains and starchy

vegetables made the problem worse. Sucrose, lactose and other double sugars had to be completely excluded, however certain fruits and vegetables were well-tolerated and even improved it.

With the discovery of gluten and celiac disease, the SCD would have been forgotten but for the work of a parent of a small daughter with severe ulcerative colitis, Canadian Elaine Gottschall. Her book “Breaking the Vicious Cycle” details years of research and the help given as well to autism, hyperactivity, learning disorders etc. Work on similar lines is continued by Donna Gates www.bodyecology.com/

Dr Weston Price emphasized the importance of well-balanced gut flora which is important in breaking down (fermenting) carbohydrates. Also, we know now that antibiotics can knock out the gut flora which digests lactose, including physiological strains of the major lactose-digesting bacteria, E. coli. In one study, normal gut flora had still not returned after 8 months. In fermented milk products like kefir and clabbered milk (leben), much of the lactose is broken down – predigested, often making these foods acceptable for those who are lactose intolerant.

HOW INSULIN VS GLUCAGON WORK

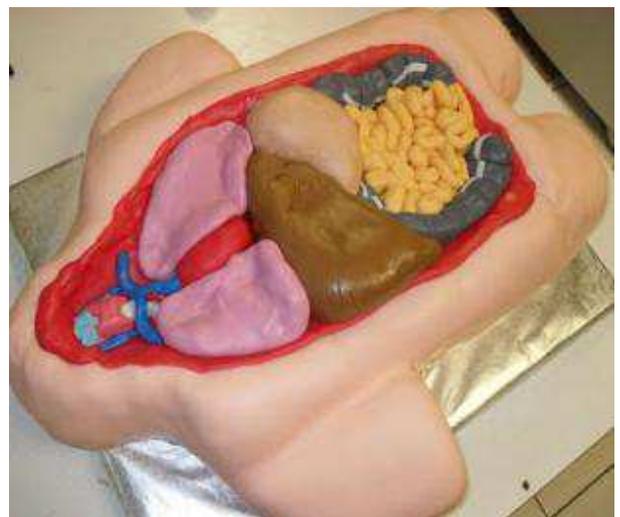
The liver stores about 1½ hours of glucose to supply the brain’s needs. The brain uses about 80% of the glucose stored in the liver.

The pancreas makes insulin in response to carbohydrates which are eaten and then converted to glucose. The liver uses the insulin to store glucose for the body’s requirements and the remainder of the glucose is stored in fat cells. When the reserves of glucose drop the brain stimulates you to eat more carbs that repeat the cycle of stimulating insulin and storing excess in the fat cells. Eating quickly absorbed ‘sugar’ leads to a vicious roller coaster of high and low blood sugars.

One of the problems is that when insulin is dominant, it locks glucose into the fat cells. As the brain demands glucose you think you want to consume more carbohydrates. And so you progressively convert to a sugar and grain addiction causing weight gain, fatigue, sickness and depression.

But when you eat proteins, the digestive process turns some of the proteins into glucose but the pancreas secretes glucagon [pronounced glu-co-gones] instead of insulin. Glucagon then fills the liver with glucose and stores the rest in the fat cells as with insulin. However when the brain requires more glucose it registers that the glucagon is available. Glucagon is able to unlock the glucose stored in the fat cells thus avoiding the demand for more carbohydrates to be eaten. And so the process goes on. The liver needs glucose; and the glucagon takes it out of the fat cells.

Remember your liver next time you eat some sugar!!!!!!



GLYCAEMIC INDEX (GI) / GLYCAEMIC LOAD

The GI is a ranking system for carbohydrates based on the immediate effect on blood glucose levels. In 1981 Dr David Jenkins and colleagues at University of Toronto developed a numerical index of post-meal glycaemia comparing gram-for-gram carbohydrates in individual foods.

Carbohydrates that break down rapidly during digestion have the highest glycaemic indices. This leads to a fast increase in blood glucose. Carbohydrates that break down slowly, releasing glucose gradually, have a low glycaemic index. These foods equate to a lower insulin demand, better long term glucose control and a reduction in blood lipids.

