

## MSG – How Does it Impact Children and Elders?

Excitotoxins – The Taste That Kills - by: Russell Blaycock, MD

Book Overview Part II written by: Eliza Fulton, 2<sup>nd</sup> year Holistic Nutrition student of Clayton College for Natural Health and owner of Insurance and Wellness in the Rockies (3/10/08)

Excitotoxins in the child's diet are of great concern. We know that children are four times more sensitive to excitotoxins than adults. The developing brain is in the process of doing critical wiring that will affect its functioning for the rest of the person's life. Newborns and toddlers are at very high risk of damage when exposed to excitotoxins. In this group there is seen excess electrical activity and even seizures when excitotoxins are introduced in large amounts. The amount of re-wiring a brain can do to correct any damage that occurs is limited. In fact, the majority of brain re-wiring process takes place from week one of conception to a period of about six to seven years of life. The effects of excitotoxin damage during these formative years can include mild dyslexia to severe outbursts of uncontrollable anger, autism, schizophrenia and cerebral palsy. Tendencies toward violence and criminal behavior later in life can also be the result of this early damage. There is a concern with children who are exposed to excitotoxins regularly in the formative years that they may grow up to be shorter in stature and obese, as was seen in several animal studies; plus have an earlier on set of puberty than normal. Hyperactive behavior, where the ability to focus is lacking, and lowered intelligence were also observed in animal studies. There were also problems with the endocrine system later in life in several animal studies. Frontal lobe damage caused by exposure to excitotoxins is often not seen until years later as children become school age or as teenagers. The affects of the damage are cumulative in nature and can include the inability to control emotions, arrested development, learning disabilities, lack of an ability to see the big picture, social incompetence, inability to show empathy toward others and being unable to perform complex problem solving.

These developmental problems can begin while the child is growing in the mother's womb and may cause many of the problems mentioned above, along with problems like autism, stuttering and delayed speech. The placental barrier is just a single layer of cells and the developing brain does not have a blood-brain barrier in place. The most vulnerable time is the first eight weeks of the fetus' life. Once born the rapidly growing brain is about 80% of adult weight by age four, 90% by age eight and is full sized by age sixteen, but not fully matured until much later. Junk food consumption by teenagers is a difficult issue and a real concern.

### How can we protect ourselves from all these hazards?

Since some restaurants use as much as 9.9 grams of MSG into a single dish to enhance the taste (enough to produce brain damage in animals) it is important to watch where we eat and what we feed our children. Fast foods are known to be full of excitotoxins. We know that humans have higher blood levels of glutamate following ingestion than any other species studied. We are extremely sensitive to excitotoxins and especially when more than one type is eaten at a given time. If you give a two year old child soup and a diet pop you are exposing that child to 500 micromoles of MSG in the blood which is enough to cause destruction to the nerves in the hypothalamus. In humans, once the blood level of the excitotoxin has subsided, the brain levels of the excitotoxin remain elevated for up to 24 hours. The destruction of the neurons continues. Therefore, people who drink three or four diet pops per day, never have a drop in the dangerously high levels of excitotoxins in the brain.

The greatest damage will be in the hypothalamus which controls the endocrine functions. This includes the thyroid gland, adrenals, gonads and also the production of prolactin (the ability to produce milk following the birth of a child). There was a marked reduction in fertility of both male and female rats when exposed to MSG early in life.

One needs to show extreme care about eating processed foods (full of excitotoxins) when hypoglycemic. Also, if a person has a migraine headache, suffers from seizures, or has a head injury or other neurodegenerative disease, this person is at even greater risk when exposed to excitotoxins in the diet.

The key here is to eat food as close to nature as possible at all times. We should each consider clearing our pantries and refrigerators to eliminate all foods with MGS, NutraSweet and hydrolyzed vegetable protein. This includes virtually all processed foods, some of the worst offenders are soups, salad dressings, steak sauce, gravy mixes, chips, cream sauces and gourmet foods. Read labels carefully and re-learn the joys of cooking and a simple diet.

#### What about our aging populations?

As we discussed the affects of excitotoxin exposure are cumulative over time. Diseases that are expressed by the destruction of glutamate receptor type neurons in the brain include Parkinson's, Huntington's, ALS and Alzheimer's Disease.

