Although the purpose of this chapter is to provide the background information you will need to understand how you can eliminate carbohydrates in your diet to fight cancer, there are three very large landmines that must be addressed first:

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The average American consumes about 22 teaspoons of sugar a day (Forbes, 8/12).

A neuroscientist at the Oregon Research Institute has used fMRI scans to conclude that sugar activates the same brain regions that are activated when a person consumes drugs like cocaine (Psychology Today, 4/12)

Researchers at the Cancer Research Center of Hawaii, University of Hawai'i, Honolulu, found that in a national sample of 2,967 adults, taste is the most important factor in food choices, followed by cost (Journal of the American Academy of Nutrition and Diatetics, 10/98)

☼☼☼

Steps to eliminate carbohydrates to fight cancer will never be effective unless we first understand and overcome food cravings. We need to begin this chapter by examining sugar addiction.

**Cravings are Different than Hunger**

Science has only recently started to unravel the origins of food cravings. Most cravings involve refined sugar and wheat such as bread, cookies, cake, pastry, doughnuts, cereal, bagels and ice cream. Unless you examine what may be controlling cravings, you may not be able to eliminate them. If you know you have sugar cravings, this chapter's first section covers several factors to consider.
Cravings may involve factors such as brain chemistry, protein deficiency, low-blood sugar, gluten, growth of bacteria, fungus or parasites, heavy metals or a low-fat diet. To conquer cravings, you will need to investigate the cause. Here is information that can help:

**Brain Chemistry**

James Braly, MD, medical director of York Nutritional Laboratories and author of *Food Allergy Relief*, says processed carbohydrates change the brain's chemistry, increasing the level of serotonin, our feel-good neurochemical. An underlying serotonin deficiency may actually be the cause of sugar cravings. As Braly explains, “People with food cravings may actually have neurochemical and hormonal imbalances that trigger these cravings.”

Serotonin is the molecule of will power, or delayed gratification. Decreased serotonin activity can make you feel a little down, or easily annoyed, or unable to control your impulses.
Braly offers the following suggestions to increase serotonin without a sugary food:

**Avoid Alcohol**
Research has shown that alcoholics appear to have an altered and/or injured serotonin system that recovers when they stop drinking.

**Increase Sunlight Exposure**
The ultraviolet (UV) light in sunlight is absorbed through your skin to produce Vitamin D. In turn, Vitamin D promotes serotonin production. (See: “Vitamin D: Power of Darkness, Ray of Hope” in my first book).

**(Option) Increase Vitamin D**
If you live in the mid-to-high latitudes, it may be impossible to make Vitamin D in winter months. If you take a Vitamin D supplement, be sure to take Vitamin D3, or cholecalciferol. Vitamin D2, also known as ergocalciferol, is synthetic.

**Exercise**
In numerous studies, exercise has been shown to increase serotonin production. Aerobic exercises (e.g. running and biking) are the most likely to boost serotonin.

**Supplements Thought To Increase Serotonin**
Braly suggest trying the following supplements even though they have been not all been proven to work:

- **5-hydroxytryptophan (5-HTP)**

- **Ginkgo biloba**
  Ginkgo biloba is considered to be a phytomedicine compound that is thought to improve blood flow to the brain and improve mood.

In October 2005, the *American Journal of Clinical Nutrition* published an article titled, "The case against ergocalciferol (vitamin D2) as a vitamin supplement" (Houghton LA, Vieth R., Am J Clin Nutr. 2006 Oct;84(4):694-7). Researchers found that vitamin D2 should no longer be considered equivalent to vitamin D3.
• **Acetyl-L Carnitine (ALC)**
  Research shows that ALC increases the natural production of both serotonin and dopamine (Smeland OB, et al. Neurochem Int. 2012;1:100-7).

• **St. John's Wort**
  Preliminary studies suggest that St. John’s wort may prevent nerve cells in the brain from reabsorbing certain chemical messengers, including dopamine and serotonin, National Center for Complementary Alternative Medicine (NCCAM Pub No.: D005, September 2012).

