

# SUGAR

**Second Edition**

**Shut your  
mouth to sugar  
addiction and  
cravings  
forever**



**Jennifer Atkins**

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## *Shut Your Mouth To Sugar Addiction And Cravings Forever*

*2<sup>nd</sup> edition*

*By Jennifer Atkins*

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## **Introduction**

Addiction means having a strong attraction or desire for anything and the word itself suggests a negative connotation. It is a force of habit, which has negative consequences. It may either be due to the corrosive nature or the parasitic character of the method itself.

Addiction has enormously disastrous effects on the body, mind and soul of the addicted person. An addiction also ruins a person's personal and social life. Society tends to discriminate against an addict in a very judgmental fashion, often to an extent where that person becomes extremely unacceptable to the patterns of society. Such people become alienated from the routines of a normal life.

Addictions tend to weaken the body and, after taking the addicted substances, the addict generally feels pacified or sated. However, this sated feeling does not last for a long time. It is incredibly short lived and not worth the consequences. The problem is that in the long run, addiction results in weakening the body and paves the way for dysfunction of both the body workings and the brain. Addictions include anything: foods, drinks, or other physical substances, but also codependency, a hostile attitude towards other and greed.

Sugar addiction is one of the most deadly and noxious addictions human beings have ever experienced. Due to its common availability, people do not consider it a very viable threat. Besides, sugar has never seen that level of bad publicity. The fact that sugar is used in everything from a baby's drink to an old man's coffee tends to overshadow its consequences as an addictive substance. It is undoubtedly the most important and widespread addiction on this planet and the situation is getting worse day by day. It affects all ages, but especially teenagers who lead chaotic lives and have uncontrolled eating habits, perhaps as a consequence of those action packed lives.

Human beings are programmed to like sugar and are genetically prone to enjoy sugary food more than other types of food. Almost all of us are genetically hardwired to favor a sweet dish over anything else. An excessive use results in diabetes and other sugar related problems that have begun to crop up recently. Even people who do not want to take sugar are sometimes unaware of taking it because sugar is latent in almost all foods we generally

have in our diet. Excessive intake of sugar keeps you overweight, unhealthy and fatigued. Sugar is quite hard to get rid of and can be very deadly for people who get a very little amount of exercise. Watching diets closely is not something practical in the modern world. Most of us do not realize what is happening until it is too late. Sugar can cause addiction and sugar cravings, which are not natural. For your healthy, sound and balanced life, sugar addiction can be one of the greatest impediments. If you want to be sure of good health, a sound mind and permanent weight loss or weight stability, you have to be serious and selective about consuming sugar and sugary substances.

In this book, I hope to help define what sugar addiction is, and help you identify the symptoms. I would also like to show you how to distinguish between a healthy usage of sugar and how it crosses the line to become an addictive substance. I'll also give you a treatment plan and steps on how to stop cravings. You can overcome sugar addiction! I'm here to help you do it and the advice given in this book is sound advice, based both on experience and expertise in the subject. Rest assured. You will find help within the pages of this book and it may just save your life.

## **Chapter 1: What Is Sugar Addiction?**

Some people take sugar or sugary substances in such ways that aren't healthy and they crave for sugar without any control and eat more sugary foods than they planned on eating. The brain accepts sugar as a harmless reward system, so they do not realize that they are hooked onto sugar unless they begin to exhibit symptoms of the addiction or until someone tells them. They can even be taking part in this process without knowing it because sugar is hidden in so many different foods.

The white, powdery substance can make you feel good and gives you a drive of energy and when that energy lowers, you need to eat more. Although the addiction is not something as obvious as just scooping out sugar from a jar, they tend to add sugar as a primary additive to most things in our diet. This repetitive, spontaneous and constant cycle of sugar intake can be defined as sugar addiction. Sugar addiction is as deadly and disastrous as any other type of addiction. Though sugar is considered harmless in comparison to other addictive substances, it can be the cause of a host of problems in excessive use.

Cravings, binge eating, intolerance, mental and physical disorders, weight gain and heart disease are just a few of the potentially dangerous side effects of a need for sugar. Prolonged use will also make you a victim of elevated blood pressure and blood sugar levels. Sugar addiction is a state or condition that means that the individual depends upon sugar consumption. When sugar is over-consumed, it is defined as a toxic poison and wreaks havoc on the body and mind. It causes physical and mental unrest in much the same way as alcohol or drugs. When an overdose of sugar enters the pancreas it is bound to release a large amount of insulin. This extra release causes the body to become fatigued and they feel it absolutely necessary to fill this void by consuming more sugar in inappropriate portions.

Sugar intake can be an addiction when sugar is eaten on a regular basis, and some people feel this to the extent that they will crave sugar. Basically, you can be aware of the addiction, or you can subconsciously feel the need for sugar and justify having it because of that need. Sugar addiction can be a conscious process when the body craves sugar and sugar feeds the need and the pleasure factor. Genetically motivated behavior, habits and practices can

be a part of this process. Conversely, it can become an unconscious habit to the point that some people are used to sugar intake, even though not being aware that the foods they eat are laced with sugar. They are addicted to it through their eating habits and they can't get over the need for those foods that they are accustomed to because of the sugar content.

Addiction consists of both biological and behavioral components. Any pleasurable and stimulating substance that is taken frequently without considering the consequences much is called addiction. Sugar is without any doubt an addictive substance. The person who has physical dependence and craving for sugar or sugary foods can be defined as a sugar addicted individual. The person who has a strong desire for sweet substances and cannot help taking them is also a sugar-addicted person. The withdrawal method is the best possible way to find out whether a person is a sugar addict or not. If the person who is deprived of sugar feels agitated and perhaps mentally unhappy because of the lack of sugar, it's a sign that they are addicted. Addiction is caused by a repetitive habit of taking the addictive substance. Similarly, taking sugar or sugary substances without any limit or sensible boundary is called sugar addiction.

Real sugar addiction facilitates long-term chemical brain changes and promotes brain adaptations to sugar. Sugar can be hidden anywhere in your foods. If you have no control over eating sugary substances, then you will be a victim of sugar addiction. Sugar can be an enslaving and habit forming powdery substance that makes you prone to crave it constantly. The condition and state of being abnormally dependent on a sugar consuming habit is called sugar addiction. Basically, a sugar addiction is something that compels someone to have it regularly and they will miss it if sugar is then taken out of the diet. Any type of addiction is detrimental to your health, body and mind and sugar addiction is no exception to that.

### **Types of sugar**

Sugar is not limited to the crystals that we use in our coffee or other drinks. Sugar is very vastly spread out over our diet that most of us do not even realize that we are consuming sugar in one way or another.

The four major types of sugar are

- Glucose: This sugar is the one that is present in our bloodstream.



Sucrose is chemically identical to the sugar that is produced from corn. This sugar is called dextrose.

- Fructose: this sugar is completely natural. It makes a major appearance in fruits. In spite of being a major constituent in fruits, it raises no flags because it is usually combined with fiber and nutrients.
- Sucrose: it is most commonly known as a table sugar. It is a double sugar, which has a part of glucose forming about fifty per cent of its structure. The rest of the structure is made up of fructose. These two sugars are chemically bound to form sucrose.
- HFCS: this sugar is completely derived from cornstarch. It is composed of roughly equal amounts of fructose and glucose. HFCS may be the most unpopular sugar among doctors because it does bring up a lot of health concerns.

From the above types we have had an insight into the types of sugar. Sugar is basically a carbohydrate and that is what makes it so prevalent in a lot of foods. Let us take a closer look at the types of carbs.

The three main types of carbs are starches, sugars and fiber. Our diet will also ensure that we hear about things like added sugar, naturally occurring sugar, low calorie sweeteners, processed grains, sweets, reduced calorie sweeteners, enriched grains and complex carbohydrates, refined or whole grains. On the nutrition label of most foods, the term, and “total carbohydrate” is the sum of all three types of carbs. This is the number that all the health freaks monitor.

The food that is high on starch includes but is not limited to

- Starchy vegetables like corn, peas, potatoes and lima beans.
- Peas, lentils and dried beans are also known to contain large amounts of starch.
- Grains like barley, rice and oats. We do not realize that a major portion of our diet is made up of these grains. Breads, pasta etc. are made from these grains.

Sugar is another type of carbohydrate, one that we are most familiar with. They may also be referred to as a fast acting carbohydrate. The two main types of sugar are naturally occurring sugars and added sugars. Naturally

occurring sugars are the sugars that are present in fruit or other natural produce; this is predominantly likely to be fructose. Added sugars are usually added to a manmade product. It is mostly visible in the heavily packaged foods or the food that has a lot of preservatives in it. It is heavily present in syrup and the sugar added to make a cookie or other confectionery.

Fiber is a form of carbohydrate that is sourced only from plants. Animals and animal products do not have fiber and so are incapable of producing this type of carbohydrate. Fibers are not as hazardous to health as the other types of sugars. Most of the fiber consumed during a diet, passes through our intestines without any change. A good source of fiber contains about five grams per serving.

### **How much sugar do we really consume**

In the 2015 market research data released by the Euromonitor, the leading countries with the most daily consumption of fat and sugar are the United States of America, Germany, Netherlands, Ireland and Canada, all ranked according to the most consumption. All these countries exceed well over the World Health Organization's recommended intake of daily fat and sugar. This is no big surprise that the Americas rank first in the world as the country with the most love for sugar, however, this data may suggest that the Americans' obsession with sugar may be bordering on to lunacy, in comparison with the other countries of the world.

In the United States, an average person typically consumes more than 126 grams of sugar per day. This amount is a little over more than three 12 ounce cans of Coca Cola. This statistic is more than twice the average sugar intake of all the other 54 countries observed by the Euromonitor, which consequently is more than twice what the World Health Organization recommends for average daily intake, a value that is only roughly 50 grams of sugar for someone of normal weight.

Germany, which is the second most sugar loving nation in the world, also has a serious sugar consumption problem. People in Germany eat approximately 103 grams on average value. On the other hand, people in the third most sugar addicted country in the world Netherlands consume a close estimate of 102.5 grams per day. And finally in Ireland, which ranks fourth on Euromonitor's list, the Irishmen consume sugar on a daily basis at almost 97 grams on average.

These sugar-consuming countries are highly addicted to sugar and particularly soda, those sugary filled bubbling beverages. On a 2013 study published in the journal *Circulation* worldwide, it was revealed that sugary drinks are responsible for around 184,000 deaths each year and on top of this mortality list ranks America with a rough estimate of 25,000 deaths in a year. The researches tabulated deaths caused by diseases with sugar consumption as a probable cause. Deaths from diabetes, heart diseases and cancer that are linked to sweetened soda, fruit drink, sports or energy drinks and iced tea consumption were counted in this study. Of these total 184,000 deaths a 133,000 proportion of this total annual death were due to complication of type-2 diabetes, 45,000 deaths were due to cardiovascular disease and 6,450 deaths are linked to cancer. The senior author of the study and then dean of the Tufts University's Friedman School of Nutrition Science and Policy, Dr. Dariush Mozaffarian, shared that this should alarm the population to consume less of the sugary beverage. It may not be possible for every population to have access to highly nutritious and healthy foods, but a step in lowering one's sugar intake can make a huge difference in health. Dr. Mozaffarian added that this alarming mortality rate due to a rather simple and very sneaky cause should be a global priority to substantially reduce or eliminate sugar sweetened beverages from the diet. He continues to discourage the population from consumption of these sugary beverages by emphasizing that sugar loaded beverages have no health benefits at all, and the potential impact of reducing consumption can save tens of thousands of deaths each year. The fact that the beverage companies continue to deny the association between their products and these mortalities does little to discourage the masses, however, experts have already proven and shown the direct link between consumption of sugars and obesity and its role as a risk factor to these mortalities.

Going back to the other side of the spectrum on Euromonitor's list of countries with their average daily fat and sugar intake, the countries India, Israel, Indonesia and China were shown to rank lowest in the charts of daily sugar intake. People in these Asian countries apparently don't like sweets. In India for instance, people only eat about 5 grams per day on average. In Israel on the other hand, people only consume 14.5 grams daily. In Indonesia, it's close to over 15 grams a day and finally in China, the Chinese consume sugar at an average daily value of just less than 16 grams.

Interestingly in the same post on daily sugar and fat consumption of the

world, they presented that neither sugar nor fat consumption seems to be a good indicator of obesity, or in the least among those countries reported that eat the most fat and sugar. Although Americans are reportedly both eating way too much sugar, even exceeding the world health recommended limits, and outpacing the rest of the world in waistline, the post presents that there doesn't seem to be much of a suggestion that an affinity for either is associated with higher rates of obesity in these countries.

To further support this claim, they report that Germany, which ranks second in both sugar and fat consumption per capita, is among the skinniest nations in the developed world. Only a rough 14.7 per cent of its population over the age of 14 is considered obese, according to data from the Organization for Economic Cooperation and Development (OECD). On the same note, other countries such as Belgium, the Netherlands, Finland and Sweden which are all both near the top of the ranks in sugar and fat daily intake but ironically are near the bottom in obesity rates.

But lower sugar and fat consumption, however, in comparison does appear to align at least a little more with lower obesity rates. To whatever degree or extent, these data may be also due to the fact that these countries have lower consumption of food in general. India, Indonesia and China happen to have the three lowest obesity rates in the list with 2.1, 2.4 and 2.9 per cent respectively, among the countries in the OECD tracks.

The correlation may seem very unclear and many published papers may even beg to debate on the results of this report but it does leave room for doubts as to the possibility of a better gauge for the tendency of people to be more overweight or obese in some countries as compared to other countries. One possible explanation may be that the cause for obesity in some countries does not rely much on the raw amount of fat or sugar content but also in the type of food that is being consumed in these countries. For instance, in the United States where processed foods are still a favorite among its population, this fact could offer another theory as to why this country have an obesity rate of more than 35 per cent.

### **The truth behind sugar and its addictive properties**

The hard core fact of the matter is that sugary foods and beverages are still and may even continue to be frequently marketed in the common masses and this makes sugar addiction all the more a cause for concern. Unlike all the

other more popular substances of abuse that have been banned by our society like heroin, cocaine and nicotine, sugar is a much more sneaky culprit because it continues to be marketed and advertised to a wide range of consumers – children to elderly – and the product comes in all forms that are readily available too. The stigma that goes along with consumption of these addictive sugary foods is also not as intense as that associated with heroin, cocaine and nicotine. To paint a vivid illustration, whenever we see a four year old child digging himself into a heap full bag of chocolate covered marshmallows we wouldn't feel too judgmental as seeing a sixteen year old teen lighting his thirteenth stick of cigarette. But the sad truth is sugar is just as addictive as nicotine, and offers just as serious a health hazard as cigarette smoking does.

Take for instance how our body responds to a can of soft drink, where it was reported that the average American child consumes one or more soda or soft drinks per day, providing them already more or less ten per cent of their daily calorie intake. In an interview conducted in 2012 with Radio Boston, Kelly Brownell, Director for Yale's Rudd Center for Food Policy and Obesity. She stated that sugary soft drinks are especially damaging to our health because our bodies do not recognize these intakes as food but instead, the sugar in the carbonated beverages acts like a drug and thus starts triggering the addictive process.

