

# Tossing Meds

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## Chapter 1: A Medical History

My life has been full of pain and suffering. No longer! I have chased the chronic and incurable illnesses of Tourette Syndrome, Ulcerative Colitis, and Hidradenitis Suppurativa from my body. Free glutamic acid, also known as free glutamate, a natural substance consumed from food and drink, created these illnesses. Reducing the chemical within my blood ended it. I will show you how. I will additionally show you how this same chemical has connections to other disorders that include: Alzheimer's Disease, Asthma, Attention Deficit Disorder, Attention Deficit Hyperactive Disorder, Autism, Cancer, Crohn's Disease, Depression and Manic Depression, Diabetes, Epilepsy, Eye Problems, Huntington's Disease, Hypoglycemia, Irritable Bowel Syndrome, Migraines, Multiple Sclerosis, Obesity, Obsessive Compulsive Disorder, Parkinson's Disease, Schizophrenia, Stroke, and the addictions to alcohol and nicotine.

You have everything if you have health. Only those who have been chronically ill know the meaning of those words. I have known illness for much of my life. I have known the minute by minute trauma of not living the life you want. Only those who have had chronic illness know

such frustration. Your legs are stuck in concrete. Each kind of illness produces different feelings. But the frustration feels the same. It escalates with the passing of time spent fighting for a normal life. A normal life does not mean an easy life, but having the same starting point as everyone else would be nice. I remember taking school exams knowing I started with points deducted because of my disabilities. My anger at my condition pushed me to find the cause through research and an endless "trial and error".

I started life primarily healthy, though the minor hiccups of health did exist early on. I was checked out of the hospital healthy, all body parts in working order. I had severe diarrhea caused by milk, and early frequent ear infections. These ear infections worsened over time and my fevers climbed to 105 degrees occasionally. These middle ear infections resulted in a temporary hearing loss. I needed surgery to remove my adenoids; and additionally, the surgeon placed temporary tubes in both ears to correct the hearing loss and keep the fluid under control.

I routinely had an unpleasant mood and an unpleasant educational experience. My parents tell me they took a picture each time I smiled because it happened so rarely. My educational difficulties could make any parent's head

spin. My early public educational experience meant jumping from one day dream to another (as my report cards would indicate). I always had a difficult time staying on task and listening to teachers. These troubles lasted into adulthood, prior to earning my Master's in Education. My learning difficulties ended when I learned the cause for my illnesses. Excess free glutamate had created them and hampered my alertness.

New medical issues and educational troubles rapidly grew over time. I was diagnosed with Tourette Syndrome by a neurologist at Brookdale Hospital in Brooklyn New York. This happened at the age of 10 and it became my first chronic illness. My Tourette Syndrome surfaced through constant twitching of my head and hands. In addition, I displayed uncontrollable throat clearing at times. These symptoms are not uncommon for those diagnosed with Tourette Syndrome. The doctor prescribed Haldol for me, but the side effects of Haldol trumped any benefit. My parents noticed the side effects and decided to take me off the drug.

I knew that Tourette affected me more one day than another. This does not make sense. How could the severity of the disorder constantly change? It should not. This unanswered question helped lead me to seek an external

source. Upon hearing the news I had Tourette Syndrome, the doctor told my parents I had a chance of growing out of the disorder. This statement added to my confusion. How could an incurable syndrome disappear as you got older? I lived with Tourette Syndrome throughout my difficult adolescent period.

Frequent blackouts occurred by the age of 12. I define these blackouts as being unconscious without fainting. I always awakened from these blackouts in the upright position. Each episode lasted no more than a few seconds. There were times when the blackouts frequently occurred, and other times "not at all". The same question surfaced as it did with Tourette Syndrome. How could the severity of a disorder constantly change? I remember an instance of blacking out very clearly. While playing baseball, someone hit a weak shot to the outfield. I remember the ball rolling toward me. I placed myself perfectly to catch it. I blacked out. Before I realized what happened, the ball rolled under my legs and out of my reach. When I came to, I watched the ball roll down the street in disbelief. It took a year for these blackouts to be diagnosed. An EEG had difficulty analyzing the blackouts. Doctors use an EEG to diagnose epilepsy. An

EEG or Electroencephalography measures the electrical activity of the brain.

"Electroencephalography is the neurophysiologic measurement of the electrical activity of the brain by recording from electrodes placed on the scalp or, in special cases, subdurally or in the cerebral cortex. The resulting traces are known as an electroencephalogram (EEG) and represent a summation of post-synaptic potentials from a large number of neurons." (Science Daily, 2007)

An excellent neurologist at Columbia Presbyterian Hospital in New York City finally diagnosed me with petite mal epilepsy. The translation of "petite" in French means "small". I never passed out the way those with extreme cases of epilepsy or what the medical industry would call "Grand Mal Seizures". The drug "Zarontin" successfully prevented epileptic attacks. The doctor took me off the anti-epileptic medicine at the age of 17 because I was no longer on a dosage that would prevent the seizures, and the EEG no longer showed evidence of the disorder. I had grown out of the illness. I have not had to worry about epilepsy since, though Tourette syndrome still displayed its fierceness throughout my teenage life.

My real horror began after graduating high school. I took a summer job as a swim instructor. I started bleeding substantially every time I went to the bathroom, and I went to the bathroom often. Because of my childhood, I had a

vicious phobia to medical doctors. This phobia prevented a quick diagnosis. It took a year before I allowed a doctor to look at me. The doctor diagnosed me with Ulcerative Colitis after a procedure called a colonoscopy. Ulcerative Colitis is a constant inflammation of the colon. For my first diagnosis of Ulcerative Colitis, 90% of my colon had been infected. This caused internal bleeding within the colon. The blood would pour out of my body while going to the bathroom.

I laugh at some old theories that stress caused Ulcerative Colitis. The onset of Ulcerative Colitis came while teaching swimming in a gorgeous pool in the relaxed atmosphere of a day camp. This surely was not a stressful experience. My Ulcerative Colitis resulted in extreme anemia through many years, and I periodically functioned with half the red blood cells of a healthy individual.

There are a considerable number of medications for Ulcerative Colitis. I experienced the overwhelming majority of them. These medications include: Sulfasalazine, Rowasa, Asacol, Purinthol, Cortisone, Remicaid, and Prednisone. In fact, the symptoms of Ulcerative Colitis may not always involve the colon. I once dealt with a condition called Pyoderma Gangrenosum. My immune system attacked my leg as it would my colon. The

Pyoderma Gangrensum forced me into the hospital for a month while I received IV treatments of Remicaid and a blood transfusion because of my anemia. This caused considerable scarring of my right leg and it would take me a few months to learn to walk again.

Doctors prescribe prednisone first for victims of Ulcerative Colitis. Prednisone eliminated my internal bleeding and lowered the inflammation every time. However, prednisone is a steroid. Steroids cannot be taken for the long term because this medication has powerful short and long term side effects. Some of these side effects include "seizures, depression, sudden weight gain and difficulty breathing." (American Society of Health-System Pharmacists, 2007) I would normally be on prednisone from 2 to 6 months. Next, the doctor would slowly change to a long term maintenance drug. Maintenance drugs are supposed to be powerful enough to keep the Ulcerative Colitis from recurring. This regimen never worked because the maintenance drugs usually did not work. The result was a never ending cycle of going on and off prednisone. Prednisone created a host of issues in the short term. The symptoms ranged from severe acne to weight gain. This never ending cycle lasted until I succeeded in reducing the free glutamic acid in my blood.