Carbohydrates with the highest glycaemic index are usually white in colour and should be avoided.

Originally man existed on a diet of wild animals and vegetation. This was a diet rich in complex carbohydrates, found mainly in high fibre vegetables that grow above ground, and animal fats and proteins, all low GI foods. Physiologically the body was well suited to this diet as seen in societies still following traditional principles. On **A Vital Journey** you will see that most of our recommendations follow low GI food.

The **glycemic load (GL)** is a ranking system for carbohydrate content in food portions based on their glycemic index (GI) and the portion size. Glycemic load or GL combines both the quality and quantity of carbohydrate in one 'number'. It's the best way to predict blood glucose values of different types and amounts of food. The formula is: $GL = (GI \times \text{the amount of available carbohydrate}) \div 100$. ^{[1] Wikipedia}

The usefulness of glycemic load is based on the idea that a high glycemic index food consumed in small quantities would give the same effect as larger quantities of a low glycemic index food.

List of foods and their approximate glycemic load, per 100g serving

Food	Glycemic index	Carbohydrate content (by weight)	Glycemic Load
Baguette, white, plain (France)	95	50%	48.0
Banana, Mean of 10 studies	52	20%	10.0
Carrots, Mean of 4 studies	47	7.5%	3.5
Potato, Mean of 5 studies	50	19%	9.3
Rice,boiled white, mean of 12 studies	64	24%	15.4
Watermelon	72	5%	3.6

FRUCTOSE

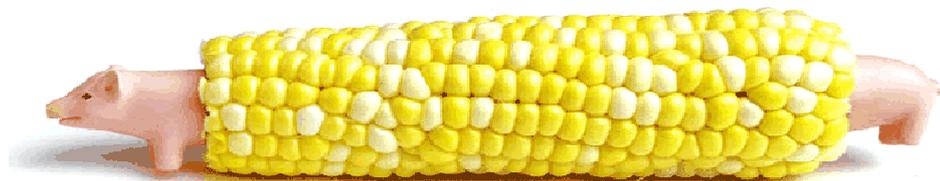
Fructose is monosaccharide (simple sugar), which the body can use for energy. It is the principal sugar found in fruits and vegetables and estimated to be the sweetest naturally-occurring sugar. The body is able to cope very efficiently with small amounts of fructose and fructose even helps to process glucose. We have discussed how glucose requires insulin from the pancreas. Fructose, on the other hand, is processed in the liver. So in very simple language: When too much fructose enters the liver, the liver can't process it all fast enough for the body to use as sugar. Instead, it starts making fats from the fructose and sends them off into the bloodstream as triglycerides. Now, have an 'Ah ha' moment – it is not the good fats that are causing excess triglycerides in the bloodstream; it is the fructose extensively used in the food industry.

David Heber's book '*Natural Remedies for a Healthy Heart*' says: "It has been estimated that 25 percent of the patients who take cholesterol-lowering prescription drugs and follow a low-fat, low-cholesterol diet do not achieve adequate reductions in their cholesterol levels. In many patients, this is due to the presence of elevated triglyceride levels, so physicians must add a second or third drug to lower triglycerides as well." (David Heber, M.D., Ph.D.) Excellent information on this whole subject is to be found in Dr Natasha Campbell-McBride's book "Put Your Heart in Your Mouth".

Use good nutrition including plenty of nutritious saturated and unsaturated fats instead of drugs! There is enough research to show that excess levels of fructose and sucrose are associated with obesity, increased heart disease, uric acid levels increasing, insulin resistance and Type 2 diabetes which is reversible.

HIGH FRUCTOSE CORN SYRUP (HFCS)

Corn – surely that's a healthy vegetable!