What makes it harder for some experts to rule sugar attachment as an addiction for certain is due to the reason that a fine line still exists in completely defining what addiction is and what is considered normal behavior. Webster's New World Dictionary defines chemical addiction, or dependence, as a "compulsive physiological and psychological need for a habit-forming substance." There are established physical and psychological signs and symptoms that distinguish true chemical dependence from habitual enjoyment of a substance or even an activity. According to the American Psychiatric Organization, addiction can be characterized by three typical behaviors: first off is binging. Binging is the consumption of large amounts of food in a small amount of time after a period of complete abstinence. The next characteristic behavior of addicts is withdrawal where depression and anxiety usually sets in when the substance is not available. The third and last behavior is cravings, these intense desires for the particular object of addiction or obsession increases whenever the substance is not available.

A professor at the Duke University of Medical center, Rochelle Schwartz-Bloom, explained that addictive drugs affect the brain by triggering the release of chemical neurotransmitters, which causes the “high” feeling.

Evidences have been uncovered to show that sugar does have addictive properties. A team of psychologists in Princeton University, lead by Dr. Bart Hoebel, replicated the effects of addiction by reproducing the behaviors and brain chemistry of addiction in rats. The experimental study was set up by dividing the rats into four groups. Experimental group was given access to feed and sugar for 12 hours then deprived of both for another 12 hours. The team then set up three control groups when one group had access to sugar and feed at all times, another had access to only feed at all times and the last one had access to only feed in 12 hour periods. The rats in the control groups did not display any signs of addiction, but the group on the 12 hour on sugar feeding, 12 hour off sugar feeding and feed schedule exhibited observable addiction behaviors. Rats in the experimental group that were later denied sugar for twenty four hours tended to binge, exhibit withdrawal symptoms, which were characterized by tremors and anxiety, and them display behaviors consistent with cravings. These observed responses were similar to rats introduced with morphine or cocaine. Hoebel and his team found out that sugar consumption in rats triggered the release of the dopamine neurotransmitter in their brains. This triggering of neurotransmitters in the brain is also observed in addictive drugs like morphine and cocaine which suggests the presence of an addictive quality to sugar.

Other researchers tend to disagree with Hoebel and his team’s findings. A certain group of neuroscientists from the University of Swansea spearheaded by David Benton have criticized Hoebel’s work, pointing out that a huge variety of actions and substances trigger a release of dopamine in the brain and this characteristic does not exclusively rule out dopamine release as a certain marker for addiction. Benton argues that even if sugar and cocaine stimulate release of neurotransmitters in the brain, other stimulators also evoke this response such as music, humor, winning a prize, familiar faces, attractive faces, smiling faces and even being in love. They argue that clearly the release of dopamine is not sufficient evidence for addiction. What’s more, the rats in Hoebel’s experiment that were on the alternating sugar and feed schedule showed the neurological and behavioral signs of addiction, but the control group of rats that had constant access to sugar did not. This suggests that perhaps sugar is not an addictive substance after all but that addiction to

sugar may occur if it is eaten in a period of bingeing followed by long periods of restraint.

### **The theories behind the causes of physical addiction to sugar**

So is sugar truly addictive? The answer to this question varies and is dependent upon its influence on an individual. Statistics have shown that sugar can certainly be addictive, but apparently, this condition is more of a problem for some women than others. This seeming gender preference for sugar addiction is all attributed to the different levels of neurotransmitters and receptors we have in our brains. These levels vary and change over time and are dependent on our genetic makeup and lifestyle. In other words, the neurotransmitter levels in our brains are all influenced by what we eat, drink and feel, where we are hormonally speaking, whether we exercise, how well and long we sleep, and the list continues. Some experts and researchers suggest that a certain portion of the population is indeed “sugar sensitive” while others are not as susceptible to the power of sugar. These individuals may be operating with naturally lower levels of serotonin and beta-endorphin, leaving them more vulnerable to sugar cravings. Details on these neurotransmitters and how it affects the brains of sugar addicts are expounded in the following chapters, for now we shall focus on how sugar becomes addictive to an individual.

To put it in a general perspective, any time the body is running low on neurotransmitters – these powerful brain chemicals that control communication in our nerve center – the brain tries to catch up by opening up more receptors for these particular neurotransmitters. The logic behind this body adjustment is to essentially increase the odds of making a connection for these transmitters. This can be better explained in terms of the supply and demand analogy where the principle is that the less availability of something increases its demand, when there is less of something available, the demand for it goes up. With so many open receptors, if a sugar-sensitive person does have sugar, alcohol or anything that causes a release of serotonin or beta-endorphin, it intensifies the resulting sugar “high”. This in turn can lead to more cravings and starts a person’s dive into sugar addiction.

Some of the individuals afflicted with sugar addiction may experience withdrawal symptoms whenever they stop eating sugar. This makes sense because when we are eating large amounts of sugar at regular intervals, the

brain becomes accustomed to frequent beta-endorphin bursts, and when we take them away, it naturally wants more. This, like withdrawal from a caffeine habit or drug addiction or even sex addiction, can lead to headaches, shakiness, nausea, fatigue and even depression.

### **Explanation behind all these sugar cravings**

So we have seen the big picture on what sugar does to the brain and how it can be addictive. But what exactly causes our taste buds to yearn more and more of these sugar treats? To start off, sugar cravings often have many distinctive features. Eating is closely connected with our biochemical processes and our emotions; we digest sugar on many levels. This can be better explained by noticing the pattern when we crave for sugar. For a great many, the pattern when we crave for sweet treats is cyclical, occurring nightly after a stressful day at work or school, monthly just before menstrual periods, or seasonally when the days grow short. For females, example, these cravings are also tied with emotions. Girls often have a sweet tooth whenever they are emotionally stressed and they need something to help them feel “better” and soothe their mood. The following are just a few of the common causes we see for sugar cravings:

- Hormonal fluctuations – This is especially noted in females, and especially just before they are menstruating where estrogen level is low and progesterone is on its way down and beta-endorphin neurotransmitter levels are also at their lowest. These repeatedly recurring episodes of hormonal and neurotransmitter fluctuations may explain why many women who experience pre menstrual syndrome, or PMS, also have cravings, as well as the accompanying serotonin-endorphin bursts that high-sugar foods can provide.
- Stress – Any stressful situation can lead to less than optimal eating habits. Stress itself increases cortisol levels, which initially dampen hunger. Cortisol is a life-sustaining adrenal hormone essential to the maintenance of homeostasis. This hormone is also dubbed as the “stress hormone” because it influences, regulates or modulates many of the changes that occur in the body in response to stress. Once the stress has become less active or intense, hunger hormones in our system builds up and tells our



body to refuel. This often leads many individuals with stressful jobs and lifestyles to a pattern of night time cravings, over eating and sweet binge eating, and the inevitable unwanted weight gain. As time progresses, being exposed to constant stress can lead to adrenal imbalance, eventually resulting in extreme exhaustion and most often people would resort to the nearest relief that they know works. So many would opt to binge on sweets or find that the only way for them to get through the day's stress is by drinking lots of caffeine or energy drinks and consuming sweets for quick energy bursts. The danger with this response is that this attitude only sets us up for further cravings and more energy depletion after the sugar rush.

➤ Insulin resistance – This condition is often the complication associated with type-2 diabetes. Insulin resistance often happens as a result of a long-term diet high in refined carbohydrates and low in micronutrients. When a person is resistant to insulin, glucose is not able to enter the body's cells and ends up staying in the blood as a result. This means that as the cells are deprived of the fuel they get from glucose they will not be able to function properly and signals are sent to the brain to increase the production of insulin. Increased insulin production results in cravings for sugar because even though you may be eating enough of your requirement, your cells are not able to access the food.

➤ Food sensitivities – Food sensitivities are often the result of a situation known as “leaky gut”, where partially digested food particles can make their way into the bloodstream through a damaged, inflamed mucosal lining in the digestive tract. When these foods find its way into the bloodstream, the body regards these food particles as foreign antigens and mounts an immune response by sending antibodies. Immune complexes or the combination of antibodies and antigens in your bloodstream can lead to intense cravings. This is what happens when gluten is consumed, you see this substance is often combined with sugar in the foods we eat and so when we crave we frequently think that it's sugar we are craving when really it might be gluten we're

craving.

➤ Intestinal yeast or systemic candidiasis – Yeast grow vigorously on the presence of sugar, it is their food so to speak. This connection can be easily made when we look at the Latin name for this group of organisms: Saccharomycotina which can be translated as “sugar fungi”. We all have a natural flora of bacteria in the body, but if ever the intestinal or vaginal bacteria are out of balance, they are likely to keep yeasts like Candida in check. An overgrowth of yeast in the intestine or system wide can lead to increased cravings for sugar, which can be easily explained because the yeast infestation drives your body to crave for the food that helps sustain it.

➤ Excess acid-forming foods – It has been observed that after a person eats a lot of red meat, cravings for sugar increases. Red meat is high in a pro-inflammatory molecule called arachidonic acid. Eating a lot of meat tends to upregulate the oxidative-inflammatory cascade in our bodies. If left unchecked, this inflammatory condition can become chronic and cause abnormal glucose metabolism, ultimately leading to insulin resistance, which as we have seen also results to intense sugar craving. This metabolic damage and the cravings associated with this dynamic can be offset by choosing anti-inflammatory foods rich in omega-3 fatty acids in our diet, as well as adding food that are alkalizing and antioxidant rich such as fruits and vegetables.

➤ A lack of sweetness in your life – And no, this is not the additional sugar we need in our diet. The reason we crave can be due to a myriad of other causes and can be rooted from many things in life that affect our serotonin and beta-endorphin levels. These influences include, but are not limited to, exercise, a well balanced nutrition, rewarding and less stressful and draining work, a positive relationship, or even as simple as a sunny day. The joy and satisfaction we find in our lives speaks to our biochemistry and eventually the cravings associated within our bodies.

## **Chapter 2: Sugar Addiction Symptoms**

The persistent and compulsive use of sugar can be defined as sugar addiction. Just like drugs and alcohol addiction, you can be a victim to sugar addiction whether you want it or not. Similar to alcohol and drugs, the over usage of sugar can also be considered to be a form of substance abuse. Excessive use of sugar is absolutely detrimental to health and mind as well. People consciously know that ingesting excessive amounts of sugar is not good for their health but they can't stop the need.

Sugar has become a part of their daily schedule as much as coffee or tea. A portion of sugar always manages to find its way into almost every meal that they might have in a day. And the habit of eating sugar turns into an addiction. Sugar addiction is most prevalent and widespread in children because they are very compulsive in devouring candy and they lead a chaotic and imbalanced life where a quick fix of food often means eating sugar based products. Being hyperactive and constantly moving, the kids find sugar to be the best fuel for their needs.

Longer lasting physical problems, mental disorders and uncontrolled blood sugar levels are very common in the case of sugar addiction. Elevated blood sugar levels are also a serious threat that accompanies a sugar addiction. Sugar addiction and its consequences are devastating, life changing and life threatening. Being overweight to the extent of being obese is the most obvious sign of being addicted to sugar or sugary substances. A huge intake of sugar and a prolonged lack of exercise are bound to add on fat very quickly. Obesity is stretched to the point where the person begins to develop flabs and other problems.

Besides this, it changes the addict's both mental and physical characteristics and behavior as well. Addicts may deny the fact that they are addicted to sugar but in reality they are compulsively addicted to it either directly or indirectly through foods that hide their sugar content. Sugar addiction symptoms and signs can be classified into two types. One is the normal or obvious sugar addiction symptoms of taking excessive sugar and the other is the withdrawal symptoms after

quitting the sugar or sugary substances. Now let's dive into identifying the two types of sugar addiction symptoms.

## **Common symptoms of sugar addiction**

Recently, study after study and statistics show that sugar is highly addictive and excessive ingestion of sugar can cause mental and physical disorders and many other diseases as well. The urge and unstoppable craving for sugar or sweets or other foods and drinks made with added sugar drive us to take that substance again and again within the blink of an eye. The uncontrollable yearn for cookies, ice creams, soft drinks, cakes is the surest sign of a sugar-addiction. You may wonder how these substances are controlling your will power. The real cause is that all these foods include sugar, which is addictive. You fall prey to this white substance because you are morally weak, you have lack of will power and your brain generally responds in a positive way after consuming this substance. The common symptoms of sugar addiction are as follows:

1. **Consistent sugar cravings:** One of the most common symptoms of sugar addiction is sugar cravings. You can be largely dependent on sugar to assist you to boost up your energy and soothe your emotional sensations and feelings. You turn to sugar as the first solution and last resort to your problems. This level of dependency is bound to get you hooked on to it. Your intense urge to eat something sweet is a consistent craving. You can't help it or avoid it, as it becomes your habit. When being used to consuming sugar on a daily basis, a lack of it may be capable of sending you into depression and a general state of inactivity. If you don't have that sweet substance, you can't concentrate on anything. This state of consciousness is responsible for sugar addiction. This all affects the level of your metabolism. The more you eat it, the more you're telling your body that it's going to depend upon sugar and your body does just that. It locks onto sugar and it hungers for it in a way that your body can only truly understand when it gets it. So, when you start to take away sugar from your diet, your body really hungers for it. It is going to prove to be something that you're familiar with when you start to pull back from sugar. It's something that everyone comes to recognize. That's why temporary diets don't work. Withdrawal from something as addictive as sugar is not going to be an easy task and temporary diets are not going to make much of a difference. Withdrawal from

a sugar addiction is similar to withdrawing from an alcohol or drug addiction but it is harder because sugar is not something that is publicly condemned by the society. This means that you are likely to come in contact with sugar on a daily and frequent basis in almost all of your diets. When under pressure or when in need of a celebration, sugar enriched items become your first choice.

2. Constant sweet tooth: Most of us do like sweet foods, but it can become an addiction if you have problems turning them down. The person who always craves sweets and can't resist eating them is a sugar addicted person. This type of person may be known as a "sweet toothed" person. They prefer sweet treats to healthier choices. After dinner, they generally see it as abnormal if they do not have something sweet as a desert. For many, having a sweet tooth is what most people tend to ignore as just a quirky habit. But, having a sweet tooth is a dominant sign that you are heading down the path of sugar addiction. This isn't something that should just be ignored. If your immediate thought for a snack or for something to eat is a sweet option, then you could be facing a much bigger problem. Joking about the problem doesn't make the problem any less severe. People with a sweet tooth walk a delicate line, because they're susceptible to a sugar addiction, if they don't have one already. Having a sweet tooth is very common. Especially among youngsters. Parents choose to reward their kids with sweets and confectionery for everything that they accomplish. This will encourage the kids to look forward to having something sweet before and after accomplishing something. This habit, though not flawed in itself could get out of hand very quickly if not adequately monitored. Most of us are in the habit of helping ourselves to a little snack or tidbit between meals. Usually, people who work in a cubicle or in a closed space have stashes of food that they can munch on while doing their work. A person with a sweet tooth is most probably going to stock up on sweet tidbits. So when looking at his/her sweet consumption throughout the day, it is phenomenal. When normal people have something like chips, sandwiches or crackers. The sugar addict will stuff himself with sweets. This does provide him with instant energy that is necessary

for completing his work. However, at the end of the day he is going to be remarkably tired due to the high secretions of insulin.