We know that the percentage of people with Alzheimer's is 3% of all people between the ages of 65 and 74. This number jumps to 18.7% for people ages 75 to 84 and after age 85 the disease is seen in 47.2% of the population. By 2030 the current population of people over age 65 will have doubled! Chronic dementia accounts for 50% of all nursing home admissions. Many people view Alzheimer's disease as "a funeral that never ends." So what can we do?

As we age the blood-brain barrier is often damaged by silent strokes, this creates holes in the barrier. There is also a natural death of neurons, by age 65 approximately 60% of the cells are dead in the human nigrestrial system. In rats only 20% of these same cells are lost in old age. We have eaten an enormous amount of excitotoxins over our lifetime and when glucose levels are low (hypoglycemic) then malfunctions occur in the blood-brain barrier and excitotoxin damage is even more likely to occur.

The brain also shrinks as we grow older, however there is no difference in the brain metabolism of a young and an old person. Function does not decline with age. Progressive loss of neurons naturally begins at about age 30 with a 60% loss at extreme ages. The hippocampus is sensitive to the effects of aging; this governs primarily learning and memory. As we grow older we tend to grow intellectually lazy, we write lists instead of trying to remember things, we use a calculator and don't do the math etc. We need to exercise our brains and challenge them with new learning and problem solving skills throughout our lives, just as we need to exercise our bodies.

Mini-strokes can also occur and not be noticed, which causes defects in the brain and makes holes in the blood-brain barrier. Low thyroid production can also cause severe intellectual deterioration as can depression and low brain levels of B12. So there can be many causes to a loss of brain function over time. The brain will always re-wire itself and try to compensate. However, when there is a 20% loss of neurons in any given area of the brain failure will occur.

In Alzheimer's it is the recent memory that goes first (hippocampus and temporal lobes) and these areas show extensive damage. The areas of the brain affected by Alzheimer's have neurons with the highest concentration of glutamate receptors. There is a general hypothesis that Alzheimer's is caused by an abnormal accumulation of excitotoxin damage in the brain. Alzheimer's patients show over 35% to 40% of all glutamate receptor neurons destroyed and as much as 60% or more of the NMDA type glutamate receptors destroyed. Alzheimer's targets specific neurons that are most impacted by MSG, NutraSweet and other excitotoxins.

Elderly people also do not eat well; they lose their appetite and often have a chronic hypoglycemic situation. This causes the neurons to be even more vulnerable as we age.

Habits are hard to change. What can we do?

I agree, but the choice is clear, either eliminate bad food habits and increase the chance of living a normal life or continue poor eating habits and potentially develop one of these seriously crippling diseases. It is clearly of great concern.

Incorporating foods that are high in magnesium is important (broccoli and spinach). The elderly and most Americans are often low in magnesium. We also know that people who take anti-inflammatory drugs (like those taken for arthritis) have a lower risk of Alzheimer's disease. It is believed this occurs because the blood-brain barrier is strengthened. It is also important to have enough good carbohydrates to keep the blood sugar constant and to keep from developing hypoglycemia.

Fast food diets that are high in processed carbohydrates, fats and phosphoric acid (in soft drinks) are low in magnesium. This continued deficiency will lead to head aches, blurred vision, muscle twitching, nausea and general weakness. It also causes excess parathyroid hormone production and pronounced excitotoxin sensitivity. Magnesium accounts for over 300 enzyme reactions and is critical in the body. Recent studies show that up to 75% of all Americans are deficient in magnesium. Phosphate in colas depletes magnesium and is of special concern with children and teens. Zinc is the other critical mineral for normal functioning of the brain.

The FDA estimated that Americans consumed over 3,500 tons of NutraSweet in 1985. Over 100 million people use NutraSweet routinely. Headaches are the number one complaint of NutraSweet users. NutraSweet spent 60 million dollars in advertising in its first three years and played a major role in revitalizing what was then a stagnant soft drink industry. The Glutamate Association was formed to help keep MSG and NutraSweet on the market. They lobbied to reduce the labeling requirements on foods and to allow MSG to not have to be listed on the label unless it was pure MSG. However, spices, natural flavorings and flavorings can all contain from 30% to 60% MSG without disclosing it!

Changing our diet to eliminate excitotoxins takes will power and also skill in reading labels. One might also consider supplementation to help protect the brain from the cumulative affects of these excitotoxin poisons.

Reference:

Blaylock, R. (1997). Excitotoxins – The Taste That Kills, Albuquerque, NM: Health Press NA.