I had also developed constant sores under my armpits by the age of 20. These sores usually disappeared after a few weeks. Suddenly however, the sores did not heal and grew increasingly severe. Over time, the wounds began to leak puss and blood. The perfect storm of having a phobia against the medical community because of its inability to help, added to my out of control infections. Having little choice but to seek medical attention, a dermatologist at Mt. Sinai Hospital diagnosed me with Hidradentitis Suppurativa. Hidradentitis Suppurativa is a rare skin disease. Hidradentitis Suppurativa creates infections only at sites where Apocrine glands exist. Apocrine glands are our sweat glands. The Apocrine glands are focused under the armpits, and in the neck, buttocks, etc.

My first bouts of Hidradentitis Suppurativa formed under my armpits. The similarities between the location and my last name brought the only humor about it. Because the armpits are not visible to the open air, the location presented a perfect opportunity for the Hidradentitis Suppurativa to spread. Hidradentitis Suppurativa is considered incurable and all known treatments have little effect on most people. At the time of diagnosis, my left armpit appeared similar to having three bullet holes seeping with blood and puss. I needed and received skin

graft surgery which removed the infection. The surgeon closed the wound using skin from my leg. I was told that the Hidradenitis Suppurativa might not spread. Yeah, right!

My Hidradenitis Suppurative moved to my buttocks within a year, creating several small infections. It became impossible to sit at times; the pain took its toll. Being an accountant at the time did not help matters. I stopped working entirely due to the Hidradenitis Suppurativa and the Ulcerative Colitis, two incurable diseases. And I still had symptoms of Tourette, though to a much smaller degree.

My life of chronic illness had also brought constant bouts of brain fog. The brain fog appeared as far back as elementary school. It prevented me from thinking clearly and helped contribute to my low grades. This occurred during the majority of my academic career. It hampered my ability to react quickly to physical, communicative, and mental situations. I had difficult times in social situations and in the classroom. My inability to process oral information well forced me to be a textbook learner. Learning from textbooks allowed me more time to process information. I still needed to reread the easiest of sentences at times. But like the disorders that affected

me, a breath of fresh air came where my symptoms suddenly declined. The fresh air rarely lasted for a day unfortunately. But those rare days were needed to ask myself an important question. How could I have unusually good days? What would cause or create a sickly day and a semi healthy day? Doctors would state that eating specific foods could make my symptoms worse. No doctor would concede that food could be THE cause. They were wrong. Food was THE cause. One chemical was THE cause.

## Chapter 2: The Discovery

Discovering the cause of my chronic illnesses came slowly. My doctors rarely conceded that the disorders had any relation to food. The doctors told me time and time again that changing one's diet would have little effect. But we know that specific illnesses do emerge directly from food. Celiac disease provides one example. "Celiac Disease is an autoimmune disease triggered by ingesting wheat. The disease can cause serious damage to the small intestine. Those who have Celiac Disease also cannot have rye or barley." (National Digestive Diseases Information Clearinghouse, 2007) This disease goes beyond the response of a normal wheat allergy. A person with Celiac cannot have any wheat products, or their immune system will turn against them. But we are a society heavily dependent upon medications. This, I will admit, delayed my interest in finding those foods that damaged and those foods that healed.

I had days where my symptoms significantly diminished, a few times disappearing completely. I wish I had had more healthy days. I may have found the cause earlier. I quickly reverted back to my sickly state with brain fog and all. I knew that foods made my symptoms worse, but never

believed that foods could be the cause. I remember eating "French Toast" with maple syrup in the morning as a child. I knew that having this morning breakfast worsened my symptoms. It would also increase my seizures prior to being on epileptic medication. My brain fog quickly increased on this menu too.

Not until the past few years have I realized that seeing things through a fog is not normal. You'll think a brain fog normal if you consistently have one your entire life. A brain fog felt like the loss of light, never seeing things clearly. My brain processed information at a slow rate of speed. I could not physically react quickly. Being clumsy produced a trend of mishaps playing sports. The few days a year not having a brain fog felt euphoric.

I love food and still love food. Food brought comfort and pleasure to a life of misery. Looking to foods as a cause of my ills came too hard. Only by my early 20's did I believe that food had some impact. Many times I tried a high protein diet, similar to the Atkins diet. This diet eliminated all carbohydrates and did limit the amount of times I went to the bathroom. It pushed my body to use all food digested. This cut down on the amount my body would have to eliminate.

The high protein diet allowed me to think clearly at times. I desperately needed those times for relief and to analyze my illnesses. Yeah, the diet limited the amount of blood pouring out of me, but it also did something different. It created unusual great days. These phenomenal days might only happen ten times out of the year, but they did happen. I always thought "this did not make sense". Scientifically, this did not make sense. I slowly started looking at the variables that could explain this unknown.

When I analyzed the possible variables leading to my great days, I always wound up with the variable "food". "Once you eliminate the impossible, whatever remains, no matter how improbable, must be the truth." (Doyle, 1891) Food had to be the cause. The idea of food constantly perplexed me. Doctors, articles, brochures, and books pointed me in other directions. Meanwhile, I had days in misery and few days in total bliss. My moments of bliss came when I played around with high protein diets. Not that high protein diets were the cure to cure all ills. But the high protein diets many times limited those foods with measurable sources of free glutamate. The diet sporadically pushed me away from foods that contained high sources of free glutamate. So, there were a few days that

I would get lucky and not consume free glutamate products. There were also days that sticking to high protein diets made me feel crappy. Nothing made sense and it drove me berserk.

One liquid drink routinely made me ill. This allowed me to narrow in on the ingredients affecting me. I was an accountant at this point. I loved the flavored ice teas. I would have a bottle to drink for lunch, as a snack, or stop by a store to and from work. I slowly realized that drinking most flavored ice teas would inevitably land me in the bathroom within 10 to 20 minutes. This happened every time. One day I looked at the ingredients. Flavored ice teas contained easily recognized ingredients that included sugar, water, and tea. Some also contained not so recognizable ingredients such as "natural flavors". How could one define the ingredient "natural flavors"? Could natural flavors mean peach? I researched the term "natural flavors" using a web browser. Researching the ingredient "natural flavors" led me to web pages criticizing monosodium glutamate. It happens that monosodium glutamate has one of the highest levels of processed free glutamic acid, while "natural flavors" has less, though still potent amounts, of free glutamic acid.

Liquids have a quicker impact on the human body than solids. Think alcohol. Yes, there are food products that contain alcohol. Alcohol is rarely used in many products for taste or effect. It just made sense to the manufacturer to use alcohol in the creation of the product. You wouldn't eat products containing alcohol to get drunk. You would be sitting on a bar stool longer than Norm from Cheers. Solid food takes longer to digest. Much of its nutritional benefits are used by the body later in the digestive process. People who drink heavily also eat solid foods when sobering up. Eating solid foods are excellent at absorbing the alcohol and limiting its effect on the body. The answer to my ills would never be found just in solid foods. If the poisonous ingredient only existed in solid foods, I would have never found it. Since I walked around in a mental fog most of the time, I wouldn't have been able to sort out the complexities of solid foods. I'm 100% healthy; the poison within my bloodstream also came from liquids.