3. Obesity and being overweight: Sugar can make you fat and it increases the weight of the addicted person more than they can control. The more sugar you consume, the fatter you will get. Losing weight and getting fit is a hard task. However, gaining weight and becoming obese is a simple task thanks to sugar overdoses. Sugar is capable of piling on pounds of fat within the end of the week. Due to its high calorific value and the modern generation's lack of exercise, gaining weight is a very simple task. Controlling the sugar addiction is no easy task either. In fact, it has been known to be tougher than getting rid of an alcohol or drug addiction. If you cut short the consumption of sugar to some extent, you will become fitter and with exercise, can become healthy again. This is easier said than done. For those people who look at sugar as a source of energy to do their daily work. It could mean a slump in their efficiency when deprived of their energy source. This is bound to send you into depression and mental angst at not being able to perform as well as you could. But it is not so easy to quit sugar consumption because sugar is as highly addictive as cocaine, heroin, morphine and marijuana but so much more easily available. Getting rid of the addiction is going to be made extremely hard because unlike other addictive substances sugar is always around you. The urge to resist temptation has been backed on a very strong willpower for any hope of success. Sugar is the likely cause of obesity and being overweight. It's a spiral that sucks you in. Let's be honest right now, sugar tastes amazing. We wouldn't be eating it if we weren't really drawn to it and when you are sucked into that spiral, it really pulls you down and starts to pile on the pounds as you attempt to get control of your life. Sugar is the fastest way to stack on those pounds and it's going to be a real struggle for anyone who is trying to lose weight. When you decide to get fit and form better muscles, you are bound to exercise more and maintain a strict diet. However, you are going to face an extreme crisis in this diet planning, as sugar in various forms is present in almost every edible item. Therefore, although

sugar cannot be entirely avoided, care can be taken to ensure that its content in the food is controlled and maintained within a limit. It's just in everything, absolutely everything!

4. Over eating and losing control: Recent studies point out that the person who is addicted to sugar or sugary foods generally overeats. They can't help themselves and have little control over it when it is placed in front of them. So, overeating and losing control over your eating are the surest signs of sugar addiction. But there's more to it than just stuffing your face with something because it has sugar in it. Intake of too much sugar causes the release of hormones like dopamine among other hormones. Some of these hormones stimulate a very good appetite. The person is more likely to be hungrier than usual due to his newfound hyperactivity. He tends to consume a lot more than what he does normally. This combined with his metabolism is going to deposit on his body as fat. Along with over eating, the addict will also start stress eating soon. When under stress they will resort to sugary items in inappropriate proportions triggering a hormonal imbalance and obesity. Sugar is part of the culinary world that has absolutely saturated everything. If you walk into a grocery store and you start looking for things that are in boxes, bags, and cans, it's going to be nearly impossible to find something that doesn't have mountains of sugar in the ingredients. So think about it when you're snacking or when you are looking for food to get you through an emotional period, and it seems you'll really have no option outside of sugar. Whenever you overeat prepackaged food, you're stuck with too much sugar, which only adds to the addiction issue that everyone has to face.
5. Responses of the brain: Sugar fuels every cell in the brain. Your brain also notices that sugar is a reward. You genuinely may not feel well if you do not have it. The cerebral cortex of the brain houses the response center to the taste buds on your tongue. So every time you have something sweet, it triggers the taste buds, which subsequently register in the reward system section of the brain. This section is responsible for triggering the release of

dopamine through various points spread over the brain. These points are scattered throughout the surface of the brain. It causes an uneven distribution of dopamine across the brain. This distribution is more concentrated in some areas than the rest. It causes a temporary “high”. Then your brain will cause the rest of your body to seek out sugar to satisfy its craving. Besides, if you are addicted to sugar, your brain will not function properly without taking it constantly. Think about what you could be experiencing when you don’t have the sugar your body is craving. This affects your mental stability, ability to focus, and everything that fires inside of your brain that helps you work on a neurological level is suffering from the lack or overpowering effect of sugar. It’s something that really causes a muddled mind and you’re really going to know it when you cut sugar out of your diet. There’s a sense of clarity in your mind that you don’t experience when your body is deprived of sugar. It’s truly amazing what happens to your neurological system when you inject sugar into your diet.

6. Increased tolerance: Sugar has a permanent effect on your body and mind. This may be eaten for the simple pleasure of eating it. It intensifies the tolerance limit of a person. If you are a sugar addict, you will need consistent levels of sugar to see you through the day. This consistent level may be more than the normal level for an ordinary person. Prolonged use of sugar in addictive ways may have raised the bar on tolerance limit for that particular person. This means that he cannot get through a normal day without consuming his minimum quota of sugar. This minimum quota is most likely to be a lot more than a healthy level. This constant and compulsive seeking of pleasure makes you sugar addict. Pleasure is an amazing thing and it’s an incredible motivator for humans. We want to feel good, we want the escape it offers, and we want to just be free to enjoy what it is we love about the world around us. However, the more you keep enjoying, the more you need to eat to hit that point of pleasure. Tolerance is a terrible thing, because it robs the simplistic beauty of sugar when you eat too much. You won’t be satisfied with the things that you love in a normal quantity. This just feeds the spiral that you’re going down because



on a digestive level, you're no longer satisfied with the basics. It's a horrible thing.

7. Special effort to obtain: This happens generally for children. If you want the addiction cut short for children, they will go through all kinds of deceptions just to have the candy that they want. In this case, they may eat it secretly to get the pleasure. When people only have a small amount of money and they're looking to purchase something tasty, you'll see that they continually buy things that are sugary. Candy, chips, or anything else that is a filler product that is full of sugar will get their desperate, last few dollars. Think about coworkers in the break room. They'll search and hunt for something sweet like sharks in scarce waters. People believe that it is worth the effort to go the extra mile for something sweet. It acts as a motivator for the young people. They will go through things that they would not think of doing otherwise, just because they were offered something sweet as a reward. It's a true problem that affects thousands of people and we take no notice of it. No one roams around hunting for carrot sticks or for a salad. It's only with sugary items that you see this kind of bizarre behavior.
8. Prioritization and ignoring negative consequences: Prioritization is one of the most important symptoms of sugar addiction. Sugar addicted people always prefer sweet items to healthier ones. They will also continue to eat it, even when they are aware of the consequences. This would be very similar to having cravings, except that people who are sugar addicts continue this behavior, regardless of the facts that are presented to them. Negative consequences are fairly obvious and you will see time and time again that people push them aside and ignore them in favor of the sugary product that has their attention. How many of us are overweight, know that sugar is contributing to it, and yet we continually stuff our faces with food that we know is trying to kill us? This is a sign that we have an addiction and one that has a really strong grip on us that we might not be able to escape from. The prioritization where we choose sweet items over healthy ones even when we know what it holds for us in future shows how

much of a motivator sugar can be. Alcohol and drug addicts may also give up their addictions much quickly than a troubled sugar addict. If a person has voluntarily chosen something that he knows is doing him more bad than good, it takes a special kind of willpower and motivation to achieve that level of dedication. The fact that sugar is capable of providing this kind of motivation is very scary and proves that it is an addiction that should be taken more seriously.

## **Chapter 3: The Science Behind Sugar Addiction**

Up until a decade or so ago, the science of food addiction has not been well-substantiated and explained and only a few theories were available to attempt to define even the possibility of such a disorder. Along with the limited hypotheses presented, no hard evidence was released to even support its existence. The human population, taking into accounts the scientists and experts alike, found it extremely hard to be convinced of food addiction. These days, we have seen a turn around on the situation as numerous peer-reviewed journals have been published claiming the existence of such an addiction. In fact, we can now find a great abundance of evidence in scientific journals and professional medical literature which has proven and established the existence of food addiction and using scientific empirical methods to boot their claims. The research on this particular field of interest has become widespread and awakened the interest of many researchers. The birth and boost of high end technology has allowed researchers to conduct experiments that were able to utilize cell and molecular biology, genetics, biochemistry, systems biology, physics, nutrition, medicine and other natural sciences to help strengthen claims of the existence of food addiction. In this chapter we will delve deeper into the science of sugar addiction and try to understand what causes human beings to be at the mercy of sugar. Why are we all programmed to like sugar? Why are others more inclined to sugar addiction than other people? How does science explain the natural urge we people get from sugar and all its affiliates?

### **Genetic Evidence of Sugar Addiction**

New research has shown that although every human being is programmed to like sugar, there are some people who are much more prone to sugar and food addiction than others and it's not just a matter of willpower but they can all blame it on their genetics. This means that for those who are genetically inclined, they find it harder to kick back the sugar cravings than others. Research is just beginning to clarify those polymorphisms of specific genes and alleles may underlie the sweet preference of a particular person in such a similar way that specific polymorphisms underlie the risk for other addictive substance dependency.

It seems that each and every one of us have our own unique way in handling our capability of experiencing pleasure. For others it may require just a minute trigger in their pleasure nerves to experience gratification. For others, on the other hand, they usually require a lot more stimulation to feel pleasure often driving them to a range of addictive pleasures that stimulate the reward center of the brain. This situation is true not only for sugar and food addiction but also with other kinds of addictive behaviors like drug and alcohol abuse, compulsive gambling, sex addiction, compulsive eating, nicotine addiction, or even shopping addiction.

We may often see these addictive behaviors as a failure on one's part to subdue his or her moral choices and a lack of discipline. But scientists have shown that in severe cases, this addiction have to be dealt with more than just mere will power. Experts present that these situations may be true for addicts of all sorts and stripes simply because they were unfortunately born with genetic variations in the reward and pleasure mechanism. In other words, the addicts may have the gene that puts them in a situation where they have more tendencies of becoming addicted to a certain pleasure trigger.

What exactly happens in the human system upon consumption of sugar? The genetics of pleasure is fairly simple and all revolves around a pleasure receptor in the brain called the dopamine receptor D2. Numerous studies have made it clear that the dopamine 2 receptor gene is a critical determinant of the ability to experience pleasure from "normal" life events, such as reading a good book, watching a funny movie, exercising, listening to music, experiencing fun activities with friends, family and close relatives. The dopamine receptor D2 (or DRD2 for short) is a little receptor in the brain that must be activated or "switched on" in order for the human being to feel pleasure. Dopamine is an amino acid that triggers this pleasure response. Stimulating addictions, like sugar, temporarily increases dopamine and this event only happens for short term periods.

However, problem occurs when the DRD2 systems are functioning abnormally and requires much more stimulation in order to exhibit a pleasure response. This condition is true for those with sugar addictions, compulsive eating, obesity, and the like. It has been shown that those who have sugar addiction seems to have fewer of the D2 dopamine receptors, thus requiring extra stimulation in order to "switch on" the receptors which eventually

means that in order for a sugar addict to feel satisfied with his or her sugar consumption, he or she must consume more than the usual amount of sugar. A deficiency in the number of dopamine 2 receptors or “pleasure” receptors is a common marker for increased risk to abuse food, alcohol or other drugs. This phenomenon, sometimes referred to as the reward deficiency syndrome involves a deficiency in the number of dopamine 2 receptors in the brain.

Published journals have shown evidences to support the lack of normal amounts of dopamine receptor D2 and its association with sugar addiction and obesity. Scientists have used functional MRI results to study lean and obese teenagers and they have found out that the obese teenagers whose brains didn’t light up as much in the dopamine reward centers were more likely to be obese and gain weight later on in life. They were also more likely to have the DRD2 gene that coded for fewer receptors.

Likewise, this reward deficiency syndrome has also been shown to be exhibited in animal studies. In recent studies using animal models, ingestion of sugar-rich foods were shown to prime the release of dopamine. A certain example is a study conducted on rats where groups were fed with varying amounts of sugar. Those rats that have intermittent access to sugar will drink a sucrose solution in a binge-like manner, stimulating the release of dopamine within the brain. Additional studies with rats were conducted where subjects were food deprived and then given 12-hour access to a sugar solution then compared to control groups who were only provided with chow feeds. Those animals that binged on sugar solutions had a significant increase of dopamine-1 receptor binding in their dorsal striatum, a condition that is similar to the down regulation of dopamine receptor D2. This excessive sugar intake sensitizing dopamine-1 was shown to be similar in action to the effects of drugs of abuse such as nicotine, cocaine, heroin, methamphetamine, etc.

To be more technical in this reward deficiency syndrome, it has been implicated that the A1 allele of the dopamine 2 receptor (DRD2) is involved in a wide variety of addictive disorders including, but not limited to, alcohol abuse and dependence, cocaine dependence, methamphetamine dependence, bulimia, binge eating disorder, and obesity. The presence of the A1 allele is strongly correlated with reduced dopamine 2 receptor density.

This theory on the dopamine 2 receptor’s link with addiction still invites a

number of questions and there are a number of important arguments in play in this discussion of the dopamine 2 receptor. A particular question to determine is if the presence of an underactive D2 receptor system is strictly a result of genes or is it the other way around where the condition may be caused and/ or exacerbated by sugar addiction, drugs of abuse, binge eating, bulimia and other specific behaviors? This is certainly a particular question that allows room for doubts and spontaneous response and may only be faithfully answered after hopefully years of continued research. However, one thing remains certain in the pursuit for answers on the genetics of sugar addiction, that there exists for certain a dramatic change in the blood chemistry of some individuals with sugar addiction whenever they consume their sweets. In addition, for some individuals the intake of carbohydrate or sweet food creates in them a sensation that drugs of abuse cause. That is, such foods profoundly change brain chemistry in these individuals. For some individuals, it may be said that sugar is their drug, and they have their genes to blame for it.

## **Biochemical Evidence of Sugar Addiction**

### ***The Serotonin or Carbohydrate Craving Phenomenon***

In addition to the effect of sugar rich meals on dopamine release and receptor activity, recent researches have also shed some light on the effects of sugar consumption on the neurobiology system. Sugar, or carbohydrate, craving was hypothesized to actually really be a serotonin or tryptophan craving. In order for communication of information to take place in the nervous center seat of the body – the brain- chemicals throughout the body and the brain are needed to relay signals between nerve cells, called neurons. These communication chemical are what we call the neurotransmitters. The brain uses neurotransmitters to tell your heart to beat, your lungs to breathe, your stomach to digest and your body to crave. Serotonin (5-hydroxytryptamine, 5-HT) is a neurotransmitter that is mainly found in the brain, bowels and blood platelets. It is thought to be especially active in constricting smooth muscles, transmitting impulses between nerve cells, regulating cyclic body processes, regulating sleep and the circadian rhythm and contributing to wellbeing and happiness. This chemical is regarded by some researches as a chemical that is responsible for maintaining mood balance. In fact, serotonin is the primary antidepressant neurotransmitter, but also plays a critical role in

the modulation of pain. Because of its association with the circadian rhythms, happiness and pain, serotonin is believed to have a unique connection with cravings. Sugary food such as cookies and milk, ice cream, cakes and sweet rolls elevate serotonin levels and in the process lifts one's mood, modulates pain and helps one disengage from the challenges and frustrations of a person's day.

