

## Sweet Talk and Cutting Through the Hype II

*Editor's Note: In several of my previous SJ columns, we have looked at sugar and especially at artificial sweeteners. Beginning in last month's column, I will highlight some of the information published in Dr. Joseph Mercola's 2006 book "Sweet Deception." Dr. Mercola is an osteopathic physician and surgeon who is board-certified by the American College Osteopathic General Practitioners in family medicine. In last month's column, we reported on the obesity epidemic due to over consumption and found that artificial sweeteners are not the answer. In fact, the 20 pounds of artificial sweeteners eaten by the average American may be linked to a whole new range of diseases far more harmful than the love handles they were designed to cure. We will look more closely at the individual artificial sweeteners and examine some of their characteristics. In this month's column, we will look at Aspartame or its' more easily recognized names NutraSweet and Equal*

Aspartame, scientifically known as 1-aspartyl 1-phenylalanine methyl ester, has three components: phenylalanine, which makes up 50% of the chemical by weight; aspartic acid, which makes up 40%; and methanol (wood alcohol), which makes up 10%. Those that defend this popular artificial sweetener contend that the two primary amino acids that make up 90% of aspartame, are harmless and a natural part of our diet. They further contend that aspartic acid is a naturally occurring neurotransmitter that is present in the human central nervous system. Some of this is true. Phenylalanine and aspartic acid are amino acids that are naturally supplied by the foods we eat; however, they can only be considered natural and harmless when they are consumed in combination with other amino acids (protein), fats, and carbohydrates in the form of genuine whole foods. When phenylalanine and aspartic acid are consumed as free-form amino acids, rather than with the full balance of amino acids found in foods, they enter your central nervous system in unusual and abnormally high concentrations, causing excessive firing of brain neurons and potential cell death. This concept has been termed excitotoxicity by neurosurgeon, Dr. Russell Blaylock.

The neurotoxic effects of these amino acids, when consumed as free-form substances, are linked to headaches, mental confusion, balance problems, and seizures. Further, although aspartic acid and phenylalanine do occur naturally in food, they never occur isolated together and attached as a single entity. The unique amino acid sequence of aspartic acid and phenylalanine does not occur anywhere in nature; which according to Dr. Mercola, your body recognizes it as a foreign chemical and attempts to metabolize and excrete it.

Because amino acids are found naturally in food, your body is normally able to absorb them. However, in nature, amino acids do not exist alone but in combination with fats and

carbohydrates. For example, a piece of meat may contain 4% phenylalanine in combination with a variety of other amino acids and fats.

### Is Aspartame Absorbed in the Body?

The breakdown of protein and amino acids begins in your mouth as soon as you start chewing food. Chewing signals your stomach to begin secreting enzymes and hydrochloric acid. This begins the direct process of breaking the peptide bonds that hold the amino acids together. Your pancreas releases a series of enzymes, such as cholecystokinin and secretin, which further break down the peptide bonds. Then, small peptides called oligopeptides, composed of between two and twelve amino acids enter the cells that line the small intestine. Free form amino acids are absorbed by your intestinal cells and are broken down into other amino acids and various by-products before they enter your bloodstream. From here, the amino acids are either metabolized by the liver, or sent into your general circulation to be utilized by the rest of your body. Perhaps of most concern is the 10% of aspartame that is absorbed into the blood as its breakdown product methanol (wood alcohol). Although the EPA defines safe consumption of methanol as 7.8 milligrams per day, a can of diet soda reportedly contains 16 milligrams. However, it's not the actual amino acids or methanol that cause the toxic side effects in your system, but the breakdown products they can convert to in your body or on the shelf. Phenylalanine decomposes into DKP, a carcinogen when exposed to warm temperatures or long storage. Even at cold temperatures, methanol can spontaneously break down to the colorless toxin formaldehyde. Accumulation of formaldehyde and reaction with other cellular proteins such as enzymes and DNA may result in un-wanted consequences especially for those who consume diet drinks and aspartame-containing foods on a daily basis.

According to Dr. Mercola, manufactures of aspartame defend the methanol produced in it by claiming it is found naturally in many foods. This is a partial truth, because methanol never exists bound to amino acids in nature. In fruit and fruit juices, for example, methanol is bound to pectin, which is a form of fiber. As a result of this bond, the body is not exposed to methanol, nor does it break down. The body excretes it before it is metabolized to formaldehyde.

With aspartame, there is no natural binder for methanol once it is in your body. As a result nearly all of the methanol is metabolically converted into formaldehyde. Moreover, methanol and phenylalanine both decrease dopamine in the brain and can cause somewhat of a high, which purportedly makes aspartame highly addictive.



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