I knew little about monosodium glutamate at that point. I heard about monosodium glutamate from constant visits to Chinese restaurants. Many Chinese restaurants would indicate on their menus "No MSG". This told me that enough people had trouble with this substance for Chinese

restaurants to offer options. Many web sites warned me about the dangers of monosodium glutamate. Restaurants used and still use monosodium glutamate to enhance the flavor of their foods. The websites educated me that the active chemical in monosodium glutamate was "free glutamic acid". "Monosodium glutamate is a food ingredient that contains 78.2 per cent glutamate, 12.2 per cent sodium (salt), and 9.6 per cent water." (Anglesey, 2002) The chemical free glutamic acid enhances the flavor of food and drink. Scientists do not understand how free glutamate enhances the flavor of food and drink, because free glutamate does not have a unique taste. "But some scientists believe that MSG stimulates glutamate receptors in the tongue to augment meat-like flavors." (United States Department of Health and Human Services, 1995)

Free glutamate can be created naturally or by man. An anti MSG website (Truth in Labeling.org) overwhelmingly focuses on the processed form of free glutamate. Monosodium glutamate (processed glutamate) comes packed in a powder to allow cooks to spray it on food. Other processed free glutamate ingredients are included in other processed food products. The Anti-Glutamate groups (Msgmyth.com, Truthinlabeling.org) mainly look to the **processed** form of free glutamate as the dangerous kind.

These groups however, primarily believe **naturally occurring** free glutamate to be safe. The Anti glutamate organization "Truth in Labeling.org" states

"Since processed free glutamic acid used in processed food and in plant "growth enhancers" is not identical to glutamic acid found in unprocessed, unadulterated food and in the human body, there is no reason to believe that the product called "glutamic acid" by the glutamate industry will be functionally equivalent to pure [natural] L-glutamic acid." (Truth in Labeling.org, 2004)

The anti glutamate websites announce that food manufacturers use a variety of names for processed free glutamic acid. "Two examples of ingredients containing processed free glutamic acid are "hydrolysis protein" and "natural flavors." (TruthinLabeling.org, 2004) Please remember that free glutamic acid is a natural source and never an artificial one. Free glutamate comes from nature even if man has participated in creating it. Products advertised as 100% natural can have processed free glutamic acid. Products advertised as having "No MSG" can also have processed free glutamic acid. "Manufacturers can use a variety of ingredient names to disguise their use of processed free glutamate. There are over 40 ingredient names used to describe this ingredient." (Truthinlabeling.org, 2004)

I started to eliminate those products that contained one or more of the forty ingredients. "The Anti-Glutamate websites indicated that "hydrolysis protein" would always contain processed free glutamic acid while the ingredient "natural flavors" might contain free glutamic acid part of the time." (Truthinlabeling.org, 2004) I never took a chance on consuming products that might have processed free glutamate. I eliminated all ingredients that had any chance. While avoiding all products having processed free glutamic acid improved my health, it did not fully heal me. My illnesses still prevailed and prevented me from having a normal life. But the diet reduced my symptoms. I bled out in the bathroom less. I had less brain fog. **Processed free glutamic acid was only half the answer.** I shuffled back and fourth between avoiding processed free glutamic acid and not caring. This took a year. From time to time, I would look at the list of multiple ingredients possibly containing free glutamic acid. I noticed one day that a few ingredients looked like natural ingredients. I sought out a way to avoid products containing **naturally occurring** free glutamic acid. That became a tougher task since most foods contain some amount of free glutamic acid.

Finding measurements of natural free glutamic acid in foods became exceedingly difficult. Very little

information is available regarding measured natural free glutamic acid within foods. Questions needed to be answered. How much natural free glutamic acid was there in meat? How much free glutamic acid was there in wheat? It took enormous lengths to find the information I needed. I found enough information and planned a diet with no processed free glutamic acid and low amounts of natural free glutamic acid. My illnesses slowly disappeared. I finally felt well after so many years. But I couldn't stop there. I needed to measure the effects specific amounts of free glutamic acid had on me. I always eliminated processed free glutamic acid. My focus primarily rested on studying the effects of natural free glutamic acid. The more natural free glutamic acid I ingested, the greater the harmful effects. All processed free glutamic acid went well beyond the breaking point, all set off negative side effects. **For complete health, I needed to eliminate all ingredients that had processed free glutamic acid and all natural products that contained too much free glutamic acid. I provide specifics in the chapters on diet.**

### Chapter 3: Free Glutamic Acid

"There are two kinds of glutamic acid. One glutamic acid is labeled "free". The other kind of glutamic acid is labeled "bound". Bound glutamic acid is harmless. It is only in this free form that glutamate can enhance a food's flavor". (United States Department of Health and Human Services, 1995) The free glutamate is the danger I have referred to. But the body needs "free glutamic acid". From reading the last two chapters, you would think otherwise. You would think free glutamic acid to be one of the most poisonous substances known on Earth. However, free glutamate is a complex substance whose complexity will be discussed throughout the book.

Glutamic acid is an amino acid. An amino acid is an organic substance, a building block of life. Amino acids are small substances that are building blocks of proteins and are produced when proteins are digested. In summary, complex proteins are digested to simpler amino acids. An amino acid contains two or more molecules, while a molecule contains two or more atoms. "The organic substance glutamic acid (bound or free) can be found in most life forms and a large variety of foods. Bound glutamate is part of a protein, a protein being a string of amino acids.

On the other hand, "free glutamic acid" is an amino acid that is independent and not attached to a protein. Freeing the glutamic acid from the protein produces flavor enhancing ingredients like "monosodium glutamate."

(American Academy of Family Physicians Foundation, 1991)

Free glutamate has many roles. Free glutamic acid enhances the flavor of food. Free glutamate has been coined by scientists as the "fifth taste". There are four known basic tastes: sweet, sour, salty, and bitter. "The fifth, free glutamic acid has also been termed "unami". Free glutamic acid does not have any of the original four tastes (bitter, sweat, sour, and salty)." (Journal of Young Investigators, 2008) Free glutamate is a unique taste. It doesn't taste very appealing by itself. But only when added to food does unami make its presence known.

Free glutamic acid plays a second role. Free glutamate not only produces better tasting food but is needed for survival. "Free glutamic acid acts as a neurotransmitter within the brain. Your brain runs on the actions of neurons. All neurons have a specific role in the brain. And each neuron needs to communicate with other neurons." (Yernool et al, 2004) The messages sent between neurons need to be clear and neurotransmitters allow this to happen. "The transfer of an impulse across the synapse

(where the nervous impulse jumps from one neuron to another) depends upon the release of the neurotransmitter (a chemical substance). The neurotransmitter is contained in sacs at the end of the neuron." (Chabner, 2001) Without neurotransmitters, the impulse isn't transmitted. There are a variety of neurotransmitters. Free glutamic acid is one type of neurotransmitter. "Glutamate is the most abundant neurotransmitter in the brain". (Devlin, 2007) Each type of neurotransmitter sends specific messages. "The neurotransmitters free glutamic acid excites neurons into action." (South, 2001) "The neurotransmitter GABA (Gamma Aminobutyric Acid) stops or inhibits neurons from acting." (Wikipedia, 2007)

We do not need to digest free glutamic acid. The body can produce this chemical on its own. The body also regulates the neurotransmitter on its own. If the brain contains too little free glutamate, messages will not be sent correctly between neurons. Too much free glutamic acid within the brain will cause deadly trouble. All scientists will concede that too much free glutamate in the brain causes a host of neurological disorders, even brain death. "If excessive amounts of glutamic acid are not removed from the synapse area after the signal transmission, various nervous system malfunctions and

breakdowns like schizophrenia and epilepsy occur." (Yernool et al, 2004) Now you may be asking why we would ingest free glutamic acid and risk neurological disorders or death. Many scientists look to the blood brain barrier to protect us from excess free glutamic acid.