Serotonin synapses in the brain signal the provision of physical relief of physical and emotional pain, consequently, someone without enough of this relief neurotransmitter can be quite anxious or depressed. The high concentrations of serotonin become too high and the low concentrations become too low. However, whenever refined carbohydrates in the form of simple sugars, flours and alcohols are ingested, serotonin is manufactured in the body and released. This, to put simply, explains why whenever a person's serotonin level is functioning poorly and life becomes overwhelmed with stress, the individual can get immediate relief by eating sugar. A person easily learns pain relief fairly quickly. Whenever something alleviates the pain, we resort to the process again. If sugar stops pain for a person, then that person will have all the tendencies to eat again whenever he or she is in pain.

Use can lead to abuse and irresistibly to addiction, to the point when the consumption of sugar becomes unconscious and the person has become dependent. If an individual cannot stop the process of self-gratification and medication with food, then the person has crossed over the line of sugar addiction.

Whenever serotonin has reached its optimum concentration, the body is supposed to tell you to stop eating. It is in this halting response feedback of the body that scientists suspect sugar addicts to have a malfunction. So a person's tendency is to eat more than the required dosage of sugar without initiating the trigger signal of its body to stop eating.

Over the past three decades or so a fairly large amount of progress has been made in the understanding of carbohydrate craving in humans. Once again we reiterate that carbohydrate craving may be a craving for tryptophan, the amino acid precursor or substrate of serotonin. This means that serotonin is created biochemically by the conversion process of the combination between tryptophan with another chemical reactor in the body called tryptophan

hydroxylase. In past studies conducted at the Massachusetts Institute of Technology, it was found out that seven specific amino acids, including tryptophan, compete for entry into the brain through an amino acid carrier complex within the blood brain barrier. Whichever of these seven amino acids predominates and is most abundant in the blood, upon intake of a given meal or light snack, will be in control of entry into the brain for a period of four to five hours or in some instances at a longer duration. Every time a person consumes any type of food, the balance of these seven amino acids is varied, based upon the composition of the constituent amino acids present in the food the person ate.

Regrettably, tryptophan is not very abundant in food and its scarcity leads to slim chances of the amino acid entering the brain. Despite anything to the contrary, there is a natural way for tryptophan to be able to enter the brain through the amino acid carrier blood system. This mechanism involves the consumption of a carbohydrate-rich meal or snack. To further elucidate the scenario, allow me to paint an illustration of this mechanism. For instance, upon the consumption of a person of a nearly pure carbohydrate meal of pasta dinner, without meat in the sauce, sides with broccoli and carrots, dinner salad and garlic bread, the natural tendency of that person is to feel sleepy and we expect that person to become unfocused. This is the effect of tryptophan entering the brain and dominating the system for hours. This in turn is due to the fact that a carbohydrate-rich meal causes blood glucose levels to rise. In response to a moderate rise in blood glucose, the pancreas releases the hormone insulin. And as it turns out, all of the amino acids that compete with tryptophan for entry in the brain are sensitized to insulin. So, all the other six amino acids evacuate or partially exit the blood. When this phenomenon happens the ordinarily scarce tryptophan becomes the most abundant of the seven competing amino acids and dominates entry into the brain.

### ***Overeating Stimulated by Endorphins***

Recent research has uncovered another biological explanation for sugar addiction and it has focused on the effects of sugar intake on the endorphin system. Endorphins, or endogenous morphine, are endogenous opioid neurotransmitters. In other words, they are also among the brain chemicals known as neurotransmitters which function to transmit electrical signals



within the nervous system. Food, as well as sex, stimulates the body to produce these brain chemicals beta-endorphins and block pain signals in the nervous system in turn making us feel good. Others often call these brain chemicals as sources of natural “high”. Beta-endorphin is produced by the pituitary gland and is reported to produce a more intense sense of well-being than any of the other endorphin types. Beta-endorphin levels are increased whenever a person craves sugar, simple carbohydrates and some fats.

The degree of increased intense desire for food, or particularly sugar, and the specific foods that cause to increase these cravings vary from person to person. Thus, as previously presented, just as there are those who are more sensitive to pain and more receptive to being medicated by internal chemicals such as serotonin, there are also those who are more or less susceptible to becoming addicted to their own endorphins. These people know that when they eat they trigger the release of satisfying endorphins and whenever endorphins are released they immediately feel better.

This can perfectly explain how easily food becomes addictive like a drug to other people. The next step in food consumption is its increased intake and eventual feeling of “getting high”, leading ultimately to a chemical dependency on sugar and refined carbohydrates and the cycle of sugar addiction begins and deepens making the process of stopping the addiction extremely difficult. When the sugar-addicted individual attempts to cut back on his or her sugar that triggers the release of relief-providing endorphins, the receptors start responding in a negative fashion. This stage of body response is called withdrawal. The person experiencing withdrawal may feel cranky, irritable, and out of his or her wits and the cause of this unsteadiness may be as simple as his or her recent sugar binge. Cravings continue to escalate as the beta-endorphin receptors utter their protests and demands and relief can only be easily attained with the consumption of a can of soda or a bite of doughnut. the physical dependence on sugar to relieve the discomfort of withdrawal reinforces the need to use more and more and the addiction truly settles into becoming a real problem as obesity strikes in and other associated noncommunicable diseases like heart problems, diabetes mellitus, cancer, etc. leaks its way into the victim.

What makes matters worse is the fact that the body’s beta-endorphin reaction is further stressed out during fasting, dieting and other sudden bodily

disruptive adjustments. This makes it harder for food addicts to try to control their weight and food intake by sheer will power and behavior modification. This move often is actually enabling the progression of their biochemical dependency. For those people who have the genetic predisposition to food and sugar dependency, or who have already crossed the line into addiction by binge-eating for long periods of time, dieting may help them lose weight in the short term, but may at times make them actually more chemically dependent on sugar in the long run. But sugar addiction is “curable”, and there are ways for a person who is addicted to sugar to slowly but more surely learn to get rid of the addiction. These will be explained further in step by step details as we progress more into the latter chapters of this book.

## **Chapter 4: The Ten Similarities Between Sugar Addiction,**

### **Junk Food and Abusive Drugs**

Now that we have established that sugar can indeed be addictive there are a number of similarities between this perpetrator, junk foods and even substances of abuse. Not only are the behavioral and psychological symptoms the same but the biology and physiology also happen to agree. The following are ten of the distressful and worrying similarities between sugar, junk food and abusive drugs.

- All flood the brain with dopamine – The human brain is innately programmed to want to execute certain behaviors. These behaviors often involve activities we require for survival, and this includes eating. Whenever we eat, a brain hormone called dopamine is released in an area of the brain called the reward system. The body interprets the dopamine response signal as “pleasure” and the programming in our brain changes to make us want to perform the behavior again, to replicate the feeling of pleasure received when we release dopamine to the brain. This is one of the ways the brain has evolved to help us navigate through our natural environment, one of the coping mechanisms that the brain motivate us to do things that help our species survive through generations. Dopamine is essential in the human system, however, with the advent of our current society and its free access to junk and sugar loaded food or even substance of abuse, there are some things that can function as “superstimuli”. Superstimuli flood the brain with dopamine in a manner that is way more than what we were exposed to throughout evolution. This irregularity can lead to the brain pathways to be seized by the intense dopamine signal.
- The classic example for this brain arrest is the effect the drug cocaine has whenever a person ingests it. Upon intake of cocaine, it floods the brain with dopamine and the brain short circuits into the addictive action of wanting

to take in cocaine over and over again in an abusive cyclic manner. The dopamine pathways that are once our internal guide towards survival have now been taken over by the new stimulus, which releases dopamine and is a much stronger behavioral reinforcing stimulus than anything else previously introduced into the body. This same effect cocaine has is especially the observed in junk and sugary foods.

- Numerous studies have been shown to prove this to be true, where sugar and junk food flood the reward system with dopamine, particularly the brain area called the Nucleus accumbens which is strongly implicated in addiction. This explains why highly processed, sugar-laden foods can make people lose control over their consumption. They have the same disabling mechanism in the brain as drugs of abuse.
- All lead to powerful cravings – Cravings are often mistaken as hunger, but the two are definitely not the same. Hunger is caused by interplay of complex physiological signals that involve the body's need for energy and nutrients. On the one hand, cravings are usually exhibited even after having finished a fulfilling, nutritious meal. Cravings are not just about hunger's satisfying the body's need for energy, instead its is satisfying the brain's need for "reward". Where hunger is driven by the body's need for energy, craving is driven by the brain's need for the dopamine fix.
- This drive for a rewarding food is indeed not natural and has nothing to do with a person's need for survival. These cravings are very similar to cravings addicts have for drugs, cigarettes or any other addictive substance or experience. The obsessive nature and thought processes are identical.
- All light up the same brain areas – Thanks to modern

medical technology, modern researchers now have means of tracking activity in the brain during selected situations. Functional magnetic resonance imaging (or MRI) scanners enable real time monitoring of changes in blood flow in specific areas in the brain. And because blood flow is directly linked to the activation of nerve cells, or neurons, researchers can use functional MRI's to measure and determine which areas in the brain are being activated. Using such devices, researches have shown that all sugar, food and drug activate the same brain regions.

- All create a tolerance to the “reward” effects in the brain – During the time when the brain is bombarded and saturated with dopamine, a protective mechanism instantly ensues. To cope with the flooding of dopamine, the brain starts to reduce its number of receptors for the reward hormone in order to keep things balanced. This downregulation of receptors initiates the development of tolerance. This feature is well known for drugs of abuse and as a consequence, people who have higher tolerance need progressively larger and larger doses of the substance because the brain has reduced its number of receptors. In order for our body to get the desired pleasure response, we must expose ourselves to more amounts of it, at times at a ridiculous volume.
- All causes bingeing – When addicts become tolerant to the effects of a drug, they start increasing the dosage. Because of the reduced number of receptors in the brain, a larger dose is required to attain the same effect. This is the reason why people resort to food, sugar or drug bingeing.
- Cross-sensitization – This feature has been observed in lab animals where addictive substances were introduced into their systems. These lab animals that were shown to have become dependent on sugar can easily switch to amphetamine or cocaine. Cross-sensitization involves being able to make a swift shift easily from one addiction to

another.

- Drugs that fight addiction are being used for weight loss – One useful argument for the addictive nature of sugar and junk food is that the same drugs that help counter addiction also has the same effect to help junk and sugar addicted people counter weight gain. A particular example of this drug is Contrave, which has recently gained the approval from the Food and Drug Association (FDA) as a weight loss drug. Contrave is a combination of two other drugs that help counter two other drugs of abuse addiction, nicotine and alcohol, morphine or heroin. One part of the Contrave drug, Bupropion (also known as wellbutrin) is an anti-depressant that helps to fight off nicotine addiction and the other part of the drug, called Naltrexone, is used to treat alcoholism and addiction to opiates, including morphine and heroin. This same effectiveness of these drugs implies that food may share some of the same biological pathways as narcotics.
- Abstaining can lead to withdrawal symptoms – Withdrawal as previously stated is another key feature of addiction. Withdrawal happens when addicted individuals experience adverse symptoms when they stop consuming the substance they are addicted to. An outstanding example we may all be familiar to when it comes to withdrawal symptoms of addiction is caffeine withdrawal. For people who have been highly dependent on caffeine for too long experience surges of headaches, fatigue and irritability the moment they abstain from coffee for a long period of time. Evidences suggest that this is applicable to junk food and sugar as well. Animal studies on rats that have been made dependent on sugar exhibit clear withdrawal symptoms the moment the sugar is removed in their diets, or when they are given a drug that blocks the effects of sugar in the brain. The symptoms include teeth chattering, head shakes and forepaw tremor, similar to the withdrawal symptoms experienced from opiate addiction.

- All are seriously harmful to physical health – Junk foods are unhealthy, sugar lacks nutritious calories, and substances of abuse are definitely not required for the body's optimal function, if anything these drugs cause the opposite of promoting health. However, even if people are already aware of such negative effects of these addictive substances, they will still reach for these non-nutritious junks, empty calorie sweets or brain damaging chemicals, and even in excessive quantities despite knowing better.
- All their symptoms satisfy the official medical criteria for addiction – Although there is no standard method in measuring addiction, such as clinical methods like blood examinations, breath analyzers or urine tests. There is a diagnosis that can be conducted based on a set of behavioral symptoms. The official criterion used by medical professionals is what we call the DSM-V. Their criteria for "Substance Use Disorder" resemble many of the food-related behaviors. Classic signs of addiction like being unable to cut back despite wanting to, cravings and urges to use the substance, and continued use despite arising physical problems are all observable for sugar, junk and substance of abuse addiction.

## **Chapter 5: Withdrawal Symptoms of Sugar Addiction**

There are some deadly and disastrous withdrawal symptoms of sugar addiction. When the sugar addict comes off sugar, they face lots of problems that are part of the withdrawal process. It is really very easy to be addicted to something but it is two times more difficult to come out of that addiction. When you break your sugar addiction, you may face weird things happening to you as a consequence. In an addiction, the people involved become addicted to the substance on a very unhealthy level. Some withdrawal symptoms are discussed below so that you can recognize them instantly.

1. **Feeling sad and down:** The person who just cuts off sugar addiction may feel extremely sad and down. This is because the person was accustomed to sugar and had complete dependence on sugary substances. And now he is left alone having nothing. This sudden change in routine has an effect of a shock on him. It will take some time for the addict to get his metabolism back to normal. Until then, his body will constantly remind him about his dependency on sugar. As an addict the person may have already developed a tolerance to sugar. So if he does not get that level of sugar every day, he is expected to go into tremendous depression and lack of motivation. As far as the addict is concerned, he has lost something vital to his existence. The effect of changing the habit is that the addict feels deprived and sometimes at a loss. This is because you're suffering from a lack of energy that has been deprived from your body. Your physical reactions are also bound to take notice of this fact. The pancreas has become used to secreting more insulin for an addict. So when there is no sugar to accommodate it, all that insulin goes to waste. The over secretion of insulin is going to cause extreme lethargy and you are going to end up tired very quickly. Your body may not respond as fast as it used to. You will notice the change in response level very quickly. You will seem out of breath after climbing a flight of stairs that you could have climbed with ease on a normal day. There's something missing in your metabolism and in your basic chemistry and that missing element is sugar. This sensation may make you



feel like you are running your body on empty. Your body needs to have some source of energy to get you going and you've pulled the rug right out from underneath you. Now, it's just running on fumes. In order to get your body back up on that level, you're going to find something new and different to get rid of this fog that is hanging over your body and your emotions. The gap that your sugar addiction left on your routine and in your functions has been plugged by something else. Just make sure not to plug it with something addictive this time.

2. Extreme fatigue and tiredness: One of the noticeable signs of sugar withdrawal is feeling fatigued and tired. The addicted person may feel extreme tiredness if he withdraws from eating sugar. This isn't necessarily a mental issue as it is a physical condition. Like the sadness and the depression that you might be suffering from with a lack of sugar, your muscles are going to react to the same thing as well. Your muscles have been running on an artificial energy source when they need protein and other nutrients that will give muscles some healthy and durable support. So, when you're taking away this artificial substitute that your muscles have not been used to for so long, they may feel like they are dying. They aren't getting the real deal and now they're not getting this substitute that you were giving them. Since an addict consumes a whole lot more sugar than the recommended level on a daily basis, your metabolism is provided with a ready energy source to burn. This energy source is usually more than enough to see you through the day. The metabolic system chooses the more easily available source over the conventional way leaving some muscles and tissues unused and dusty. When you give up sugar and put yourself through some heavy exercise you will notice that you cannot keep it up for long. You will run out of breath, get cramps and possibly injure yourself. This is expected because the body will need time to get used to switching back to the normal functioning mode from the artificial energy it had been favoring for so long. So now, you're left exhausted and very tired even after doing the simplest task.