• **Vitamin B-6**
  Pyridoxal phosphate (PLP) is an active form of Vitamin B6 that acts as a cofactor in converting tryptophan to serotonin.

• **NADH (Vitamin B-3 derivative)**
  NADH is an abbreviation for nicotinamide adenine dinucleotide plus hydrogen. The letter H indicates a reduced form (NAD+ is an abbreviation for the oxidizing agent form). NADH plays a key role in the production of energy through redox reactions (redox is an abbreviation for oxidation reduction). NADH also plays a vital role in creation of the neurotransmitters (brain chemicals) serotonin, dopamine, and norepinephrine.

• **SAMe (S-adenosyl-L-methionine)**
  SAMe is synthesized as part of a multistep pathway involving the vitamins folic acid and B-12. The end product donates methyl groups in the reactions involved in the synthesis of the key neurotransmitters serotonin, norepinephrine, and dopamine.
  
  In the body, SAMe may be in short supply due to protein deficiency of the essential amino acid methionine as well as vulnerability to mercury making it inaccessible to methylation reactions. Methylation, or the addition of a methyl group is fundamental to DNA repair, liver detoxification and new cell growth. The March 1999 issue of *Life Extension Magazine* reported that deficient methylation is the major cause of aging.

**Protein Deficiency**

As we'll see in the chapter about protein, proteins are made of amino acids that may not be able to be synthesized by the body. The group of amino acids contained in the body is limited to the availability of essential amino acids that are required for the production of proteins.
Acids that cannot be synthesized by the body are called essential because they need to be consumed in food. Tryptophan and methionine are examples of essential amino acids that must be consumed. Our bodies use tryptophan and methionine to make serotonin.

**Sugary Foods, Low Blood Sugar**
Carbohydrate foods are metabolized quickly making you crave more food about an hour after a meal. Each time you eat a starchy food, the pancreas secretes insulin to metabolize sugar. Blood sugar rises, but then can fall drastically if the pancreas continues to secrete insulin. Fluctuating blood sugar levels can trigger food cravings, migraines, mood swings, weak spells, and drowsiness. Eventually, chronically high blood sugar and insulin can lead to insulin resistance and diabetes.

**Gluten and the Gut-Brain Connection**
Wheat, rye, barley and spelt contain a protein called gluten, which is very difficult to digest. In his book, *Dangerous Grains*, James Braly, M.D., says that undigested partial proteins, or peptides, found in gluten cereals have morphine-like properties, becoming potent drugs once they enter the blood stream. Braly explains that food cravings for gluten grains may develop due to the pleasant feelings they cause. Other authors who have explored addiction associated with gluten include Dr. William Davis’ *New York Times* best-selling *Wheat Belly* and Dr. David Perlmutter’s new book *Grain Brain*.

**Bacteria, Fungus and Parasites**
Foods that are difficult to digest cause an overgrowth of bad bacteria, and fungi in the intestinal tract. People who take antibiotics will be missing good bacteria that keep these microorganisms in balance. As the unwanted microbes become established, they will want to be supplied with sugar that they use for fuel. Parasites can grow anywhere in your body and they usually develop from tiny eggs hidden in food. Unless you're eating a diet containing foods that leave behind chloride, phosphorus and sulfur (from meat, eggs, milk and cheese), you may have low stomach acid (hydroychloric acid) that kills bad bacteria and parasite eggs. Several researchers speculate that food cravings may be influenced by bad bacteria, fungi and parasites.
The average American consumes three pounds of sugar each week totaling 3,550 pounds in a lifetime. This much sugar can fill an industrial dumpster (Alice G. Walton, Forbes Magazine, August 30, 2012)

**Heavy Metals**
Serotonin is a monoamine neurotransmitter derived from tryptophan, an essential amino acid that must be consumed in the diet. A monoamine is an amine that contains one amino group (a nitrogen atom connected to an aromatic ring). Mercury is a particularly destructive heavy metal when it accumulates in the body because it can bind with amines decreasing the availability of neurotransmitters.