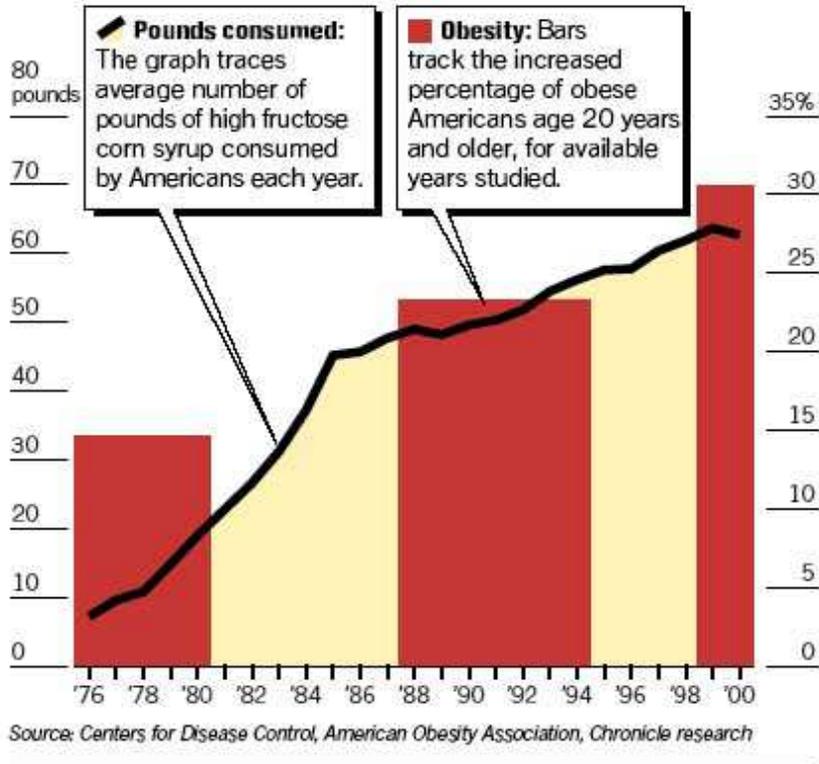


highfructosecornsyrup.org
Soon to be disguised on ingredient labels as "Corn Sugar"
(Hey, the name change worked for Blackwater....)

High Fructose Corn Syrup was discovered by scientists Marshall and Kooi in 1957, by adding an enzyme to the corn syrup glucose make up and transforming amounts of it to fructose. The more fructose that was made by converting glucose in the corn syrup, the sweeter it became. Corn refiners picked-up on the possibilities of HFCS becoming popular for its easier use in sweetening, and because corn refining is so abundant in the USA, HFCS became cheap to make and sell. First put into products in the 1970's, High Fructose Corn Syrup made up 56% of commercial sweeteners by 1997.

Obesity and high fructose corn syrup

The number of Americans who are obese has quadrupled in recent years, a study shows. At the same time, high fructose corn syrup consumption has risen at parallel rates.



In the USA corn is the number one crop, heavily subsidized and now often a genetically modified crop. (See the film 'Food Inc' for much more info).

We recommend that you avoid all foods with labels containing corn derivatives such as corn syrup, fructose, high fructose corn syrup, corn oil, cornmeal, cornstarch, glucose syrup, dextrose, MSG, xanthan gum and maltodextrin.

SWEET corn as a vegetable, in its whole traditional unhybridised form is fine to eat in moderation. (Note modern sweet corn hybrids have much higher levels of sugar – source heritage seeds if you want to grow corn.) As with fruits, the fibre will moderate the release of fructose and insulin into your bloodstream. In its refined, processed forms we recommend totally avoiding it.

SUGAR SUBSTITUTES

All sugar substitutes such as saccharin (Sweet-N-Low), sucralose (Splenda) and aspartame (Equal and Nutrasweet) should be avoided.

Health effect of aspartame:

Brain tumours	Migraine	Visual
impairment	Insomnia	Fatigue
Tremors		Joint Pain
Liver damage		Cancer
Seizures	and the list goes on	

What many people do not know is that aspartame metabolises to methanol (highly toxic wood alcohol) and then to formaldehyde which is neurotoxic and can cause cancer. See Dr Russell Blaylock's "Excitotoxins; the Taste that Kills".