3. Headaches: Initially, some people feel headaches when they

remove sugar from their diet. This headache is most likely caused by the altering of the eating habits or exemplified from the growing tension the addict faces. So, the addicted person may feel headache primarily if he withdraws from sugar consumption. This withdrawal is what's going to bring your mind to this painful point. When you take sugar from your diet, it's like reaching into a car, grabbing a handful of wires, and then ripping them out. The machine doesn't work and it's super painful and that's what is happening to your body when you deprive it of sugar after establishing it as a vital presence in your body's sustenance program. The addict is bound to suffer from such headaches as his source of getting high has been abruptly cut off. The reward center in his brain would have gotten used to secreting large amounts of dopamine. So when there is an abrupt stop of that source, the cerebral cortex will take time to get accustomed to it. This gap between giving up and everything going back to normal is going to be extremely painful and not a very rewarding experience. One of the best ways to prevent these headaches or reduce its magnitude is to phase out the addiction rather than attempting to bring it to an abrupt stop.

4. Sleep patterns may be affected: During the withdrawal, you may notice some changes in your sleep patterns. The changes are so spontaneous that they may affect sleep to some extent. A disturbance in the diurnal pattern of a human being is common when experiencing a drastic change in one's immediate environment. This change in pattern is usually not a big deal and gradually settles into rhythm after some time. With a sugar addiction it is a completely different scenario. Since sugar is a part of our daily diet, the metabolic system makes certain allowances for it. So a sudden absence of sugar in your system will render the general functioning of your body unstable. One of the systems most affected would be the sleep cycle. Sugar usually helps people stay awake late into the night when they have a ton of work to do. An absence of it will have this same effect on you for a few weeks at least, where you will feel exhausted but unable to fall asleep immediately. You may find changes in your energy levels, arousal

and mood. All of the issues are thought to have a great impact on your sleeping patterns. So, it will be wise to take it lightly if your sleep pattern is affected due to sugar withdrawal. There are always ways to counter this struggle that you're having with supplements like melatonin and other healthy ways of getting your body comfortable again with sleeping like a normal person. This can be hard and you may feel even more exhausted from this, but it will pass. That much I can guarantee you. However, this is going to give you an excellent glimpse into the strange neurological relationship that sugar has with your brain. Your dependencies are so deep with sugar that you can't even help your body recharge and relax when it's so exhausted all the time. Dependency is such a dangerous thing and it's going to be hard for you to recover from it with a disturbed sleep cycle, so it's wise to find a supplement that can help you.

5. Intense sugar cravings: After quitting sugar, you may feel an intense desire to have sugar and to break the diet. And it is the most obvious withdrawal symptom an addict may face. The craving for sugar intake may be intense and difficult to overcome. You can recover from these cravings if you follow a disciplined life and self-denial. You can remove sugar or sugary substances from your kitchen cupboards and if possible out of your reach in order to curb intense sugar cravings. These cravings however, are going to ramp it up to level eleven in your mind and in your day to day life. It's going to be extremely difficult for you to battle these cravings. Having a healthy substitute and drinking lots of water is going to be your best defense against the argumentative mind that you're going to quickly develop. Remember that cravings will pass in time and they won't have such a rampant and dangerous hold on you, but in the meantime, you're stuck with them. All you can do is dig your heels in the sand, grit your teeth, and fight them off as well as you can. Remember, giving into intense cravings only makes it harder for you to keep fighting them off in the future. This method is usually hardcore and cannot be followed by weak willed people. In some cases, the dependency level is so high that you go out of control when faced with a situation where you are

absolutely cut off from sugar. The best method for people like this would be to gradually phase it out as opposed to cutting it off in one go. Reduce portions of sugar in your diet gradually. This method will give you the same result but it will take longer. It is recommended for weak willed people who might become unstable with the hardcore treatment.

6. Anger and anxiety: Many individuals have reported recently the feelings of anger and anxiety after giving up sugar intake. Besides, a recent survey shows that addicted people, after quitting sugar intake, may become angrier and their anxiety increases to some level. It is well known that sugar can have an influence on dopamine levels and activity. And these feelings of anger and anxiety are the likely caused because of changes in those levels. But these two withdrawal symptoms may vary from person to person. It is just a matter of being able to wait it out, and everything will be normal after few days. Your body is reacting to a sudden and devastating change that is affecting it on a molecular level. It's vital that you understand that this is not something that you're choosing to lash out about, but rather than you're suffering and responding to an incident that your body isn't able to comprehend. As we have seen earlier, sugar is capable of releasing dopamine to high levels, when you give up sugar after being addicted to it for quite some time these levels of dopamine and other secretions seem quite pointless when they do not have any sugar to deal with. These timely secretions will happen for a few days after you stop. It will gradually reduce and go back to normal when it sees a period of consistent ban of use of sugar by the person. However, during the initial days after the stopping of sugar, these levels of dopamine and other hormones are going to fluctuate in a very unstable way. Since these secretions are also responsible for determining a person's mood and behavior. It is normal for you to have unreasonable fits of anger and episodes of low tolerance. The fluctuations cause you to be on a short fuse. You will throw a fit of anger at the slightest excuse making yourself extremely unpleasant and anti-social. When tensions rise, you just need to remember that you're in a position that requires

you to take a break, go for a walk, or just put some distance between you and whatever stressful stimuli is eating away at you for the moment. Getting away is going to be the smartest and the safest way to ensure that this rising anger and anxiety doesn't affect anyone that you know. After all, the last thing you want on the road to a healthier life is making enemies as you go. So keep your chin up and keep pushing forward. Let whatever is bothering you go. Let it slide off your back and tell yourself it is just part of the withdrawal process. Running away from problems when you are not in control of your senses is not cowardice. Rather it is the smartest move you could pull off at that time. Taking stressful stimuli head on when you are on a short fuse may not always have the best results. The ultimate aim of this treatment is to ensure that you grow out of your addict persona into someone more acceptable and pleasant. This result cannot be achieved if you choose to throw fits of anger at everyone who chooses to cross your path while you are recovering. Once you are recovered you might wake up to face a reality where the people will judge you based on your violent acts during rehabilitation. So keep your head low while recovering.

7. Depression and dizziness: People can face a crash of mood and can feel dizziness when they first come off sugar. Sugar intake may make someone feel like his/her depression and anxiety levels are better but this is not the solution because excessive use of sugar can cause you much more long-term harm. But not everyone will experience depression and dizziness when they stop consuming sugar. Depression is a state of mind and consciousness. Depression is harmful for body, mind and soul. Firstly, your mind won't function properly after giving up sugar. But all these conditions are temporary. You will be more sound and healthy after saying goodbye to sugar and sugary substances. What this leaves you with is the reality that you're going to need to find a way to start dealing with your emotional problems on a very real basis. When you take away the crutch that you've been using as a support in avoiding your problems, that leaves you with the gaping reality and you've got to fill that need somehow. In the end, you're going to need to know what you plan on doing. Having a plan is going to help you

manage the emotions that require an outlet and an avenue for you to express yourself and to cope with situations that cause depression and emotional stress.

8. Intolerance, irritability and changes of appetite: Sugar consumption can lead people to experience intense cravings for carbohydrates. But if you stop sugar, you may notice some fluctuation in your eating habits. Primarily you may eat more or less of one kind of food, but over a period of time, this balances out. Besides, after quitting, you may fall a prey to intolerance and irritability. Intolerance and irritability are the most likely symptoms of withdrawal from sugar consumption. But these signs are also temporary if you can cultivate the bait properly. Imagine your mind is so desperate for sugar that everything has been put on high alert in the hunt for something that will offer sustenance and enjoyment out of life. Everything is going to grate against you that isn't sugar based and being hyper sensitive isn't going to help the situation, but that's where you're going to find yourself. If you find that you're being irritable and intolerant toward others and have started lashing out, then I would suggest that you consider apologizing to people you meet and making it common knowledge that you're suffering from withdrawals right now. They'll understand that this is only temporary and that you're not exactly yourself right now. Gaining family support is vital.
9. Insomnia and weight loss: Dropping sugar primarily results in changes in sleep patterns and arousal. You may experience insomnia and weight loss. You may not be able to sleep soundly at a proper time and arousal can be an impediment in your sleep. Besides this, you are likely to find that you are losing weight. But you can follow some relaxation exercises regularly before going to bed and that will ensure a sound sleep and help your weight to become stable. Sugar in large amounts is capable of single handedly piling on the pounds. So, a lack of sugar is bound to reduce your weight really fast. In some cases, by a huge margin depending on your addiction level. This might seem pretty frightening because it will be quick and drastic. As for weight loss,

this is a desired effect that everyone is going for and it's a great way to keep you motivated to start turning your life around. Adding a little exercise to your life will help tone your body and also assist your sleep patterns. Sugar is a way of poisoning your body and mind into thinking that it's receiving sustenance and, in reality, you're just packing on fat and encouraging fat development. By taking away sugar, you're going to start seeing symptomatic weight loss, which is great, and hopefully it will inspire you to keep going by defining your health and your lifestyle choices.

10.       Mood swings: when you put aside sugar from your diet, you may experience minor mood swings. For children, the impact is to some extent difficult. They become intolerant, depressed and unwell sometimes. Minor depression, anxiety and negative feelings may arise but it's only a question of time before life gets back to feeling great. This lashing out can turn violent or turn into tantrums that really test your parenting or tolerance levels, but just keep in mind what is happening to them. They are rewiring their brain and that's never an easy task and it's something that very few people have experienced. It's a lot to throw onto a child and they're entitled to be a little upset about it. Again, just make sure that you're tolerant and that you're understanding in the days where they experience their withdrawals the most heavily. Cut them some slack and remember that this won't last forever. It's just a matter of time before life starts to get back to normal.

## **Chapter 6: Consequences of Sugar Addiction**

Some people consume sugar in such ways that aren't healthy and sound at all. Rather excessive consumption of sugar and sugary substances are detrimental for their body and their mind. Besides, sugar is known to create addiction. If you are addicted to sugar, it will be very difficult to recover from that addiction. Sugar paves the way for over eating and gaining weight. Also, sugar has a powerful impact on the reward centers of the brain like the impact of heroin, nicotine and cocaine.

Sugar hastens the process of becoming overweight, causes cravings and many other psychological problems. Sugar addiction has also some impact on your mood, learning and quality of life. Eating too much desert and processed foods containing large amounts of sugar can contribute to physical problems like obesity and type-2 diabetes. Sugar and other sweeteners like high fructose corn syrup, honey, maple syrup and molasses can cause not only inflating waistlines but also several psychological problems like depression, anxiety, intolerance and irritability as well. So, the consequences of sugar addiction are devastating and catastrophic. By over stimulating the reward centers of your brain, sugar can alter your behavior and attitude. The consequences of sugar addiction are broadly discussed below.

### **Obesity and weight gain**

Excessive consumption of sugar and sugary foods are the likely causes of obesity and weight gain. It is universally acknowledged that sugar makes you fat. The more you consume sugar, the fatter you will be. The human liver converts the sugar and sugary substances we eat and drink into fat. And normally the sugar addict gains weight and becomes fat spontaneously. Remember that this isn't actually something that happens overnight. You continually force your body to consume a false substitute for good nutrition and your body reacts accordingly by storing it up for harder times down the road. Obesity and weight gain is one of the most devastating and difficult things that your body can suffer and all of the symptoms that follow because of weight gain are horrifying and very difficult to reverse. Whether it is joint stress or devastation to your blood vessels, there is so much damage that is done to your body because of gaining weight. Weight gain is really just the



doorway to future problems that are all sitting on your horizon, waiting to strike against you. These can include heart problems and serious illnesses, which can be fatal.

The World Health Organization provides a formal definition of obesity as a medical condition in which excess body fat has accumulated to the extent that it may have negative effects on health, leading to reduced life expectancy and/ or increased health problems. The most common cause of obesity is the combination of excessive food energy intake, deficiency of physical activity, and genetic susceptibility, although a few cases may be attributed to genes, endocrine disorders, medications, or psychiatric illness. Accumulation of fat, or triacylglycerol, is essentially the only way that body weight can become excessive, as other energy storage for instance carbohydrate glycogen in liver and skeletal muscles, does not have the potential of adipose (or fat) tissues to exceed the limit of requirements. If glycogen stores are full, glucose will then be stored as fat. This is where the massive intake of sugar will also eventually be converted to fat and thus the obvious and marked increase in weight for a person with sugar addiction.

For most obesity problems, sugar and other junk foods are the culprits that are the biggest hurdles between you and your ideal weight. Sugar cravings and addictions trigger you to overeat and will inevitably make you fat. Because body fats are the only sure markers of obesity, it has long been thought of that fatty foods are the only ones that could make a person fat. However, much research has already been conducted showing that processed foods, and sugar-laden sweets and treats are more to blame than the essential fats we often deny ourselves in our diets. Sugary foods are high-glycemic and are digested faster than all the other food groups. This instantaneous digestion causes a release of sugars into the bloodstream and the rapid overload of the system so that cells begin storing fat at an accelerated rate. This triggers a bigger insulin response in some people, causing calories to be quickly stored rather than kept available for quick energy. The result of this process is the fast turnover of hunger and our immediate impulse to eat more. Therefore, we gain weight rapidly.

Sadly, our society does so little or close to no help at all in our struggle to rid ourselves of the harmful processed sugar. The average American eats sixty to ninety pounds of sugar per year and these they attain from high-fructose corn syrup, dextrose, invert sugar, fructose, barley malt, cane sugar, malt syrup,

and all the other sugars that are added into conveniently sold food and often these nasty sugars are hidden in processed food. The truth of the matter is, there is not any tad bit of nutrition that anyone can get from processed sugar. Eating these highly calorie-laden food does not contribute at all to your overall wellness and good health.

Most of the empty calories we intake that cause us to gain weight measurably come from non-diet soft drinks, candy, sweet baked goods such as cakes, cookies, muffins and doughnuts, ice cream, and sweetened fruit drinks. At the top of the list are soft drinks which are all calories and sugar and no beneficial nutrient at all. They contribute one-third of the added sugar in our average diets, which is not utterly surprising once you've come into terms with the analogy that one twenty-ounce bottle of Coke has seventeen teaspoons of sugar. And these foods are fast becoming the favorite of our children, making childhood obesity increase at an alarming rate every year. Childhood obesity has been known to be a high risk of adulthood obesity and a precursor of the many preventable diseases associated with obesity.

The medical condition of obesity is one of the leading preventable causes of death worldwide. In fact, it is commonly recognized that the prevalence of overweight and obesity is increasing around the world and that the overweight are becoming obese, and the obese are becoming more severely obese. A recent report by the Institute for Health Metrics and Evaluation (IHME) in 2013, covering a data from 188 countries determined that 30% of the world's population is either overweight or obese. That is a total count of 2.1 billion people, and growing! More than 50% of the world's 671 million obese live in 10 countries (ranked beginning with the countries with the most obese people): US, China, India, Russia, Brazil, Mexico, Egypt, Germany, Pakistan and Indonesia.