**Low-Fat Diet**
Low-fat diets are usually high in carbohydrates. As I mentioned in the Sugary Foods, Low Blood Sugar section in this chapter, starchy foods metabolize quickly making you feel hungry about an hour after a meal. In contrast, the fats found in butter, cream, nuts, meats and eggs stimulate the production of a hormone in the stomach that signals you have eaten enough. Food cravings are unlikely to occur if there is enough fat in the diet.
In the last chapter, we learned that a human who wants to eliminate cancer cells can eliminate carbohydrates that metabolize into glucose, take a glutamine-antagonist drug and survive on a high protein and high fat diet using fat and derivative ketones for fuel. Day-to-day tactics that align with this strategy will involve:

- Identifying carbohydrates and eliminating them from your diet
- Identifying protein foods that you like and adding daily quantities you need for your age, gender and level of activity
- Identifying high-quality fats that your body can use for energy or metabolize as ketones

**Study Aid: Illustration of Normal Cells and Tumor Cells**

The following illustration is designed to help you remember what normal cells can use for fuel and what cancer cells require. If you notice, normal cells have optional fuels that cancer cells cannot utilize. If glucose is removed and glutamine is blocked (indicated with curly “delete” lines), cancer cannot survive.

**Normal cells survive on:**
- Glucose
- Glutamine
- Ketones
- Fat

**Tumor cells survive on:**
- Glucose
- Glutamine
The next section contains important information about three important diet books. In order to understand each author's contribution, you will need to understand the difference between a protein and a carbohydrate. While assembling this book, the following story helped me realize I cannot assume that readers know the difference between a protein and a carbohydrate.

**Startling Statistic About Soy**

Complete protein is critical for life, but we can live without carbohydrates. If a food grows in the ground, it is a plant and plants do not have all the amino acids that humans need.

According to the American Academy of Pediatrics, “the use of soy-based formula has nearly doubled during the past decade to achieve 25 percent of the market in the United States.” (Source: Soy Protein-based Formulas: Recommendations for Use in Infant Feeding.” *Pediatrics*, 2009).

The most startling part of this story is that mothers surveyed about their choice of soy-based formula said their pediatrician told them to give their children soy. If there are pediatricians in the United States recommending soy-based formula it means they do not understand the difference between a protein and a carbohydrate.

Worldwide, the Israeli Health Ministry, the French Food Agency, the German Institute of Risk Assessment, and the British Dietetic Association have started to warn parents and pediatricians that soy formula could jeopardize brain and body development and should be used only as a last resort (Source: *The Whole Soy Story: The Dark Side of America's Favorite Health Food*, Kaayla T. Daniel, Ph.D.).

**Soy and Corn Politics**

Since the early 1940s, corn and soy have grown to become the United States’ first and second largest crops. These industries are very powerful and they can afford to bombard consumers with messages about soy. Consider the following:

- Soybean farming in the United States is a $41 billion dollar industry (Source: Ibisworld Market Research)
- Corn farming in the United States is a $78 billion dollar industry (Source: Ibisworld Market Research)
Accidental Cure for Cancer: The Art of War on Cancer

In 2012, the Waisman Center for Developmental Disabilities, University of Wisconsin, Madison found that soy exacerbates seizures in mice with neurological diseases. In the study's conclusion, the researchers say the results have important implications for individuals on soy-based diets (“Soy Exacerbates Seizures in Mouse Models of Neurological Disease” Journal of Alzheimer’s Disease, 2013;33(3):797-805).