Human beings and complex animals have a blood brain barrier. This blood brain barrier is supposed to limit the amount of free glutamate entering the brain. This should keep the correct balance of free glutamate within the brain, letting the brain function correctly. The blood brain barrier also regulates or prevents multiple substances from entering the brain. "Glutamate flux from plasma into brain is mediated by a high affinity transport system at the BBB [blood brain barrier]." (Smith, 2000) I believe scientists are overestimating the ability of the blood brain barrier. I digested a lowered amount of free glutamate and my multiple chronic illnesses disappeared. I am not saying that every person will have a problem with digesting free glutamic acid. Every person reacts differently. Some may not show short term effects after ingestion. But free glutamic acid can create chronic long term illnesses without warning.

I will provide you with a summary of the three major arguments involving free glutamic acid in the next few

chapters. I then provide a chapter on the weaknesses of the blood brain barrier and discuss the connection between free glutamic acid and the chronic diseases I cured myself of: Tourette Syndrome, Hidradenitis Suppurativa, and Ulcerative Colitis. I also identify the linkages between free glutamic acid and a number of other chronic diseases, with a discussion of free glutamate's role in the abuse of alcohol and nicotine. Lastly, I provide you with information on how the free glutamic acid diet works. The chapters on diet will explain how to implement a free glutamate diet in your own life. I am hopeful this diet will help alleviate your ills. I can state with 100% certainty that lowering free glutamic acid resulted in a cure for my Ulcerative Colitis, Hidradenitis Suppurativa, and Tourette Syndrome. I cannot say this diet will cure you of yours. But I think there is hope.

#### Chapter 4: Climbing Use of Free Glutamic Acid

The rising use of processed free glutamic acid has been disturbing. We can thank technology for that. The Asiatic cultures first made use of free glutamic acid. "They extracted the free glutamic acid from a type of seaweed called Sea Tangle." (Cavan in NoMSG.org, 1997)

"And until new technologies produced free glutamic acid in greater amounts, these cultures used this process for over 1,000 years." (Gardiner and Wilson, 1998) They may not have been aware that the substance was free glutamic acid but it did flavor their food nicely. "It was not until 1908 that Professor Kikunae Ikeda of the University of Tokyo discovered free glutamic acid." (Cavan in NoMSG.org, 1997)

The claim to fame for free glutamic acid came during the Second World War. "American quartermasters realized that Japanese army rations tasted great." (NOHA News, 2000)

The Americans found that free glutamic acid enhanced the flavor of the food, and the idea of flavoring began in the industrialized manner. The free glutamate substance was later called "Monosodium Glutamate". At this time, the process underlying production of monosodium glutamate was slow and costly. This kept the quantity of processed free

glutamic acid to a minimum, with a small impact on the American public. But the production of monosodium glutamate kept increasing, and it "has doubled every year since 1948." (Von Stackelberg, 2000)

New technologies have increased production of monosodium glutamate and other free glutamate products. In the 1950's, the production of monosodium glutamate began in North America. "The producers used wheat gluten instead of seaweed." (Cavan in Congress, 2007) Yes, you will not be able to have wheat products. Wheat has an abundant amount of natural free glutamate which made it easier to extract the substance from wheat. The Asian countries seem to have taken control of the monosodium glutamate industry to this day. "In 1956, the Japanese succeeded in producing free glutamic acid by means of microbial fermentation."

(TruthinLabeling.org, 2004) This means that free glutamic acid is extracted from the cell walls of bacteria. This means of production still remains the best way of creating monosodium glutamate and other free glutamate products. This process also tripled the amount of processed free glutamic acid that could be manufactured. In 1960, Accent became the leading seller of monosodium glutamate in the United States. Your grandparents may remember the can of Accent at the dinner table like the salt and pepper shaker.

Now, the free glutamic acid has already been added to your food. This comes from technological advancement in food manufacturing. "Today, 200,000 tons of monosodium glutamate is produced yearly worldwide. The United States consumes approximately 28,000 tons per year." (Cavan, in Fed, 1997) This statistic confines itself to **processed** free glutamate.

## Chapter 5: The Arguments

There are three primary arguments regarding free glutamic acid.

The first argument considers the dangers of **processed** free glutamic acid. It's helpful to note that this argument talks only of **processed** free glutamate. One example includes some Chinese restaurants that spray monosodium glutamate on the food they serve. As I talked about before, there are groups of individuals who believe that processed free glutamic acid is dangerous in the long term. These groups are grassroots organizations mostly found on the World Wide Web. These include "The Truth in Labeling", and "No MSG" organizations. The manufacturers of monosodium glutamate and other processed free glutamate products will support its use. There are some medical professionals who are looking at this subject closely. However, they do not agree with each other.

The second argument debates the chemistry of free glutamic acid. Most food manufacturers believe processed and naturally occurring free glutamate to be chemically identical. Opponents of processed free glutamic acid believe that processed and natural free glutamate are

different, and that only the processed free glutamate is dangerous.

The third, and most complex argument, involves the blood brain barrier. The blood brain barrier purportedly protects the brain from chemicals that might harm it. Supposing a poison enters your system through your blood stream. The blood brain barrier should not allow that poison to enter the brain. Some medical professionals suggest that the blood brain barrier can regulate all digested amounts of free glutamic acid, while others oppose. I oppose.

I support the position that processed free glutamic acid be eradicated from our food supply. I also take the unusual position that natural and processed free glutamate is chemically similar, and that natural free glutamic acid needs to be lowered in our bloodstreams. **Please keep in mind that almost all processed free glutamate ingredients exceed most natural sources.** But the blood brain barrier does not provide full protection from excess free glutamate.

**Both the reduction of natural free glutamic acid and the eradication of processed free glutamic acid were needed to eliminate my Ulcerative Colitis, Hidradenitis Suppurativa, and Tourette Syndrome.** This statement

presents my core argument. Though I support my position by research, the concrete evidence comes from my life experiences. People with these disorders have gone into remission at times. These remissions occur infrequently. But my current good health cannot be considered a freakish remission. I can, at will, create and eliminate Ulcerative Colitis, Hidradenitis Suppurativa, and the tics within my body. I never had a remission prior to the use of this diet. I have provided snapshots of my medical records on my web page. I will provide evidence supporting my arguments. And I will also provide the details of my diet.

### **First Argument: Processed Free Glutamate**

Processed free glutamic acid poisons a multitude of people with a known or unknown sensitivity to this substance.

The following experience occasionally occurred with me, as well as other people. A man walks into a Chinese restaurant and orders wonton soup, an egg roll, and some beef fried rice. His face starts to feel funny as it begins to expand. These first effects start twenty minutes after finishing his meal. A small headache slowly becomes a big one, turns into a "migraine". His face flushes.

Nausea sets in. And as he's fighting these symptoms, a trip to the bathroom is needed before he throws up. There are many people who have these effects. **Never having these feelings doesn't mean this diet could not help you. Please do not look upon free glutamate excess as an allergy.** Our body needs free glutamate to survive. There were plenty of times I went to a Chinese restaurant and did not have any short term symptoms. Usually the food or drink had to be quite potent with monosodium glutamate or another free glutamate source for this to happen. I have come across many stories of this nature and some people have written about their own experiences. You can read these experiences in the forums of "NoMSG.org".