### **Compulsive behavior and changes in attitude**

People consume or intake sugary foods not because they are weak willed, gluttons or have personality defects. It is likely caused by a substance named fructose, which is latent in our food supply. An overly sugar addicted person behaves in a compulsive way and changes attitude frequently. Their compulsive and uncontrolled behavior and changes in attitude are the result of excessive sugar intake. You have to start thinking of sugar as a drug, because it has all of the components that you would identify a drug as having.

It can cause changes in attitude and the birth of compulsive behavior. You want a fix. It's subtle and it's socially acceptable, but it's still a drug that is rewiring everything that is in your life. It is something that is going to start changing your brain patterns so that you begin to seek out and hunt down sugar wherever you can find it. This is going to mean doing things that you should never or hardly ever do, like stop at vending machines or gas stations for sodas or snacks.

Compulsive binge eating is a type of reward-seeking behavior, which as we have said can be likened to drug addiction. The major difference between substance drug abuse and overeating is that the latter activity is a necessity for survival. Since eating is required for survival, and is not an entirely out of the ordinary activity like drug use, researchers had to pick apart brain circuits involved in compulsive eating behavior against normal eating habits in order to effectively study and differentiate compulsive behavior associated with sugar addiction. Researchers have indeed found evidences showing that compulsive overeating also stimulates the same neural pathways and brain regions that are associated with other addictive reward-related behaviors such as sexual activity and drug substance abuse. A team from the University of North Carolina School of Medicine similarly tested this theory on mice and found out that the region of the hypothalamus responsible for both feeding and reward-seeking behavior is involved in the condition and they have further uncovered distinct subsets of neurons that either mediate food-seeking behavior or respond to reward consumption. And most recently, for the first time a team of neuroscientists from the Picower Institute for Learning and Memory at the Massachusetts Institute of Technology have untangled the two closely linked process of reducing the drive to eat unhealthy foods without affecting the desire to eat healthy foods when hungry. the study led by the principal investigator Kay Tye have demonstrated this breakthrough on mice by showing that inhibiting a previously unknown brain circuit that regulates compulsive sugar consumption does not interfere with eating. This remarkable find is a huge step forward in developing noninvasive therapeutic ways to address compulsive overeating and sugar addiction and has paved the way for more studies in the field of abusive behavior in food addiction.

## **Depression**

Sugar can provide a quick energy boost for a short period of time but eventually it can cause irritability, intolerance, fatigue, poor concentration

and mood swings. Once sugar is ingested, whether in a form of a heavy carbohydrate-loaded meal or a quick snack from the pastry shop, insulin is released. Immediately, insulin begins to direct the glucose into your bloodstream and this simple sugar is led to your brain where it is readily burned up upon use. This process is remarkably faster during times of increased stress and emotional instability. Taking into consideration that the brain cells require twice as much energy as any other cells in your body, it comes as no surprise then that your head is extremely sensitive to changing blood sugar levels. This sugar rush is also accompanied by the release of pleasure-initiating endorphins such as dopamine and serotonin, which is the reason why you would initially feel happier and calmer. However, these receptor sites slow down production to regulate the same endorphins that had you feeling so good, causing an inevitable crash in mood and the probable cause of your depression. After this high-low stage, the cycle starts anew and we reach for more sugar to again initiate the high.

Sugar may accentuate the risk of depression and ultimately it can cause schizophrenia. Research has tied heavy sugar consumption to an increased risk of depression and worse outcomes in individuals with schizophrenia. There have been a couple number of theories explaining the link. Sugar suppresses the activity of a hormone called BDNF that is low in individuals with depression and schizophrenia.

Chronic inflammation is also the result of sugar addiction, which hinders the immune system, brain and other parts of the body and causes depression and anxiety. Interestingly, countries with high sugar intake also have high rates of depression. What goes up must come down and when sugar begins to leave your system, you are experiencing the low of a high that you have inflicted upon yourself. This is another indication that sugar is acting like a drug in your life and that you need to take action right now to stop it from taking over what it is doing to you and how you handle your life. Depression is a very dangerous thing in your life and it affects many of the actions that you take during the course of a day. Take control of your life and pull yourself away from depression and remained focused on the good things in life.

### **Anxiety and disability to cope with stress**

Sugar addicted people generally suffer from anxiety and nervousness. And ultimately they will be unable to cope in stressful situations. Then a feeling of

depression and fear appears in their mind and they break down unnecessarily in a stressful situation. The reason this happens is that they are infecting their mind with a nervous stimulant and using it as a coping mechanism. "I feel bad, so I'm going to buy a Coke to treat myself." This is not a statement that makes any sense. All it does is built up the jittery anxiety that you are probably suffering from and forces you to find a false way of confronting stress and the emotional troubles in your life. This is not an acceptable way of dealing with the problems in your life and is the kind of attitude that is displayed by an escapist.

Contrary to what most literatures present, sugar does not directly cause anxiety. Anxiety is a mental health issue and its association to be caused by a certain diet is very uncommon. What sugar does do, on the other hand, is create changes in your body that may help worsen your anxiety symptoms, or cause feelings that trigger anxiety attacks. The Standard American Diet, which is full of sugar and fat, does not necessarily cause anxiety but it does appear to worsen anxiety symptoms and impair the body's ability to cope with stress.

When one person suffers from anxiety attacks, the person involved tends to become hypersensitive to his or her body. The person starts to fear his or her anxiety attacks, and the person notices every single time he or she feels tired, lightheaded, sick or any other form of discomfort. The person is highly sensitive to any form of ache and pain, and he or she notices whenever he or she is not thinking clearly. In turn, every time the person notices any of these changes, his or her anxiety spikes as a result. A sugar high and subsequent crash can cause shaking and tension, which can make anxiety worse.

As I've mentioned, sugar itself does not necessarily cause any of these sensations. What sugar does is it stimulates various sensations in the body. Glucose, as well as the insulin released to counter glucose, can cause fatigue, trouble thinking, blurry vision and general ill feeling. For those without anxiety, many of these symptoms go unnoticed. But for those with anxiety, each and every one of these rather less serious symptoms makes them worry that a panic attack may strike along with the increased fear of the likelihood of getting one.

Animal research seems to confirm with these symptoms associated with anxiety and its association with sugar intake. A study conducted in 2008 found that rats went on a sugar binge and then were deprived of food seemed

to have a dopamine imbalance that lead to increased anxiety. Another research published in 2009 found that long term sugar use seemed more likely to impair memory and reduce the ability to fight anxiety. Details on the mechanisms of these observations are still unknown and biological processes involved are yet unclear. However, these results suggest that sugar may well affect a person's ability to live with anxiety, regardless if it is not causing the anxiety itself. While dietary changes alone cannot cure anxiety, they can minimize symptoms, boost energy and improve the body's ability to cope with stress.

### **Bacterial infection and decline in tissue elasticity**

Excessive sugar intake disables the body's capacity to defend against bacterial infection. Sugar is what bad bacteria, or germs, feed on. Most often than not, chronic recurring bacterial infections are present in persons whose nutrition contains a lot of sugar. Diets rich in soft drinks, sweetened juices, junk foods, and sweet treats loaded with added sugars help the proliferation of bacteria and thus worsening cases of bacterial infection. In order to stop having these recurrent bacterial infections, you must stop feeding these infectious bacteria. Cut out on added sugars in your diet and drinks and load up on the good bacteria, probiotics, instead.

Sugar depresses the immune system by competing with one substance that is highly needed by white blood cells so that they could phagocytize viruses and bacteria. Phagocytosis is the process of the white blood cells where it engulfs harmful microorganisms that have found its way into the bloodstream and causing harm for the body. In order to effectively do this, the white blood cells require a fifty times higher concentration of vitamin C inside the cell as outside, so the immune system's white blood cells must accumulate vitamin C for impending threats from bacteria or viruses. The thing is, glucose and vitamin C have similar chemical structures, so what happens whenever the sugar levels go up is that each compete with one another upon entering the cells. And the thing that mediates the entry of glucose into the cells is the same thing that mediates the entry of vitamin C into the cells. If there is higher concentration of glucose, naturally less vitamin C would be allowed to enter into the cell. And the effects are hugely devastating. A blood sugar value of 120 reduces the phagocytic index by 75%, so eating sugar at high amounts would mean slowing down your immune system down to a painstaking crawl.

Sugar also reduces the function and elasticity of the tissue. The more sugar you take, the more elasticity and tissue function you lose. So, bacterial infection and decline in tissue elasticity are caused by excessive sugar addiction. This fact has long been presented by the New York Academy of Science and the Scientific American in May of 1987. What they found out was the most probable reason behind premature aging upon high consumption of sugar is the immune system overload. The reason that this should alarm you is that most of us are ingesting far more sugar than we ever should and this is a caustic material that is sitting inside of the body, eating away and destroying you. You need to get it out of your system and out of your life as quickly as possible. If you open the doorway to infection and tear down your body at the same time, there is no way that you're going to be able to effectively fight off any kind of a disease or illness that your body attracts. The weaker the body, the more you're going to suffer from illness.

### **Cancer and heart disease**

Sugar laden foods are high in calories but they are also low in nutrition and fiber, which lead us to eat more. The more you eat, the fatter you will be. This will ultimately lead you to obesity and increase the risk of cancer and other health problems. There has been a saying going around that “sugar feeds cancer”, and sugar is cancer's preferred fuel. In order to slow down the growth of cancer, patients must make it possible for their immune system to catch up to the disease. And, as previously explained, sugar's competition with vitamin C decreases the immune systems defenses. To ensure the immune system is getting its best foot forward, cancer patients must include strict or absolute abstinence of sugar in their diets. In fact, controlling one's blood glucose levels through diet, exercise, supplements, meditation and prescription drugs, whenever necessary, is probably one of the most crucial components to a cancer treatment program.

To understand better how “sugar feeds cancer”, we must look into the mechanism behind the proliferation of cancer cells and how they multiply into its host. In 1931, the Nobel laureate in medicine Dr. Germam Otto Warburg first discovered that cancer cells have a fundamentally different energy metabolism as compared to healthy cells. He has observed that malignant tumor cells frequently exhibit an increase in “anaerobic glycolysis”. Anaerobic glycolysis is a process by which glucose is being

utilized by cancer cells as a fuel alongside lactic acid as an anaerobic by-product; this is in comparison with normal cells which makes use of the aerobic mechanism of fuelling the cells. The large amount of lactic acid produced by this fermentation process of glucose by the cancer cells is then transported towards the liver. This process of anaerobic glycolysis of glucose to lactate creates a lower, more acidic pH environment in cancerous tissues as well as overall physical fatigue from lactic acid build-up. This in turn explains why larger tumors tend to exhibit a more acidic pH. For cancer therapies to be effective, therapists must focus on this mechanism wherein cancer cells derive most of its energy from anaerobic glycolysis. The goal should be not to eliminate sugars or carbohydrates entirely from the diet but rather to control blood glucose levels within a narrow range to help starve the cancer cells and boost immune function. This can be accomplished by means of diet, supplements, exercise, medication when necessary, gradual weight loss and stress reduction.

Besides, sugar is a problematic substance and intensifies the risk of heart disease. There is a strong link between heart disease and sugar consumption. People who eat 25 percent or more of their calories from added sugar have the potentiality of having low levels of healthy cholesterol, which facilitates the risk of heart disease, stroke and other bodily problems. Having health problems is going to shorten your life and it's going to decrease the quality of the life that you're able to have. You don't want to have to worry about whether or not you're going to make it in the coming years or if you can look forward to decades and decades ahead of you. Everyone wants to feel like they have a chance at a life that is going to be rich and fulfilling, but cancer isn't on the list of things that you want to experience in that time. Another thing is that heart disease is something that can be completely avoided if you monitor the amount of sugar and regulate the amount of exercise that you have on a daily level.

## **Type-2 diabetes**

Diabetes is a problem with your body wherein it causes blood glucose levels to rise at a higher rate than normal. This condition is also called hyperglycemia and type-2 diabetes is the most common form of diabetes. A person who has type 2 diabetes is not able to utilize insulin properly. This condition is also known as insulin resistance. Insulin is required to help check



the levels of glucose in the blood stream and make sure that they are at favorable levels. Initially, the pancreas will make extra insulin to make up for this lack of insulin. However, over time the pancreas won't be able to keep up with the body's demand and won't be able to make enough insulin to keep the blood glucose levels at normal values.

Diabetes is a common, serious and expensive disease. This disease affects around 3-4% of the UK population and more than three quarters of people with diabetes have type-2 diabetes which is non-insulin dependent diabetes and heavily relies on diet and/ or oral agents to control blood sugar levels. This is as opposed to the type-1 diabetes which is hereditary and not diet related. Type-1 diabetes develops when most or all of the cells in the pancreas that produce insulin are destroyed, most of people inflicted with this disease are under the age of 40, oftentimes during childhood and is treated by regular insulin shots and a healthy diet. Type-2 diabetes, on the other hand generally occurs in people over the age of 40 and is caused by the interplay of a number of cofactors, but one of its most evident is being overweight.

One of the biggest risk factors for type-2 diabetes is being overweight, and a diet high in calories from any source contributes to weight gain. So sugar does not directly cause diabetes but a high intake is a precursor to weight gain. Sugar increases the threat of type-2 diabetes for the addicted person. There are lots of sugary drinks like soda, fruit juice and sports drinks, which have been linked to an increased risk of type-2 diabetes. Besides, some researchers believe that sugar is the direct cause of type-2 diabetes. Again, the common characteristics of sugar consumption are obesity and weight gain, which drastically lead the addicted persons to diabetes. The thing about diabetes is that it's completely avoidable if you're willing to make different decisions in your life. Not only are you shackled with a terribly afflicting health problem, but also you're limiting the potential of fun and enjoyment that you might have in your life by not making a few simple decisions that could really help you out in the long run. It's just a foolish thing that you could be avoiding.

## **Learning and memory**

Sugar intake has an impact over the cognitive capabilities such as learning and memory. Recently an animal study conducted by the University of California Los Angeles shows that six weeks of taking a fructose solution

causes rats to forget their way out of a maze. Whereas control rats that ate a nutritious diet and those that consumed a high-fructose diet that also included omega-3 fatty acids found their way out faster. Apparently, eating a high-fructose diet over the long term alters your brain's ability to learn and remember information but the addition of omega-3 fatty acids to your meals can help minimize the damage. Similarly, the high sugar diet causes insulin resistance, which in turn damages the communication between brain cells that fuel learning and memory formation. Insulin is important in the body for the management of blood sugar levels, but it seems that it may play a different role in the brain, wherein it appears to disturb memory and learning, this study has firstly shown how a high-fructose diet harms the brain as well as the body too.

