

## ***Sugar, The Secret Scourge of the Holidays***

If one goes back in time more than 500 years or so, sugar was non-existent; honey and maple syrup were the only concentrated sweeteners around, and they were very rare. As little as 200 years ago, although we had discovered how to refine sugar, people still ate very little of it. It was hard to find, and a pound of refined sugar could easily cost the average person a full week's wages.

But sugar prices have dropped rapidly over the years. We now eat as much sugar in two weeks as people in George Washington's time ate in a whole year. At the turn of the 20<sup>th</sup> century, people in this country ate about half as much sugar as they did starches like potatoes or pasta. By 1960, Americans had increased the amount of sugar in their diets to the point that they ate just as much sugar as starches. The average person now consumes in excess of 120 pounds of sugar each year. That's almost 63 teaspoons each day! What exactly is this substance we're consuming in such quantities?

We're all familiar with the term "carbohydrate". Carbohydrates make up, along with fats and proteins, the three types of foods needed by human beings to survive. In fact recent medical research has found that people in America should eat more carbohydrates (and fewer fats and protein). Wait a minute? That's absurd. Haven't we been bombarded about the evils of carbs and how too many carbs turn us into obese diabetics? While this concern is well justified, it is based on a misconception. There are different types of carbohydrates. Some are good, some are bad and some are the worst.

Many of you might recall from high school chemistry the two basic types of carbohydrates: simple carbohydrates and complex carbohydrates. Simple carbs make up the various sugars (dextrose, maltose, glucose, etc.) and complex carbs are often referred to as starches and are found in whole grains and most vegetables.

In addition to simple and complex, there is another distinction that should be made between carbs: those that are refined or unrefined (or raw). "Refined" has a very nice sound to it. It sounds like "improved" or "purified", but unfortunately it is neither. Refining is a process that takes a whole, health-providing food and removes all the vitamins, all the minerals, in fact, everything except the pure, naked calories.

Sugar, as it occurs naturally in whole foods like sugar cane, sugar beets, or fruits, is found along with a number of vitamins, minerals, and other nutritional factors. Whole-wheat flour contains large amounts of B vitamins, as well as considerable fiber; refined flour has no fiber or vitamins or any kind left in it. Unless, that is, it has been "enriched", another misleading term, which means the flour has been processed and a small number of vitamins are added to replace the vitamins that were previously removed. Kind of silly isn't it?

Now, let's get back to sugar. Sugar occurs naturally in a number of similar forms: glucose, the sugar used by the body for energy; fructose, common in fruits; lactose, found in milk; maltose, formed by enzymes from starches; sucrose, or table sugar, which is actually a combination of glucose and fructose; and several others. This is one of the reasons sugar can sneak into our diets so easily; it can appear under a number of aliases, including the names above and such innocuous

sounding names as "high fructose corn syrup," "corn sweetener," and "rice syrup".

One of the forms sugar can take, glucose, doesn't even have to appear in the list of food ingredients required by law on all packaged foods; the government somehow decided that glucose, unlike virtually everything else, wasn't important enough to bother the consumer with! As a result, food manufacturers often use it as a filler, since it is very inexpensive, and it can "bulk up" a product and make it look like you're getting more food than you really are.

Sugar, however, provides more than filler. Our appetites seem to be built to crave sweet things. And it's not just people who love sugar: many animals also seem to be drawn, almost irresistibly, to anything sweet. Studies done with rats have shown how powerful this attraction is. Scientists put rats in cages where there were two types of food: rat chow, a scientifically balanced product designed to meet all of the rat's nutritional needs, and sugar water. The rats all chose the sugar water, ignoring the rat chow, until they had all become sick from malnourishment! I think we have all seen children who eat too much candy on Halloween and relatives who eat too much chocolate on Christmas have similar experiences.

Whatever name it uses, sugar is both a simple and refined carbohydrate. This is a deadly combination. While normally carbs are a very healthy food, and should actually make up the majority of our diet, simple refined carbs are poison. Sugar has a very long list of negative effects on the body, but no matter how much I'd like to get into every single one of those, I will narrow the focus of this article to the effects of sugar on the immune system, which is very important

knowledge to have, especially during the holidays and "flu season".

Several studies have shown how sugar weakens the immune system response. Typically these studies have examined a particularly important type of white blood cell. This white blood cell is a predatory cell, meaning that it actively hunts invaders in the blood stream, whether they be viruses, bacteria or foreign protein. Once they discover such an invader, these cells will surround the invading substance, engulf it and destroy it. These white blood cells are called "phagocytes" and the level of phagocytic activity in the body is called the "phagocytic index". A low index means there are only a few phagocytes active and detectable in the blood, so obviously, the higher the better.

Sugar has an inhibitory effect on the phagocytic index, that is, the more sugar in the blood, the less number of bacteria and harmful invaders the phagocytes can consume. This means that the regular consumption of sugar products leaves us with an immune system that is in a chronically low level of efficiency, leaving us more vulnerable to disease and illness... like the flu. Is it any wonder that "flu season" happens to coincide with Halloween, Thanksgiving and Christmas? November also happens to be a very common birthday month due to Valentine's Day being just nine months prior. This time of year many of us feel like we have been good all year and now it is time to splurge and enjoy ourselves with a little cake, candy, chocolate, eggnog, sugar filled cranberry sauce, etc., I'm sure you understand where I'm going with this. There is, however, another aspect of the immune system that is very important to understand regarding its relationship with sugar, and that is food allergies.