There are too many people who complain about symptoms caused by processed free glutamic acid, usually known as monosodium glutamate. How could these manufacturers of free glutamic acid or the United State's Food and Drug Administration think potent sources of processed free glutamic acid could be safe? How could those same groups not think it would be detrimental in the long term? In their defense, some scientists believe that they have shown processed free glutamic acid to be safe, though they are wrong. A Harvard law student, Marc Cavan wrote about he and his family's symptoms which resulted from digesting too

much monosodium glutamate. The members of his immediate family have all had reactions from this substance. "The reactions have included sweats, dizziness, headaches, and sleeplessness. He additionally reported passing out once after consuming this substance." (Cavan, 1997) There are many other substances that are dangerous for people. People often become seriously ill or die from eating peanuts. A small amount of peanut can close a child's throat. It should not be hard to imagine that free glutamic acid can do the same thing.

Governments, scientists, doctors, and other concerned citizens have all written about the negative reactions of processed free glutamate sources like monosodium glutamate. "Because of the popularity of symptoms emanating from Chinese restaurants, the "New England Journal of Medicine" called this reaction the Chinese Restaurant Syndrome (CRS) in 1968." (Alcantara M.D, 2002) This topic has been talked about for decades. If our government chooses not to listen to the medical articles of old, it should listen to its own. "The Food and Drug Administration's Center for Food Safety and Applied Nutrition received 661 complaints of adverse reactions purportedly related to MSG." (Cavan in Fed, 1997) There obviously is a problem.

The public has also reported negative effects from potent free glutamate sources, though scientific bodies are still debating it. The Federal Food and Drug Administration contracted with the Federation of American Societies for Biology to look into the MSG matter. "The FASEB stated that no scientifically verifiable evidence existed." (Walker & Lupien, 2000) This conflicts with other scientific studies done on the effects of high processed free glutamate sources. For example, a scientific study tested the effects free glutamic acid (L-glutamate) had on 56 healthy subjects. "After oral administration of L-glutamate on an empty stomach, the symptoms occurred in all but one subject. Symptoms included burning, facial and chest pressure." (World Health Organization, 1974) The multitude of tests on free glutamic acid consistently conflict with each other. The United States government even conflicts with itself regarding this issue. The FDA's Advisory Committee on Hypersensitivity to Food Constituents stated that MSG was safe for the general public, but suggested that "some individuals might experience adverse reactions for a short time even at normal levels of ingestion." (Cavan in Fed, 1997)

There can be several reasons for conflicting reports. Those tested may not have sensitivity to free glutamate. There are people who will not show those short term effects that I talked about, but may find it to be a larger problem in the future. There could be, one might suggest, a government cover up. The glutamate industry has become a powerful political force much like the tobacco industry. "The MSG industry rakes in over a billion dollars in revenue." (TruthinLabeling.org, 2004) All this money used to enhance the flavor of our food. It's unbelievable! But think of all the revenues food companies can make by enhancing the flavor of their products, the meat juicier, the fruits fresher, and the ice cream sweeter. Companies use flavor enhancements to beat out their competition, while all recognizing that their competitors use the same flavor enhancements. They hope that their products are so good and addicting that you'll keep coming back for more.

The billion dollar glutamate industry also puts a great deal of money in publicizing the health of free glutamic acid. "The IGIS (International Glutamate Information Service) was created for this purpose. IGIS purports to base its information on the extensive body of scientific evidence, which confirms the safety and the

benefits of the widely used food ingredient."

(TruthinLabeling.org, 2004) Can you imagine a company specifically set up to promote the safety of a nutritional substance? How many products need a company to point out that they're safe? Not many. There are also free glutamate manufacturers and food producers who occasionally speak of this substance. "These groups call themselves International Hydrolzyed Protein Council and the International Glutamate Technical Committee; their members include representatives from the Ajinomoto Corporation, the highest producer of monosodium glutamate. Additional representatives include individuals from the Campbell Soup Company, Pet Foods, McCormick and Company, Red Star Specialty Products, and many more." (TruthinLabeling.org, 2004)

The IGIS (International Glutamate Information Service) informs the public of the safety of processed free glutamic acid. "The IGIS states that the glutamate added to foods in this way represents just a small fraction of the glutamate consumed in the average daily diet. They believe that, on average, people ingest .5 to 1.5 grams of monosodium glutamate each day. The IGIS also points out that between 10 and 20 grams of glutamate are consumed every day and absorbed for use by the body in normal

metabolism." (IGIS, 2002) Is the IGIS referring to the healthy bound glutamic acid or the poisonous free kind? "A steak has thousands of grams of bound glutamic acid, the kind of glutamate that delivers no harmful effects."

(Institute of Food Technologists, 1987) So we'll go with the presumption that the 10 to 20 grams of glutamic acid are of the free and dangerous kind. On paper, the 10 to 20 grams seems quite low an amount. But think about what 10 to 20 grams of TNT can do. The small numbers camouflage the impact quite well. "Parmesan cheese contains 1,200 milligrams per 100 grams of food." (Institute of Food Technologists, 1987) One thousand milligrams equals one gram. There are few more potent sources of free glutamate than parmesan cheese. A small slice of Parmesan cheese will hurt me, and take at least 24 to 72 hours to clear out of my system.

Processed free glutamate has also been disguised well in our food and drink. The United States Food and Drug Administration have done a remarkable job in keeping its citizens in the dark on the true ingredients in many of our consumables. Shouldn't we have the right to decide what we put in our mouths? The complexities of the ingredient names disallows us that choice. I believe many people have looked at the ingredients of a single product and realized

they didn't know what most of them were. Consumers have even less choice since most foods contain potent free glutamate substances along with other kinds of chemicals. Let's take a look at United States law when dealing with free glutamate ingredients. You would think the law was written by the manufactures of processed free glutamate products like monosodium glutamate.

Most people think of glutamate as the flavorful ingredient "Monosodium Glutamate" as I once did. We know that Monosodium Glutamate contains 78.2 percent glutamate, 12.2 percent sodium (salt), and 9.6 percent water. "Only when a product contains this mixture, or a more potent form of free glutamate, does the food manufacture even need to put the word "glutamate" in the ingredient listing of that product." (TruthinLabelling.org, 2004) Now monosodium glutamate is one of the most potent free glutamate substances while just a touch of monosodium glutamate will bring great harm to me, the standards set by the Food and Drug Administration on this issue are very loose. Any ingredient that has less free glutamate than MSG, does not need to be written on the ingredients list as "glutamate". Reducing the levels of potency of free glutamic acid would not matter; they would still have ill effects in my system. When manufactures use a less potent form of free glutamate,

they can use ingredient names that do not provide consumers with full disclosure. "Autolyzed yeast, calcium caseinate, yeast food, yeast extract, and hydrolyzed proteins are examples of ingredients that contain lesser percentages of processed free glutamic acid (MSG)." (TruthinLabelling.org, 2004) These ingredients are still quite similar to monosodium glutamate, all having astronomically high amounts of free glutamate. The United States Food and Drug Administration states that all ingredients containing lesser amounts of free glutamate shall be called by their common names. Meaning, these ingredients may have potent amounts of free glutamate but the public will never know it. One popular ingredient used to disguise free glutamate is "natural flavors". "The Code of Federal Regulations, 21CFR101.22 Subpart B: Foods, the terms "flavors", "natural flavors", or "flavorings" may not include MSG, hydrolyzed proteins, and autolyzed yeast." (Whole Foods, 2007) However, we know that ingredients like "natural flavors" can still have strong amounts of free glutamate.