In another study from the Oregon State University, they have shown that a high-sugar, high-fat diet causes changes in the gut bacterial flora that seem to lead to significant losses in cognitive flexibility. Cognitive flexibility is a way of appraising the brain's quality of being able to perform the interchange between thinking of a certain concept to another, and to be able to adapt to variations in the environment in as quick a time as possible. The study which was conducted on mice and published in the *Neuroscience* journal in 2015 presented that a high-sugar diet was particularly detrimental to brain function, aiding in the progressive consequences of not only decreased cognitive flexibility but also impairments in short- and long-term memory. Their work is rooted on the theory that fat and sugar in the diet are altering the healthy bacterial systems within an individual and influencing optimal functioning of the brain. According to the lead author biomedical scientist Dr. Kathy Magnusson, their findings didn't come so much as a surprise but instead reinforced the already widespread knowledge nowadays that too much of sugar and fat in the diet is indeed detrimental to anyone's health. They're the latest to join in a growing body of research that has shown that the trillions of bacteria living in the gut can have a major influence on brain function and mental health. On the positive note of this finding is the knowledge that diet does indeed play an important role in the neurological and mental health of an individual, and it is up to the person to use this to his advantage or disadvantage. How exactly does this work? The scientists all have but theories yet and one of those that help them explain how the gut bacteria communicate with the brain is how the bacteria can activate an inflammatory response of the immune system. Another theory supports the evidence that

the bacteria can release chemicals that are used as transmitters to the brain.

Besides, a sugar addicted child shows his reluctant to learn things easily and they are much more forgetful than others. Sugar really interferes with the way your mind functions and there are several things that are happening to you on a chemical and neurological level that you could really prevent and that you could really change in your life. By messing with your ability to retain information, you're messing with the efficiency with which you can live your life and your ability to actually succeed in the things you do. You're going to find social exchanges more difficult and you're going to find that people are less and less tolerant with you and your mistakes. It really begins to affect you and those around you very early on.

These are just a few of the possible side effects or consequences of sugar addiction. If you eat too much sugar or sugary substances in proportion to your bodily limit, you will experience a poor and prematurely aging skin and tooth decay as well. Sugar intake is a constant threat to your body and mind. There are other consequences as well. They are mentioned very below.

- ✓ Ensures poor and prematurely aging skin and promotes tooth decay. These are things that affect you on a social level as well as a physical level. Your smile and your skin are your first impressions to the world around you and sugar has a way of making you sallow, rotten, and haggard looking. Don't lose that precious first impression that everyone wants to make when they're meeting people for the first time. Having a young, youthful look is something that we all strive for, so why destroy it with your sugar intake? That's something that no one wants to deal with, so save yourself the financial struggle that's awaiting you if you keep eating loads and loads of sugar. All the creams and potions in the world won't help you if you don't help yourself.

- ✓ Sugar is an addictive substance and it can be as intoxicating as alcohol. As I have mentioned before, sugar treats your body the same way that any drug treats your body. It is an addictive substance that changes the wiring and the understanding of your brain and the way that it perceives the world around you.

- ✓ Sugar can lead to the formation of kidney stones. Kidney stones are painful to experience whichever way they decide to leave your

body. For men, kidney stones can be an extremely painful process if they decide to pass out of your body through the urinary tract. However, there are other ways for them to rip through your body. You may need to throw them up, something that imitates the flu and is equally as devastating and painful for those who experience it. Kidney stones are painful and they're extremely harsh on the body. So cut yourself free from the possibility of suffering them.

✓ It can decrease the emotional stability and a feeling of irritation can engulf the addicted person. It's something that we've all experienced when we've gotten on what we've dubbed as a sugar high. It's the period of increased energy that eventually starts to erode and decrease the stability of your mental presence. It compromises everything and you're more likely to experience a more agitated, nervous, and emotionally fluctuating personality if you're taking too much sugar into your diet.

✓ It can be a likely cause of infertility, gout and kidney disease. Seriously, over consumption of sugar can cause infertility! You are messing with your ability to reproduce. If you're young right now, you might not think that this is such a big deal, but one day you're going to want to hear the pitter patter of little feet running through your home and sugar is putting that possibility at extreme risk. How about gout? Do you want that? Gout is the buildup of an acidic presence in your joints that eats away at the cartilage and burns, causing inflammation and swelling in your joints. Your mobility is going to drop to zero, it is excruciating and it's something that you never really recover from. As far as kidney disease goes, you're looking at the potential loss of your kidneys, the organs that sift toxins out of your body. You're putting your entire body at risk by letting toxins run rampant and the organs that are required to keep you alive are falling apart on your watch.

✓ Metabolic syndrome, heart and arterial disease and hypertension are the results of sugar addiction. We're talking about heart attacks here and the possibility of a stroke. Your life can end with the fluttering of an eyelid and a sharp pain in your arm. It's a dangerous and it's a subtle problem that a lot of people ignore until it is too late for them to alter their ways.

✓ Fatty liver disease, cirrhosis, liver failure caused by fructose. This

is the kind of damage similar to what you should be seeing from a heavy alcoholic who refuses to put the bottle down, not someone who really likes having cookies and chips when they're downing a soda. This kind of damage is dangerous and this damage is irreversible. If your liver gives way, you're stuck on a waiting list that is much longer than the road to changing your life is. So you should take up a better life for the sake of your liver.

## **Effect of sugar on the brain**

The effect of sugar on the brain deserves some scrutiny and close inspection. Sugar is dangerously capable of affecting the brain in a way that is very similar to how alcohol and drugs may corrupt the functions and pace of the brain. This is not something to be scoffed at, as it plays a very dangerous role in the degradation of the brain, at both the physiological and psychological level. Since childhood all of us have had a first-hand experience of how sugar can be a remarkable motivator to even the laziest kid. Have you ever thought about what makes sugar so addictive even to a kid?

To be able to further analyze the addictive nature sugar does to an individual, let us examine the research and similarities between high-sugar, energy-dense, fatty and salty processed food and compare it with the effects of drugs of abuse substances such as cocaine, heroin and nicotine. To start off, the diagnostic criteria for substance dependence or addiction, as laid out on the *DSM-IV* book which is renowned to be of highest authority in psychiatric diagnosis of substance addiction and then compare how it relates to sugar addiction.

- Substance is consumed or taken in a larger amount and for a longer period than is normal – the classic symptom of a person who habitually binges on sugar-laden food.
- Persistent desire or repeated unsuccessful attempts to quit – another example of the many hurdles repeated attempts at losing weight and diet so many overweight and sugar addicted individuals go through.
- Much time or activity is spent to obtain, use or recover – repeated attempts to lose weight take frustratingly long time to be

successful, if indeed it comes through.

- Important social, occupational or recreational activities given up or reduced – overweight or obese individuals with problems of sugar bingeing and depression or emotional instability continue to face this problem of interacting well within a social circle.

- Use continues despite knowledge of adverse consequences, such as failure to fulfill role obligation and knowledge of the possible many consequence of continued use – many sugar addicts are already well aware that sugar does no good benefit into the body especially at excessively alarming amounts, however, self-motivation to stop habitual sugar consumption is almost as difficult as asking a substance using addict to quit on the thing that he or she is most dependent on.

- Tolerance (marked increase in amount, marked decrease in effect) – as exhibited by the desensitized reaction to dopamine where in order for sugar addicts to feel “high” or even “normal” again they must continue to reach for a sugar-loaded snack otherwise they fall into lower of the “lows” and the inevitable addictive and harmful cycle continues to control the individual.

Characteristic withdrawal symptoms; substance taken to relieve withdrawal – many people, those that are undergoing withdrawal from food addiction, undergo a “healing crisis” that has many of the same symptoms as withdrawal when removing certain foods from their diet.

Only a limited number of us in today’s population are truly free from this addictive pattern. If you examine your own behavior and relationship to sugar, in particular, you will likely find that your manner of reacting towards sugar and the biological effects brought about by over-consumption of this easily-attainable substance may match up perfectly. Many of the above listed criteria may likely be applicable to you.

When you take the first bite, the brain has already relayed signals that register it as a reward system. The brain has a region that is entirely dedicated to being a reward system centre. This centre is composed of a series of intertwined chemical and electrical path systems that are spread over different

regions of the brain. Dr. Nicole Avena mentioned this as a notable fact. Dr. Avena is a researcher in the department of psychiatry, University of Florida College of Medicine. In a recent TED talk, he mentioned that the reward system part of the brain is not a myth and is something that deserves to be viewed in a more serious light. When you consume sugary foods, the taste receptors in your tongue detect the presence of sugar and send signals to the brain. This causes the cerebral cortex in the brain to activate its dopamine receptors. They are unevenly distributed throughout the brain and so they cause the people to get a high when activated. The response of the brain to sugar is very similar to that of drugs or alcohol. The only difference being that sugar does not initiate as much of a violent reaction as other addictive substances. Dopamine is the primary chemical responsible for the stimulation and running of the reward system. When a person becomes a victim to substance abuse, his dopamine detection levels goes off the charts. This causes him to experience a short-lived high on that particular substance. This high is quite stimulating and causes the user to actively seek out such sources in the future. Although sugar is capable of pulling off such a reaction, the reason that we do not notice it is that it is not as pronounced as the effects of alcohol and drugs.

Dopamine is not something that is limited to causing a “high” feeling alone. It might be interesting to note that dopamine is always released when you have food. When we have a new dish, after it clears the taste buds to suit our preferences, the dopamine secretion becomes high. This causes us to develop a craving for that particular dish or delicacy. However, a continuous exposure to this addictive agent will cause the dopamine secretion to even out to a point where it becomes almost constant. This may also be due to the way the human brain is hardwired. We are not likely to fixate on one type of food or too long. This may deprive us of nutrients that are available only in other food. The point of this discussion is to notice that sugar never ceases to even out dopamine levels. Our dopamine levels always spike when we consume something that has a decent amount of sugar in it. This means that our body will never be able to tell us to stop eating sugar, even if the situation seems to be going against us. So if sugar is able to cross this natural barrier it is just as much of a threat as alcohol or drugs. The daily intake of sugar as recommended by the World Health Organization is that sugar should constitute no more than 10 per cent of a person diet. This amount is measured

as about six teaspoons of sugar per day. Twenty-five grams per day is the most advisable amount of sugar that can be consumed by an adult. However, you will be shocked when I tell you that our normal levels of consumption are considerably above the healthy, recommended level. A can of coke contains as much as 39 grams of sugar. The most obvious symptoms that shout out a sugar addiction are obesity and weight gain. This will go on to more serious problems like liver damage and off the charts blood pressure.

A group of researchers from Yale's Rudd Center for Food Policy and Obesity validated a "food addiction" scale and we may be able to use the scale to apply to our own assessment of our sugar addiction. Here are a few selections of the points on the scale that are used to determine and assess if you do suffer from sugar addiction. Take time to read through the following criteria and honestly evaluate how you fare though each scenario. If any of it sounds even the tad bit familiar then you may be indeed suffering from sugar addiction.

1. I find that when I start eating certain foods, I end up eating much more that I had planned.
2. Not eating certain types of food (in our case, sugar-laden and sweet food) or cutting down on certain types of food is something I worry about.
3. I spend a lot of time feeling sluggish or lethargic from overeating.
4. There have been times when I consumed certain foods so often or in such large quantities that I spent time dealing with negative feelings from overeating instead of working, spending time with my family and/ or friends, or engaging in other important activities or recreational activities I enjoy.
5. I kept consuming the same types of food or the same amount of food even though I was having emotional and/ or physical problems.
6. Over time, I have found that I need to eat more and more to get the feeling I want, such as reduced negative emotions or increased pleasure.
7. I have had withdrawal symptoms when I cut down or stopped



eating certain foods. This symptom should not include withdrawal symptoms caused by cutting down on caffeinated beverages that include, but are not limited to, soft drinks, coffee, tea, energy drinks and the like. Examples of withdrawal symptoms are development of physical symptoms or the feeling of agitation, or feeling of anxiety and restlessness.

8. My behavior with respect to food (particularly sugar) and eating causes significant distress.
9. I experience significant problems in my ability to function effectively in day to day activities such as daily routine, job or school functions, social activities, family recreational activities, health difficulties and the like because of food (sugar) and eating.

If we are to use these criteria to assess how far along the addiction of sugar we are, then many of us most definitely (including a large amount of obese and overweight children) are indeed “addicted” to the deceptive culprit. The problems we often face with when dealing with sugar addiction are made even worse by the fact that food manufacturers refuse to release any useful data on how they manufacture and prepare their food, how they put together their ingredients and how much sugar they have added into their products. Of course this move is done by food manufacturers to ensure maximum consumption and patronization of their food products, for their own benefit and market earnings. And alarmingly, the current state of food production in the United States have shown that sugar, both declared and hidden, is added to more or less 80% of our food available in the market these days. With this continuing, it was projected that by 2050 more than 1/3 of the United States population may be facing health problems associated with high sugar consumption such as obesity, type-2 diabetes, heart failures and metabolic syndrome, to name a few.

## **Chapter 7: Treatment For Sugar Addiction**

Addiction is strong desire for any harmful thing and it is deeply connected with taking heroin, cocaine, marijuana, alcohol etc. But there is another type of addiction and this is sugar addiction, which is as deadly as any type of addictive drug. It is also a widely abused substance all over the world. Sugar addiction consists of all uncontrollable desire or cravings for sweets and the consequences cause remarkable changes in demeanor including depression, irritability and anxiety when the person goes without any sugar.

Excessive sugar consumption is detrimental to health and it leads to obesity and other health related problems and disorders, diabetes, heart attack etc. Treating a sugar addicted person helps enormously to increase the quality of life and level of health. Though the treatment of sugar addiction is a long-term process, you can cut it short if you strictly follow some disciplined rules and regulations.

One needs to be highly determined, disciplined and a lot of self-control needs to be practiced to break the addiction of sugar consumption. To curve out the sugar from your menu you have to decide upon a complete change in your lifestyle. Addiction is a disease and a host of medical, psychological and nutritional treatment options are needed to lower the intensity of this addiction. Sugar addiction treatment is no exception from the options available to you. But sugar addiction treatment is not generally available. There are lots of recovery treatment methods available for you instead. Here are some treatment options available to tackle sugar addiction.

1. **Therapy:** One of the most intriguing and effective first options for treating sugar addiction is therapy. This therapy can be done either in one-on-one sessions or in groups with other patients who are struggling to recover from the same addiction. Therapy assists them to sort out the reasons behind sugar consumption including possible emotional impulses. It also provides them with the necessary tools they need to recover from this addiction. There are a lot of great therapies out there that do not necessarily mean that you will be sitting on a couch with a professional, talking about why food makes you happy. However, that one on one support is something that you can depend upon and have the comfort and the

faith of knowing that everything you say is going to just remain between the two of you and no one else. You don't have to worry about being embarrassed and you don't have to worry about what others might say to you or what they might think when you're speaking. However, those cost money and if you're looking for a free and equally effective way of getting this under control, you can go to group sessions. Group sessions are fantastic for those that are looking for a sense of community and a group that they can really relate to, blend in to, and become a family member of. Group sessions offer the bonus of showing you that this isn't something that you're suffering from on your own and you can find others in your community who are on the same path that you are who will offer you support.

