The Aspartame Controversy

Aspartame, sold under the brand names NutraSweet and Equal, has been promoted as a safe alternative for those who wish to avoid using sugar or saccharin. Aspartame is made of two amino acids (phenylalanine and aspartic acid) which are also found in all protein-containing foods such as meat. Since these amino acids are natural products, most people assume that they are safe to consume in unlimited quantities. New research, however, is raising serious questions about the safety of excessive aspartame exposure especially for the developing baby.

The aspartame controversy was first brought to BDRC's attention by a pediatric nurse who put us in touch with the Mills family in Georgia. Their son Brandon was born with serious neurological impairment and developmental delays. Karen Mills was exposed to excessive doses of aspartame and phenylalanine during her pregnancy.

KAREN'S STORY - According to my obstetrician, I had a very normal pregnancy. I was in very good health, did not smoke, drink alcohol or take any drugs. I had a prenatal test to rule out any genetic birth defects they can test for and had sonograms early and late in pregnancy.

At the time of my pregnancy, I had not seen any proof of harmful effects of aspartame and no consumer warning was given on the use of NutraSweet products during pregnancy. In order to avoid additional sugar intake and weight gain and the fatigue resulting in blood sugar drop after drinking sugared beverages, I chose to drink beverages containing NutraSweet. I drank on the average of 4-6 twelve-ounce cans a day including: Diet 7-Up, Diet Coke, NutraSweet sweetened tea and lemonade. Six weeks into my pregnancy, I also started taking capsules containing 500 to l000 mg. of phenylalanine a day, because I had read that this amino acid could help relieve fatigue.

Brandon was born by C-section without any birth trauma or lack of oxygen. I was one week post full term and was not in labor when the C-section was done.

Brandon has severe neurological problems, causing vocal cord paralysis and swallowing dysfunction. His muscle spasms and vocal cord paralysis are caused by the brain signals to the muscles being "static" or distorted. He is also diaphoretic, meaning that he has excessive perspiration. Other than this, Brandon is in good health. He laughs and smiles. He recognizes people and music he has heard before. He has learned to play games with us.

Recently Brandon has been diagnosed as severely retarded due to the severity of the neurological problem. He has to have a trach tube to help him breathe and a GI-tube in his stomach to help him eat since he cannot swallow foods without aspirating. There is possible brain cell damage, but this cannot be proven by testing and the degree of damage is unknown at this time.

Brandon has had numerous MRI tests, CAT scans, X-rays, a genetics study, blood testing and all results have come back normal.

I am suspicious that NutraSweet could be a contributing factor in Brandon's situation since there are no physical or genetic causes revealed for his neurological problems. I hope that Brandon's situation can be a reason to focus more testing on NutraSweet regarding the possible effects it could have on a developing fetus during pregnancy.

TESTING AT EMORY

Senator Howard Metzenbaum (D-Ohio) has been a very vocal critic of aspartame and has chaired hearings on its safety. Senator Metzenbaum put the Mills family in touch with Dr. Louis J. Elsas, II, the Director of Medical Genetics at Emory University School of Medicine. Dr. Elsas has co-authored numerous papers on aspartame research.

After examining Brandon and reviewing his prenatal history, Dr. Elsas proposed a test to determine whether Brandon might have been exposed to excessive levels of phenylalanine during prenatal development.

Karen was given capsules containing L-Phenylalanine which reached concentrations that approximated the highest amount she took during pregnancy. Blood tests were then made at intervals to determine the concentration of phenylalanine in her bloodstream. The data showed that her blood plasma concentrations of phenylalanine rose two and 2-l/2 fold over twelve days without an equal increase in other neutral amino acids thus producing an "imbalance". If this also happened during Karen's pregnancy with Brandon, the placenta could have magnified this imbalance another two fold and his blood brain barrier would magnify it yet another two fold. Therefore, Brandon's developing brain cells could have been chronically exposed to 500-600 mg of phenylalanine.

Could this excessive exposure cause the severe problems Brandon was born with? Since no one knows the level of consumption that might cause damage in a developing fetus, Dr. Elsas recommends that pregnant women avoid aspartame sweeteners.

THE RESEARCH ON ASPARTAME

The first indication of aspartame's negative effects on brain function have come from animal studies. In rats, aspartame exposure raises the levels of brain chemicals associated with seizures. In more recent studies with mice, a researcher for the Utah State University Food Science Department has reported that aspartame induced changes in brain neurotransmitter levels controlling the pituitary gland, considered the "body's master gland". The mice were fed aspartame at realistic human equivalent levels of low, high and abusive consumption levels.

The most persuasive studies connecting aspartame to brain dysfunction come from research in humans and began with the study of an autosomal recessive disease called PKU. People with PKU are born with an inherited inability to metabolize phenylalanine. This causes excessive levels of phenylalanine to build

up in the blood which can damage the nervous system and cause retardation. Babies born with PKU must be placed on diets that restrict levels of phenylalanine found in the ordinary diet including any products containing aspartame.

About one in every 50 people carries the gene for PKU even though they do not have the disorder themselves. If a woman who carries the gene for PKU marries a man with the same recessive gene, she could give birth to a baby with the condition. If she consumed too much phenylalanine during pregnancy, her baby could be born mentally retarded.

Parents who may carry the gene for PKU can be identified by measuring levels and ratios of phenylalanine and other amino acids after phenylalanine loading tests. This research has demonstrated that those who carry the gene for PKU also have a lower capacity to metabolize phenylalanine than normal people.If an unborn child does not have PKU, but carries the gene for the disease, he/she might be adversely affected by excessive exposure to phenylalanine during prenatal development.

Concern also exists regarding the effects of elevated phenylalanine in older PKU patients who have completed brain development. When these patients have been exposed to excessive levels of phenylalanine, they have demonstrated prolonged performance times on neuro-psychological tests of higher integrative function.

The most disturbing research on phenylalanine is found in recently published studies of its effects on the normal human brain. These studies show that elevated phenylalanine levels caused significant, widespread EEG (brain wave) slowing in neurologically normal subjects. The effects are reversible when the phenylalanine levels are lowered.

Additional research by Woodrow Monte, the director of the Food Science and Nutrition Laboratory at the Arizona State University shows that when aspartame breaks down in the body, it releases methyl alcohol (a brain toxin) into the bloodstream. Dr. Monte thinks the neurological problems reported by aspartame consumers might be caused by this toxic by-product.

It is important for the public to be aware that the safety of aspartame is controversial, (especially during pregnancy) since aspartame may soon be an ingredient in more and more processed foods. NutraSweet, a subsidiary of the Monsanto Company, has recently announced that it has perfected a process to keep aspartame from breaking down at the high temperatures required for baking. This new process could open the door to the $l5 billion-a-year sweet baked goods market.

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