- Soy is the second-most genetically modified crop in the United States—behind corn.
- Soy ingredients are found in more than 60 percent of packaged and processed foods and nearly 100 percent of fast foods (Source: Weston A. Price Foundation)
- More than one-quarter of all goods found in supermarkets contain corn (Source: The Omnivore’s Dilemma: A Natural History of Four Meals)
- The plant-based diet fad has encouraged many health-conscious Americans to substitute soy products for both meat and dairy (Source: Weston A. Price Foundation)
- Corn has a carbon structure that can be traced in everything that consumes it. When hair samples of Americans and tortilla-eating Mexicans are compared, American contain a far larger proportion of corn-type carbon. “We North Americans look like corn chips with legs,” says one of the researchers who conducts such tests (Source: The Omnivore’s Dilemma: A Natural History of Four Meals)

Truth About Soy and Corn
You will never hear a message from the soy or corn industry that tells the truth:

Soy and corn contain inferior protein compared to animal protein and all plants contain mostly carbohydrates.

Soy Industry Studies Promote Soy

Nutritionist Kaayla Daniel, PhD, author of The Whole Soy Story: The Dark Side of America’s Favorite Health Food explains that soy foods were introduced as health foods in the 1970s and 80s.

Daniel explains that as soy foods became popular, studies in medical journals began to assert that soy supports cardiovascular health and bone health and that soy isoflavones (estrogen-like compounds) protect against breast cancer and prostate cancer.

In 1999, the U.S. Food and Drug Administration approved a health claim that “25 grams of soy protein a day, as part of a diet...
Fermenting neutralizes toxins in soy. Although soy was first used as a food during the late Chou dynasty (1134–246 BC), the Chinese learned to ferment soy beans to make foods like tempeh, natto and tamari.

low in saturated fat and cholesterol, may reduce the risk of heart disease.” This announcement was more good news for the soy foods industry. From 1992 to 2008, the sale of soy foods in the United States skyrocketed—from $300 million to $4 billion.
Authors Who Contradict the Food Industry Agenda

If the soy and corn industries have become the world's most powerful food consortia, they are modern-day Goliaths. In contrast, diet book authors who have dared to contradict the giants are the diminuitive Davids. The short list includes:

- **Co-authors Sally Fallon and Mary Enig, Ph.D.**
  *Nourishing Traditions: The Cookbook that Challenges Politically Correct Nutrition and the Diet Dictocrats* and *Eat Fat, Lose Fat: The Healthy Alternative to Trans Fats*

- **Robert C. Atkins, M.D.**
  *Dr. Atkin's Diet Revolution*

- **Pierre Dukan, M.D.**
  *The Dukan Diet: 2 Steps to Lose the Weight, 2 Steps to Keep It Off Forever, The Dukan Diet Cookbook: The Essential Companion to the Dukan Diet*
Carbohydrates Are Not Essential For Life

Not many people understand that carbohydrates are not essential for life, not even doctors. In the English version of his recently published book, Dr. Pierre Dukan, Carole Middleton's diet doctor, admitted he discovered humans do not need carbohydrates—by accident.

Carole Middleton

Carole Middleton is the mother of Kate Middleton, Princess of Wales. Although Dukan is misinformed on fat and artificial sugar, his book is valuable because he understands the truth about carbohydrates:

Carbohydrates are not essential for life.

Dukan worked with an obese patient in Paris when he was a young doctor. His patient said, “Put me on whatever diet you want, deprive me of whatever food you want, anything, but not meat. I like meat too much.” Dukan told his patient to eat nothing but meat for five days and five days later, his patient had lost twelve pounds. After an additional five days, his patient had lost another five pounds. Dukan and his patient were amazed at the amount of weight lost after several days of eating nothing but meat.

Dukan's Warnings

Dukan did not wait for critics to find faults with his diet. He describes the following side effect in his book:
• Low energy
• Constipation
• Bad Breath

carbohydrates make you fat. In the 80s, people ate "low-fat" foods that are high in carbohydrates (this seems to cause confusion). Very few diet book authors understand that carbohydrates are not essential for life.
Notes