"The term natural flavor or natural flavoring means the essential oil, oleoresin, essence or extractive, protein hydrolysate, distillate, or any product of roasting, heating or enzymolysis, which contains the flavoring constituents derived from a spice, fruit or fruit juice, vegetable or vegetable juice, edible yeast, herb, bark, bud, root, leaf or similar plant material, meat, seafood, poultry, eggs, dairy products, or

fermentation products thereof, whose significant function in food is flavoring rather than nutritional. Natural flavors include the natural essence or extractives obtained from plants listed in Secs. 182.10, 182.20, 182.40, and 182.50 and part 184 of this chapter, and the substances listed in Sec. 172.510 of this chapter." (United States Food and Drug Administration, 2002)

As you can see in the first sentence, the word hydrolysate appears. Hydrolysate, by definition, is a food product created by hydrolysis. We know that hydrolysis creates potent amounts of free glutamate. This provides proof that tricky ingredient names like "natural flavors" can sometimes mean they contain high levels of free glutamic acid. I will provide a list of ingredients that possibly contain potent amounts of processed free glutamate. This list can be found in the diet and appendix chapters.

The science used by processed free glutamate supporters does not match up with public reports. There are too many people who show negative effects to processed free glutamic acid. There must be something wrong with some of the science. However, people are different and react differently. Some will never show the short term effects of digesting free glutamic acid sources. But a bomb may explode one day from the constant strain. Chronic

disorders will show up sooner or later. Others, like me, will feel both the short and long term effects.

But free glutamic acid should not be identified as an allergy. You may not get a simple short term reaction all the time as you would from any other allergy. Solid foods take time to digest and the reaction may not come about for awhile. You also may not notice the short term reactions because you're used to them. When you're never feeling well you notice the reactions less. But when you start to feel better and your chronic symptoms lessen, the reactions will be more noticeable.

The elimination of all processed free glutamate sources was half the battle for me. I felt better at this stage but still had many of my chronic symptoms. I needed to go further to win the battle, beyond the limits of current research. I needed to consume natural foods having only low levels of free glutamic acid, along with avoiding all processed free glutamic acid. No processed free glutamic acid ingredients have low levels of free glutamic acid. **The free glutamate may be low when compared to the product. However, the body processes food based on individual ingredients. If a single ingredient within a product has high levels of free glutamic acid, it will set off my system, no matter the size of the overall product.**

For example, a person allergic to peanuts can still die of peanuts regardless of how little peanut is in the overall product.

### **Second Argument: Natural Free Glutamate**

The producers of monosodium glutamate rely on the belief that the chemistry of natural and processed free glutamic acid is the same. It's their best argument, since the natural substance has been digested since time began. How could natural free glutamate be dangerous if there is little chemical difference? It can. I needed to both limit the naturally produced free glutamic acid and eliminate all processed free glutamate from my diet to eliminate Ulcerative Colitis, Hidradenitis Suppurativa, and Tourette Syndrome.

The anti glutamate web forums speaking of free glutamic acid usually address the processed kind. I think some people are scared about looking at natural foods. Think of all the natural foods that might need to be eliminated due to high levels of free glutamate. This fear plays into the hands of producers of processed free glutamic acid. Certain foods provide comfort for all of us. These comfort foods are also different for all of us.

Some of us need a chocolate bar, while others may need an ice cream shake or a cold beer. Eliminating our comfort foods is a psychological toll on all of us. The psychological toll is more prevalent for those who are chronically ill. Those stuck in their homes because of chronic illness have few legal pleasures in life.

Free glutamic acid naturally present in food and the processed free glutamic acid are identical. I will explain the argument chemically for those interested. Free glutamic acid is an amino acid, the building blocks of life. As mentioned earlier, there are two kinds of free glutamic acid. There is bound glutamate which is attached to the protein. Bound glutamic acid will not hurt you regardless of the amount; and everyone is in agreement about that. Free glutamic acid is not attached to the protein and is allowed to go off on its merry way. It is this free glutamate that acts as a neurotransmitter in your brain and is dangerous in excess. It is this class of glutamic acid that I am concerned about. "The chemical structure of natural free glutamic acid uses the academic term "L-glutamate" only. Only higher level organisms have this free glutamate structure. If we did not ingest free glutamate, our bodies would produce free glutamic acid and it would be this "L type". Additionally, this L-glutamate

has no contaminants because of its natural purity.

However, there is an "L type" free glutamate that can be created unnaturally and which has contaminants. These contaminants include pyroglutamic acid, mono and dichloro propanols, heterocyclic amines, and peptides. Scientists state that these contaminants are carcinogens, cancer forming. The processed free glutamate takes on the D form (D-glutamate) and is only produced from lower life forms. The D-form is found in the cell walls of bacteria, and our processed free glutamic acid is now mainly produced from bacteria. Because of these chemical differences, the anti glutamate supporters believe that the natural L-glutamate is different than the processed L or D glutamate."

(Chunhasawasdikul, Dr., 2006) There are small differences between these chemical forms but not enough. The naturally occurring free glutamic acid should be considered equal to the processed "L" and "D" forms of free glutamate.

The argument that naturally free glutamate is good and processed free glutamate is bad is nonsense. The only difference between the natural L-glutamate and the processed L-glutamate are the contaminants added to the processed form. These contaminants may add to the problem, but the main problem here is the free glutamic acid. The difference between the L- form and the D-form also has

little relevance. The D-glutamate is formed using lower life forms such as bacteria. But the L- and D-form are chemical identical molecules, being the mirror image of each other. "So a supporter of an anti glutamate group like Dr. Adrinne Samuels will accuse the FDA of refusing to differentiate between potentially toxic glutamate as a consequence of manufacture and truly natural glutamic acid." (Cavan in Food Chemical News, 1997) "Those supporters of processed free glutamate like FDA Associate Commissioner for Regulatory Affairs Ronald Chesemore "reject Samuel's' contention that there is no difference between natural and manufactured glutamate, since their chemical and functional properties are identical." (Cavan in Food Chemical News, 1997) It isn't true. Free glutamate, as a whole, needed to be lowered in my bloodstream to eliminate all symptoms of my chronic illnesses.

### **Third Argument: The Blood Brain Barrier**

The blood brain barrier cannot fully protect the brain from excess free glutamic acid in all of us. Knowledge of some medical brain jargon is needed to follow this train of thought. "The brain is full of cells called neurons, or

also known as nerve cells. Each neuron has a specific function in the brain. Each neuron sends signals to start or stop an action. Neurons use transmitters to send and receive messages, and there are about 20 different kinds of neurotransmitters. The type of neurotransmitter used depends upon the type of neuron. "Free glutamic acid is the most abundant fast excitatory neurotransmitter in the mammalian nervous system." (Wikipedia, 2007) There needs to be a balance of all chemicals including neurotransmitters for the brain to function and for the neurons to communicate properly. The neurons within the brain, which utilize free glutamate as a neurotransmitter, require a specific amount of free glutamic acid to correctly send messages to other associated neurons. Having excess free glutamic acid produces a dysfunction within the brain, and where the brain goes, the body will surely follow. "Neurotransmitters are categorized as: amino acids, neuro peptides, biogenic amines, or acetylcholine. Free glutamate is an amino acid. There are "essential amino acids" and "unessential amino acids". Both the essential and unessential amino acids have equal importance. But essential amino acids can only come through digesting specific compounds. The body can produce all unessential amino acids independent of digestion. Free

glutamic acid is an unessential amino acid." (Wikipedia, 2007) The body can produce free glutamate without food. Phew!