Is it just coincidence that the foods that most commonly cause allergic reactions; chocolate, peanuts, milk, wheat, and corn, are often found mixed with sugar in the modern American diet? I don't think so.

It's no wonder we find sugar in virtually all of our chocolate; raw cocoa is pretty nasty tasting stuff. Ice cream, yogurt, whether frozen or not, chocolate milk and milk chocolate, all find sugar mixed with milk. So does the typical American breakfast, which includes cereal, almost always sweetened with sugar, and milk. All pastries, donuts, cakes, and pies contain wheat and sugar. And corn sweetener, or corn syrup, is found in the majority of processed foods mainly because it is an inexpensive alternative to many other sweeteners and there is increasing evidence of an addictive effect, but what is the connection between sugar and allergies?

The first sign of this connection was in the work of Dr. Theron Randolph, an allergy researcher, working in the 1950s. He found that people who were allergic to corn reacted more strongly to cornmeal with sugar than they did to pure cornmeal. The reason behind this wasn't clear for many years, but we now understand what is going on.

First, let's consider what exactly a food allergy is. An allergic reaction is when the immune system responds inappropriately. In the case of food, it is when a food has not been sufficiently broken down and it still contains markers of where it originally came from. More simply, one carbon dioxide molecule looks much the same as another, but if that molecule still had a little bit "peanut" with it, the phagocytes would think, "Alright troops, we're being invaded by peanuts. Attack!" As silly as that sounds, that is essentially what is occurring. In order to understand

sugar's role in aggravating this condition, we must go a little earlier in the train.

It is common knowledge that sugar causes large, rapid changes in the body's mineral balances, the exact details of which are beyond the scope of this article, but please bear with. These minerals are essential in the production of enzymes. Enzymes are necessary proteins that enable the body to do a large number of things, including but not limited to, digesting food. Sugar, through creating mineral imbalances, disrupts the body's production of enzymes that are necessary to properly digest food. This leads to undigested food, which the body can have an immune response to.

Let's take a step back for a moment. Is this really as scary as I am making it out to be? I mean, how often do food allergies kill people? Bee stings, sure, but food allergies? While it may be true that if you consume a food you are mildly allergic to once a year your immune system is, quite likely, able to cope with it. The real danger, however, comes when these substances are consumed in conjunction with sugar on a regular basis, such as during the holidays. This constant bombardment stresses the immune system to the point that it leaves the body vulnerable to attack from real invaders, such as cold or flu.

My sons both went to boarding school, and I recall a story they told me about one of their 5<sup>th</sup> grade classrooms. In the beginning of the week, one of the kids had a birthday party and the whole class had cake and ice cream. Two days later was Valentine's Day and they ate lots of candy and sweets. Then the next day they had a school trip to the movies where the kids all had chocolate bon-bons and popcorn with butter. Two days later one kid got a cold of some kind. Over the next two

days, the rest of the class, which was about 70-80 kids all fell sick with the same cold. Their immune systems had been so strongly bombarded with sugar that they were unable to cope with a legitimate invader.

Hopefully, you understand now the importance of eliminating sugar from your diet and taking precautions during the holidays when it seems nearly everything you eat is sugared. I know how hard it is, that is why I am going to provide you with a list of "safe sugars" i.e. ones that are not as strenuous on the immune system and won't aggravate food allergies.

#### SAFE SUGARS/ SWEETENERS

**FRUCTOSE** – This is a simple sugar found in the fruit of plants and honey. It is much sweeter than table sugar and it actually has the same chemical formula as glucose, the sugar the body produces for energy, but the molecule is a different shape. The safest form of this sugar is in its naturally occurring state in fruits and vegetables.

**AGAVE NECTAR** – Agave is a succulent plant found in Mexico, the sap of which is very similar in both taste and appearance to honey. Tequila is made from a plant in the agave family. Agave nectar is 90% naturally occurring fructose and has a low glycemic value. However, agave nectar is made by taking the starchy root of the agave plant and processing it into a high fructose concentrate much like high fructose corn syrup, except with a higher fructose ratio. This is bad. Before buying agave nectar, confirm that it is actually boiled agave sap and not processed agave root.

**STEVIA** – A plant derived sweetener used all over the world, the extract of which are up to 300 times sweeter than table sugar. It is an excellent substitute for sugar in cooking and baking due to its stability at high

temperatures. It also has a low glycemic value.

**UNSULFURED BLACK STRAP MOLASSES** – This is a thick dark syrup made from boiling sugar cane juice. Common table sugar is made from boiling cane juice once to crystallize the sugar. The remaining juice, if boiled again removes more crystallized sugar and creates dark molasses. If this substance is boiled yet a third time, blackstrap is the result. This is considered by some to be the most nutritious sweetener since it has high amounts of manganese, copper, iron, potassium, selenium, vitamin B6 and magnesium.

**LUO HAN GUO** – A fruit derived sweetener made from the fruit of a plant with the same name. Predominantly grown and processed in China, it has been used there for many generations as both a sweetener and an herbal remedy. The extracted sweetener is anywhere from 250 to 400 times sweeter than sugar, but has a very low glycemic value.

**SUGAR ALCOHOLS** – Also safe to use, in moderation, are the sugar alcohols like mannitol and sorbitol. Most sweeteners that end in -ol are sugar alcohols and typically safe to consume, though large amounts have been known to cause discomfort in the intestines.

So smart and be safe, use sugar alternatives and discover new ways to get your sweet tooth satisfaction without the misery that is sure to follow from using sugar.