Animal studies using Sucralose, have shown a decrease in the size of the thymus gland, enlargement of liver and kidney, decreased blood cell count and many other alarming connections.

Also avoid all alternative sugar that has been highly processed such as Xylitol.

The irony of it all is that there is no evidence to show that using sugar alternatives is even useful in weight reduction.

CONCLUSION: ALL SYNTHETIC SWEETENERS ARE TOXIC SO DO NOT USE.

GRAINS

Just 6,000-10,000 years ago man started to farm, to become agriculturists. Only then did humans start to ingest large amounts of grains and starch in their diet. There is good evidence to suggest overall health deteriorated with increase in such conditions as arthritis following the addition of these foods to the diet.

A few present day facts:

1. 95% of the grains consumed in the USA are processed to white flour thus stripping them of their precious minerals, oils and vitamins. What remains is, in essence, refined sugar. White flour was developed in WW2. It enabled shipping and storage of the grain without its oils to make it rancid.
2. Our food pyramid, until very recently, has taught that we need 6-11 carbohydrate servings a day in the form of pasta, rice, bread, cereals etc. This food company-driven advice has seen a huge contribution to the obesity, diabetes and heart disease epidemics.
3. Traditionally, grains, nuts and seeds were prepared slowly by soaking and fermentation. Apart from allowing foods to be stored, fermentation maximises the enzyme, vitamin and mineral content to create a much more nutritious and digestible food.
4. Reheated pasta and rice can become more of a starch and create more bloating and flatulence.

5. Grains are harder to grow compared with vegetables and meant to be valued /eaten in small quantities. Harvested in autumn, they should provide good winter fare – energy for colder temperatures.

We hope you are convinced about how lethal fast food is. **Eating modern grains and sugars, not fats, is the main reason for weight gain and obesity.**

For more information on proper preparation of grains etc, see books like “Change of Heart”, “Nourishing Traditions”.

WHAT SUGARS CAN I EAT?

In nature, things that are sweet and minerals exist together. Cane sugar is a great example. I remember travelling in Africa and many people would be chewing a stick of sugar cane. They had beautiful teeth and no obesity. So it is with the good sugars. Eat as near as possible to the original source and in limited quantities.

Molasses, barley malt, brown rice syrup, stevia, luo han (a fruit from China), rapadura (dehydrated cane sugar), muscovara and maple syrup are some of the sugars that may be eaten in moderation. Ensure that the maple syrup is genuine (Grade B or C is fine) and not an artificial version. Honey can be consumed, in small amounts, but be eat it unheated. Use dried fruits like apricots, dates, figs, raisins, sultanas etc to sweeten cakes and slices etc, to eat in very moderate amounts. (Figs and dates also have the bonus of high enzyme content.) Coconut or chestnut flour make an excellent substitute for wheat flour.

Brown and demerara sugar are sometimes suggested as natural alternatives to white sugar. However, demerara and brown sugar are almost the same as white sugar - the only difference is that some of the molasses has been added back to the refined sugar after processing. These sugars have a glycemic index almost as high as that of white table sugar.

If you want to lose weight, all carbohydrates need to be drastically reduced and you must eat plenty of good nutritious fats like butter, coconut oil, and traditional animal fats eg lard. These fats will slow sugar absorption as well as sending chemical messengers (leptins) to the brain to say you are full. (And they make food taste great). See the book “Eat Fat, Lose Fat” (Mary Enig PhD). If you want to maintain your weight, include some unrefined grains and legumes, and a little fruit. If you eat natural whole foods of good quality, quantity tends to take care of itself. Nobody is going to eat half-a-dozen sugar beets or a whole case of sugar cane.

We are programmed for the sugar-sweet taste to enable us to lay down fat to ensure our survival in time of shortage. For many, sugar is an addiction just like smoking or alcohol. This being the case, we don't need to justify alternatives so satisfy the craving. The real answer is to overcome the addiction. Fortunately you will find that by eating a more balanced diet, the craving for sugar will diminish and, without question, the more you avoid sugar, the easier it is to go without it.

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