You might be asking why I am picking on free glutamate and that would be an excellent question. Without the scientific jargon, research, and experiments, I know that eliminating all processed free glutamate and lowering the natural kind put an end to my misery. That being said, some scientific theories that show the dangers of free glutamic acid are important to note.

The amino acid "free glutamate" stands out among all other free amino acids the brain needs. Look how our bodies attain the amino acids, neuro-peptides, biogenic, and acetylcholine to keep our neurotransmitters going. Neuro-peptides, biogenic amines, and acetylcholine cannot be extracted from food directly. For example, "the Monoamine "Serotonin" needs the amino acid "Tryptophan" to be created". (Wikipedia, 2007) Only some amino acid neurotransmitters can be extracted directly from food; one is free glutamate. Let's take a look at the "amino acid" neurotransmitters free glutamate, aspartame, GABA, and Glycine. "Proteins contain very little Glycine. The overwhelming amount of Glycine is produced by the body

using the enzyme "serine hydroxymethyl transferase."

(Wikipedia, 2007) You've probably heard of "aspartame".

Aspartic Acid or Aspartame is a close cousin of glutamate, and just as dangerous. Like free glutamate, aspartic acid excites neurons, though it is slower acting. And it is used to enhance the flavor of food sources. Aspartic acid will not be allowed on this diet. Aspartic Acid is heavily used in diet soft drinks. Aspartic acid, like free glutamate, enhances the flavor of these soft drinks. Though regular soft drinks have plenty of free glutamate, sugar contributes to the flavor of regular soft drinks. However, no sugar exists in diet soft drinks, and more chemicals are needed to enhance the flavor. Aspartame helps provide this flavor enhancement.

Next, "Gamma amino-butyrac acid is created from free glutamate." (Wikipedia, 2007) Looking at this closely, you'll see that free glutamate is the primary neurotransmitter chemical that can be extracted directly from food in great amounts. GABA and aspartame have an extremely close relationship to free glutamate. No digestive process or manipulation is needed for free glutamate to be used as a neurotransmitter. This is scary. The digestive process helps regulate substances. Free glutamate can bypass this process. I have created a diet

to help balance out the neurotransmitters within the brain using food.

Truth in Labeling.org suggests that a few scientists claim that "free glutamate is most likely not subject to the digestion process." (Truth in Labeling.org, 2005) From my experience, this is an understatement. The rate of metabolizing free glutamic acid can be extraordinary. Liquids containing free glutamic acid affected me at a greater rate than those that were solid based. Narrowing down the cause of my symptoms from solid foods would be impossible, because solid foods take hours or days to digest. Since the breakdown of solid foods take more time, the energy released from their digestion takes time as well. Solid foods are slow in providing us energy. Some liquids are so potent with free glutamic acid that narrowing down the cause for my symptoms became much easier. The free glutamate in liquid form has a very short rate of metabolism which means that the time between ingesting the free glutamate substance into your mouth and its impact on your system is incredibly short. Free glutamic acid does not require the digestion process to be used by the body because it is already in a simplified form. Free glutamic acid has been digested before consumption; free glutamic acid is an end product of

digestion. If you digest a piece of meat, that piece of meat certainly does not enter your blood stream whole. The meat is broken down so that the body can convert the food into the energy and vitamins and minerals the body needs. The digestive system processes iron to be used by the body in many ways. "One of these ways is the creation of hemoglobin which is a molecule that helps carry oxygen throughout the body." (Wikipedia, 2008) Free glutamic acid does not need to be broken down. This substance bypasses the body's defenses and has an automatic pass to affect our system, either positively or negatively. I believe an evolutionary reason exists for this, for other substances also bypass the digestive process. "We know that vitamins, minerals, sugars, and some amino acids can be assimilated without digestion." (Truthinlabeling.org, 2005) Giving certain chemicals the ability to bypass the digestive system can sometimes be a good thing. When the body is under great strain, certain vitamins and minerals will be needed so quickly that going through the digestive process would not be beneficial.

I theorize that nature and genetics allowed free glutamate to bypass the digestive system. Nature has determined that free glutamate would be needed instantly when the body is under stress. "Many have theorized that

free glutamate plays a profound role in memory and learning." (Wiebodt et al., 1994) Nature has not prepared us for all the free glutamate products of today.

The overwhelming majority of food products have processed free glutamic acid. The increase started in the 1950's. Our bodies do not change at such a rate. The consumption of so much free glutamate is overloading our systems. Free glutamate skips the digestive system as nature intended. All the free glutamate automatically heads toward the brain, as nature also intended. The blood brain barrier provides the major defense for the brain from this overabundance of free glutamate. The blood brain barrier is not invulnerable.

"Some medical professionals like Dr. Linda James and makers of free glutamate ingredients believe the blood brain barrier provides full protection from free glutamate excess." (Demars, 2004) They rely on the blood brain barrier as their sole defense against attacks on the free glutamate industry. The blood brain barrier plays a vital role in the neurological system and so plays a major role in life. The blood brain barrier protects the brain from substances that could damage or kill the brain. The blood brain barrier also regulates those chemicals the brain needs to properly function. "The blood brain barrier is

formed by "tight junctions that seal off the paracellular diffusion space." To cross the barrier, substances have two options. In the first option, substances dissolve and allowed to pass through the blood brain barrier. The second option has substances transported by selected carriers across the blood brain barrier. Each carrier transports a specific chemical across the barrier." (Smith, 2000) The brain needs less imported free glutamic acid since the brain can produce it on its own. We ingest significantly more free glutamate than the body and brain needs. If the barrier protected the brain 100%, free glutamic acid would never be allowed to cause damage. If a person consumed a large amount of free glutamic acid, that free glutamic acid would increase in the plasma. "Plasma makes up 55% of your blood. The plasma includes: water, proteins, sugar, salts, hormones, and vitamins." (Chabner, 2001) With complete protection from the blood brain barrier, the brain would not be affected by major changes in the plasma.

As my experiences have shown, the blood brain barrier provides less protection than what most scientists believe. "There are also some areas of the brain that do not contain a BBB and therefore allow rapid L-glutamate uptake from the circulation." (Smith in Hawkins et al, 2000) "Those

unprotected parts of the brain are known as the circumventricular organs." (Wikipedia, 2007) These organs surrounding the ventricles of the brain appear unprotected. I will primarily concentrate on two of these unprotected organs, the Hypothalamus and the Pituitary glands. "The Hypothalamus controls body temperature, emotions, sexual desire, thirst, hunger, and the release of hormones from the pituitary gland." (Wikipedia, 2000)

The hypothalamus and pituitary include those regions of the brain not protected by the blood brain barrier. "Dr. John W. Olney, a neuroscientist at Washington University in St. Louis became one of the first researchers to publish studies exploring the harmful effects of free glutamate. He believed that elevated free glutamate levels in plasma can impact unprotected regions of the brain. Dr. Olney showed that the hypothalamus can be severely damaged at these levels." (Cavan in FASEB, 1997) This contradicts those who defend the blood brain barrier as being invulnerable. Free glutamic acid could affect the hypothalamus and affect those organs/structures attached to the hypothalamus.