2. Awareness about food products: You must have a comprehensive idea about the ingredients of the foods you purchase from the marketplace. You can check while buying foods whether that food has any sugar in it or not. You have to avoid eating any sugary food to control this problem. Besides, if you become vigilant, you can reduce sugar consumption completely. There are a lot of products out there that are unhealthy for you, but it's easy for you to figure out what on the list of ingredients is healthy and what you should have in your body. It's something that you're going to find yourself checking as a second nature, curious to see what everything that you're eating is made of. This is an excellent skill for you to develop in your life and keep in your life no matter what kind of adventures you go on. Having a conscious knowledge about what you're eating really just makes sense. You may find other ingredients that are equally good to avoid.
3. Nutrition: Awareness and nutritional education help sugar addicts to change their dietary habits. This approach may include keeping food journals, following strict food menus and taking cooking classes to learn how to make low sugar or sugar free meals. Nutrition is one of those lifestyle habits that you should really develop and utilize to your advantage. Being healthy isn't a magic bullet that you can fire off once and call it good. No, you have to find a way of transitioning your life into a healthy style with healthy intentions that you can carry with you as you go forward in

your life. Nutrition is one of those things that are easy to pick up and it will pay off in spades later on down the road. Seriously, if you're going to turn your life around, good nutrition is crucial and it's going to help you cut down on your grocery bills. Fresh fruit produce, and meats are all much cheaper than fast food, packaged, canned, or bagged products that you're used to picking up off the shelf. So start getting savory and start getting thrifty with the way you spend your money and know what it is you're buying.

4. **Homemade foods:** Homemade food is the best treatment for sugar addiction. You can cook such foods that are free from sugar to help the addicted recover from his addiction. Cooking is a way to relieve stress and the frustrations of day to day life that might be great for your diet as well. Learning how food works and the flavors that you can really work with are great ways of getting you to enjoy everything that you have available to you. Whether you're using fresh ingredients or just working with what you know is healthy for you. No matter what you do, just get into the habit of making your own food because your body and your budget are going to start thanking you. You're going to love how much money you're actually saving by making your own food and not having to overspend on a single meal. Learning a new trade that can save your health, your mind, and your wallet? That sounds like something that you should definitely get onboard with.
5. **Treatment centers:** If you need a more structured plan and strict precautions, you can take the help of treatment centers. If sugar addiction is causing serious health risks, there are a few treatment centers offer treatment programs for sugar addiction. Talk to your doctor. These centers provide round-the-clock psychiatric care, medical services, and nutritional education. This is the more drastic choice for people who have been trying and trying but can't seem to figure out what it is that they need to do to kick this habit. Of course, you should never jump into this on the first round. See if you can figure out all of this on your own and get yourself a plan that you can try without help. This is a worst-case scenario for you if you just can't do what it is you want to and you don't have the willpower that is required to make such a change in your life. This place will make certain that you get the help you need and they're

going to make certain that all their resources are going to be invested in seeing you succeed. It's a great opportunity for you if you need to draw that last line in the sand.

6. Use a sugar substitute: Sugar substitution can help you to reduce the cravings for sugar and sugary foods. Think of eating vegetables and fruits instead of foods laced in sugar. You might not think that this is a satisfying substitute when you're craving a candy bar or that drink of soda, but it really is. When was the last time you actually bit into a fresh strawberry and tasted the sweet glory that is a strawberry? It's probably been a long time. Explore what nature has to offer you in the realm of natural sugars that are good for you and that are satisfying. Sure, there are other artificial sweeteners out there, but is that really dealing with your problem or just avoiding it? Take a chance on produce and see if you can't get the sweetness that you're hunting from nature. You're going to love the taste of fresh peaches, sweet strawberries, and tangy raspberries. It's heaven in your mouth.
7. Behavioral training: Another aspect of sugar addiction treatment is behavioral training. There are underlying causes for sugar addiction, which need to be sorted out. You have to find out whether it is because of stress, anxiety and depression or not. Behavioral training helps to sort out those triggers and provides solutions to recover from those triggers. This is a matter of hunting down the things that are causing you to use sugar as a crutch and you're systematically dealing with these problems and triggers one by one. Getting to the root of your problems could really get rid of your cravings immediately. This is never easy and it requires a lot of introspection and a lot of contemplation when it comes to what you're working with. Make sure that you're fully aware of what needs to be done in these areas. Identifying the times, places, things, or people in your life that are causing you stress isn't enough. You have to come to terms with these problems and these stresses so that they no longer haunt you. Liberating yourself from these worries, stresses, and triggers is going to make life easier for you to manage and easier for you to deal with on your own.
8. Plans to eliminate dependence: Generally, addicts have complete

dependence on sugar and sugary substances. You have to practice and construct livable plans to eliminate the dependence on sugar slowly. It is one of the most important aspects of treatment for sugar addiction. Don't expect to be completely weaned off sugar by the end of the week. Be smart about what it is you're facing and understand that you're in for the long term with this struggle and that it's not going to be an easy route to take. Drawing up a realistic, intelligent plan to cope with the suffering that you're currently in is going to give you the greatest chance at success and that's exactly what you want, right? We want you to be the most adequately prepared for success that you can be. So, in order to be adequately prepared, you need to be aware of what your limits are and where your weaknesses are. So before you begin to cut out sugar in your life, you should take the time to monitor beforehand when it is you eat sugar, where do you eat sugar, and what's going on in your mind. Journal this and keep a log of all the cravings and feelings that you experience so that when you're formulating the plan of attack in your mind, you're completely ready and aware of what needs to be done. This is about success and this is about knowing your enemy, so gather everything that you have at your disposal.

## **Chapter 8: Fifteen Easy Steps to Control Sugar Cravings**

The human mind and body are programmed to take pleasure and sugar is such a pleasurable substance. Seeking pleasure for fun or a relief to stress has always been the pattern of man. When indulging in pleasure we rarely question the safety or morality of the practice. It rarely occurs to us that it might actually turn out to be dangerous and life threatening. Finally, when realization dawns upon us it is already too late to control it. This does not go to say that addiction cannot be cured. It can be curbed and you can go back to normal with some willpower and dedication. It is the natural instinct of man to intake sugar and sugary substances whenever those sweet and delicious foods appear before them. They can't control themselves in this situation and ultimately it turns into an addiction, which can be tragic. If you are someone who can't stop devouring sugar once you started and are plagued with sweet cravings, then it is essential for you to take control. It is because sugar addiction is harmful not only for your body but also for your mental and psychological growth. Seeking professional help or assistance from friends and family is nothing to be ashamed of. The first step to recovery is all about accepting that you have a problem. Even though not very professional, there are some things you could try at home if you are skeptical about seeking professional guidance. Here are some easy steps to control sugar cravings for you and all these steps are tried and tested.

a) Ensure self satisfaction and inner peace: You can minimize the sugar cravings by ensuring self satisfaction and inner peace. Whenever sugary foods appear before you, you can pacify yourself by thinking that you are completely self satisfied and you don't need this type of food. Besides, if you are addicted to sugar, and you manage to resist, you have a good reason to feel great. Moreover, meditation and several yogic practices can be very helpful at this stage. This might seem hokey or strange to people whom have never done it, but meditation and yoga is great ways to explore your internal strength and to build up the inner part of your mind and soul. An addiction is only as good as the purpose it is supposed to serve. In an addict's life, an addiction is used to fill the void created by stress or boredom. If you were to convince yourself that you are in no need of an addiction to keep you busy, half the problem melts away. The argument between your desires and your conscience is

only as strong as the reason behind it. So once you eliminate the reason you can logically convince yourself that there is no possible reason under the sun for you to continue degrading yourself.

b) Lead a disciplined and balanced life: By leading a disciplined and balanced life, you can decrease the intensity of sugar cravings. Military men are always looked up to for being punctual and strong willed. We know as well as everyone else that not every military man was born that way. Therefore, it had to do with the way they were being trained. It can be argued that a strict and disciplined life was integral in shaping up a military man. Everything from his physique to his emotional status is always calm and collected with no room for confusion. You are more likely to stuff yourself on a sugar addiction when you are confused and unsure of what to do in a stressful environment. It would not be a bad idea to incorporate some of that military discipline into your real life as far as a sugar addiction is concerned. Maintain a routine and follow it religiously and you might be surprised at how it could work wonders for you. You will feel more at ease while trying to get a grip on your cravings. Always stop yourself from eating sugar and sugary foods. Make a chart of your food menu and erase all sweet substances from that menu. Ensure a balanced food diet and eat a lot of vegetables and fruits instead of sugar. Remember, you want a lifestyle that is sustainable and is worth your time. This is going to be the template by which you eat the rest of the meals in your life.

c) Sleep at least 7-8 hours per day and you will crave less: Sleeping is a perfect medicine for your sugar addiction. When you sleep, you will forget all cravings. Balancing the hormones Ghrelin, leptin and insulin is the key to stop sugar cravings in their tracks. Get these hormones working in harmony and sleep at least 7-8 hours a day and you will be able to minimize the sugar cravings. Sleep deprivation makes these hormones imbalanced and makes sugary foods more appealing and lower your capacity to resist them. Sleep is the remedy that so many people are looking for in their life and you have a chance to revolutionize the way you live by incorporating more sleep in your schedule. So get some shuteye. Immediately after starting the treatment to addiction, you are sure to encounter sleepless nights where you might seem dead tired but unable to get any sleep. This is most likely due to malfunctioning levels of dopamine. It is vital that you bear with



this discomfort and wait for your body to settle into normal rhythm. Once it does, make sure to engage a minimum of seven hours in sleep. This helps you balance out any action caused by the dopamine by releasing controlled secretions of leptin, Ghrelin and insulin.

d) Eat regular meals and healthy food to satisfy your hunger: If you eat three regular meals and healthy food to satisfy your hunger, you will be able to control sugar cravings. But you have to ensure that you will refrain from eating sugary foods in your regular meals. Avoid all types of junk foods and try to concentrate wholly on the homemade and more balanced foods. Watching what you eat will do you great favors in the long run. This advice holds good for everyone and not just fitness enthusiasts. A disciplined diet plan consisting of three good meals per day is enough to solve most of your problems. The catch here is that you have to be particularly careful about not engaging yourself in junk foods or other sugar rich foods even on a cheat day. The slightest reminder of the lifestyle you are abandoning might be enough to cause the whole thing to come rushing back at you.

e) Keep sugar and sugary products out of your reach: You have to keep sugar and sugary products out of your house so that you can't reach out for them easily. This includes white and brown sugar, all types of sweets, corn syrup and maple syrup. Go through the house and initiate a purge on anything that is sweet that you could be tempted to eat. Temptation lasts for a second. The moment you start hunting for something to eat and you can't find anything, you'll give up on it. The best way to avoid something is to minimize contact with it as much as possible. This is best achieved by keeping it out of sight and out of reach. In a recovery period it is only human to crave for the things you cannot have. So keeping them far away from yourself seems like a very logical and practical thing to do.

f) Stabilize your blood sugar and don't focus on weight loss: when you leave your addiction to sugar and sugar based foods you are sure to experience a sudden drop in blood sugar and you are likely to experience drastic weight loss. The weight loss is not a serious problem and you have nothing to be worried about unless you happen to be dropping into the underweight category. Even then it cannot be considered as an excuse to go back to your sugar intensive diet. By

eating foods that are rich in protein and fiber, you can stabilize your blood sugar. After quitting sugar, you may lose some of your normal weight. But don't focus on weight loss, try to eat healthy foods and drink a lot of water.

g) Treat yourself like you are in detox: Sugar abstinence can be very uncomfortable for the first two weeks but try to treat yourself like you are in detox. Be lenient and kind to yourself because you can't overcome this habit overnight. Take your time and ask others to support you. Spend your time in prayers and meditations. An idle mind is the devil's workshop. Spend your time pursuing fruitful interests rather than idling around. Take up a hobby or something that will distract you from the addiction scenario. Socialize more; get to know a lot of people. Be part of a group activity. It is strictly recommended against being alone at this juncture. It is not shameful to seek help. Be open-minded and approach friends or family for help and moral support. They are people who know you very well and they can guide you through the whole thing. Professional help is also highly recommended. Although, that part depends on the individual's comfort level.

h) Identify the enemy: The key to curbing your sugar addiction is to eliminate your sugar intake. In order to do this, first you have to identify the sugary products from your diet. Making a note of the number of calories and the frequency of having that particular food will help. A little homework will pay off. After identifying the sugar and sugary products, you have to replace those foods with something that gives you satisfaction.

i) Cease and desist: At the end of the week, look over your foods and identify which type of food is responsible for sugar intake. After identifying the sugary foods, try to eliminate them slowly. You may find that you get enough sugar from fruit anyway without looking for more.

j) Stay hydrated: Try to drink as much water as you can if your sweet tooth is on overdrive. Dehydration can spike the cravings dramatically for sugar and junk food. Stay hydrated and cool all the time.

k) Cut back on caffeine, alcohol and processed foods: Caffeine and

alcohol are responsible for dehydrating the body and ultimately lead to mineral deficiencies. On the other hand, processed foods contain high sugar and salt. Try to cut back on caffeine, alcohol and processed foods to control sugar cravings.

l) Exercise regularly: We have the natural tendency to take sugary foods when we are tired. Exercising regularly is a good form to curb this tendency. Besides, you can boost your energy levels and reduce stress by exercising. This will obviously assist you to reduce sugar cravings.

m) Manage stress and emotions: If you can manage stresses and emotions, you can minimize the intake of sugar. Besides, stresses are not created by external factors but by the way we perceive situations in life. Stresses and emotions are the likely cause of sugar addiction. It is common knowledge that stress cannot be eliminated completely but it can be efficiently managed to a point where it does not cause us much trouble.

n) Reward yourself with healthier foods: Rewarding is a good practice to remove sugar addiction. Budget your time and try to avoid taking sugary foods within this span of time. There are healthy foods that are delicious but expensive. If you become victorious, reward yourself with healthier foods. Rewarding is a motivational act without any doubt.

o) Forgive yourself: To end the struggle with sugar, you can take the taste of sugar sometimes. But try to focus on a healthier diet. If you eat sugary substances without being aware of it, forgive yourself and build the habit from the next moment onwards. The best sugar substitute is self-acceptance. Once you stop feeling sorry for yourself most of the problem has already been resolved. The only thing that governs the success or failure of the treatment is you. Whatever you believe will most likely be the outcome. Therefore, it is absolutely necessary to maintain an optimistic approach towards the whole thing. In times of uncertainty and doubt, this optimistic point of view is what's going to guide you through the whole thing.

## **Conclusion**

To sum up the above discussion, it is essential to know better the dangers of sugar addiction. This only goes to prove that some of the most dangerous substances may be in plain sight of our everyday life. Nothing should be used beyond a healthy measure, as it will always have some side effects that may or may not be immediately visible. Getting addicted to sugar is easy and getting out of the addiction is even tougher. It takes a sound mind to reject an addiction, especially a sugar addiction. This book shows you exactly that. The methods mentioned above may not be foolproof and are most likely not tailor made for a specific person but this is the usual method to get over an addiction. Just like any other addiction, sugar addiction can only be overcome by inspired and dedicated effort. Sugar has a powerful and detrimental effect on your body, mind and soul. It can gradually lead us to decay and we may fall victim to mental and physical hazards due to this white substance. Sugar culminates the growth of our intellect and bodily tissue. It can stimulate our brain for the time being but it is absolutely to be thought of as dangerous for us. So, it will be wise and better to give up the habit of sugar intake and addiction as well. But avoiding sugar is a tough job because it is very easy to say but difficult to practice. So, let's give up sugar addiction before it is too late because you have miles to go and you will go further without sugar in your diet.

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