The blood brain barrier itself can also become more permeable. There are a variety of reasons for this. Infants are most vulnerable to a rise of free glutamic acid

in the body. The blood brain barrier needs time to develop. Infants do not have a developed blood brain barrier. Even when scientific studies dispute the issues of free glutamic acid, all "showed that MSG was significantly dangerous for early infants." (World Health Organization, 1974) No reputable doctor would claim that the blood brain barrier of an infant has the capability of an adult. Babies are in danger from products containing even small amounts of processed free glutamate. I will speak further about infants in the chapter "Baby Food".

"If the free glutamic acid damages the blood brain barrier of an infant, the blood brain barrier may not develop correctly. This may not allow the normal regulation of free glutamic acid between the brain and blood. A brain can also be damaged in adulthood, affecting the blood brain barrier. The normal intact adult brain can be altered to allow seepage of excess free glutamate into the brain." (Gold, 1995)

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## Chapter 6: Ulcerative Colitis

I believe free glutamate causes Ulcerative Colitis in two ways. The first way looks at the chemical cortisol. "The synthesis of cortisol in the adrenal gland is stimulated by the anterior lobe of the pituitary gland with adrenocorticotrophic hormone (ACTH); production of ACTH is in turn stimulated by corticotropin-releasing hormone (CRH), released by the hypothalamus." (Wikipedia, 2007) The unprotected hypothalamus and pituitary gland plays major roles in the production of cortisol. It is chemical cortisol that I mainly speak of in this chapter. Please bear with me. Remember that all people are different. Not everyone has issues with free glutamic acid because of genetic reasons. And I suspect that the Hypothalamus and Pituitary gland does not function in the exact same way for every individual. But for those with Ulcerative Colitis, I believe the following information will guide you on how this disorder probably came about.

The unprotected hypothalamus can be affected by excess free glutamate. Free glutamate excites neurons. This overexcitement causes the hypothalamus and pituitary to malfunction. This malfunction releases too much cortisol for a longer period of time than normal.

Cortisol is known as the "stress hormone". "Chronic sustained stress, such as that due to adverse life events causes a prolonged increase in cortisol over several events and that in turn causes a prolonged increase in cortisol over several days." (Mawdsley & Rampton, 2005) Cortisol provides short bursts of energy in times of stress. It can be harmful if pumped through the body constantly.

"Cortisol's multiple roles include: making sure the sugar (glucose) has been effectively used by the body and regulates your blood pressure. Cortisol also helps in the release of insulin which converts sugar into energy. Additionally, cortisol maintains proper immune function and inflammatory response." (Wikipedia, 2007) Ulcerative Colitis comes from an improper inflammatory response. Cortisol plays a vital role in the development and possible elimination of Ulcerative Colitis.

Scientists have begun looking again to the brain and stress to decipher the cause for Ulcerative Colitis. I find this humorous, since the first scientific analyses of Ulcerative Colitis claimed that stress caused this condition.

"Psychological stress has long been reported anecdotally to increase disease activity in inflammatory bowel disease (IBD). And recent well designed studies have confirmed that adverse life events, chronic stress, and depression

increase the likelihood of relapse in patients with quiescent [quiet] IBD. "The stress response involves the complex integration of a series of interconnected regions within the brain, most notably the hypothalamus, amygdale, and hippocampus." (Mawdsley & Rampton, 2005)

"The hypothalamus, amygdale, and hippocampus are part of the autonomic nervous system. The autonomic nervous system controls heart rate, raises blood pressure, and increases intestinal and gland activity. The hypothalamus is at the center of the autonomic nervous system." (Wikipedia, 2007)

When the feeling of stress occurs, the hypothalamus releases the chemical cortisol. This action is characteristically associated with immunosuppression.

**However, in addition to immunosuppression, "chronic psychological stress has also been shown to be associated with sub clinical increases in inflammation." (Mawdley & Rampton, 2005)** Meaning, though stress can reduce the power of the immune system, it can also enhance it. It's small wonder why "the results of early studies of the association between adverse life events and disease activity in IBD were mixed." (Mawdley & Rampton, 2005) In my opinion, and through the evidence presented, stress in and of itself does not cause Ulcerative Colitis. It's the process the human body takes when under stress. "Like humans, some animals such as Cotton top tamarins have been shown to

develop bowel inflammation when chronically stressed."

(Mawdley & Rampton, 2005) So though one may not be in a stressful situation does not mean underneath the skin, the body isn't stressed. There must be a cause that mimics the body's reaction to stress as if one was in a stressful situation.

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## Chapter 7: Hidradenitis Suppurativa

Hidradenitis Suppurativa is a menacing disgusting disorder. "This disorder has also been named Vernevil's disease or Acne Inversa." (Shah, 2005) But Hidradenitis Suppurativa goes far beyond normal cases of acne. The disorder creates sores at the location of the apocrine glands. Apocrine glands are located under the armpits, in the groin, buttocks etc. "The apocrine glands are known as the sweat glands. They produce sweat to help cool the body when it is overheated. The production of sweat is controlled by the temperature-regulating hypothalamus." (Emedicine.org, 2006) Apocrine glands are usually found in all areas of the body covered with hair. Hidradenitis Suppurativa has been treated with minimal results by antibiotics, local wound care, and limited incision and drainage. The infections can run very deep or on the surface of the skin, but they rarely go away without medical attention. I personally needed skin graft surgery to rid one infection. The Hidradenitis Suppurativa spreads, so surgery can sometimes be a short term answer. "With Hidradentis Suppurativa come other complications including: local or systemic infection resulting from the spread of microorganisms, arthritis and restricted limb

mobility from scarring. Not surprising, the apocrine glands are regulated by the [unprotected] hypothalamus." (Emedicine.org, 2006)

Hidradenitis Suppurativa is created by an overactive immune system from the excess of free glutamate. We now know why from reading the third argument about the blood brain barrier. Free glutamate's central role is that of a neurotransmitter. Free glutamate excites the neurons. **Most importantly, since free glutamate is an excitatory, it is also an inflammatory; since inflammation is essentially the overexcitement of cells.**

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## Chapter 8: Tourette Syndrome

Tourette Syndrome is a disorder which appears to be magnificently connected to the unprotected regions of the brain. Scientists have locked on to a single chemical as a prominent cause for Tourette Syndrome. That chemical is Dopamine.

"The Hypothalamus controls the secretion of Dopamine within the brain. Dopamine also functions as a neurotransmitter. Dopamine plays a large role in motor activity." (Wikipedia, 2007) And motor activity directly correlates with the symptoms of Tourette Syndrome. The symptoms of Tourette Syndrome mainly manifest itself through twitches, a motor activity.

Few disorders are more annoying and humiliating than this one. Off the bat, "Obsessive-Compulsive Disorder and Attention-Deficit Hyperactive Disorder are often associated with Tourette." (Spencer et al., 1998) I provide a connection later to these disorders as well. Additionally, genetic studies have shown that the overwhelming majority of cases of Tourette are inherited. I believe free glutamate sensitivity to be genetic. Tourette Syndrome has been widely identified as a childhood illness which should not be the case. "The ages of highest tic severity are

eight to twelve". (Wikipedia in Leckman, 1998) However, a study using videotape to record tics in adults found that, "although tics diminished in comparison with childhood, 90% of adults still had tics." (Pappert, 2003) I should be included in the 90%. I had tics well beyond the age of childhood. My tics did not completely stop until I created the low free glutamate diet.

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