

J U L Y 2 0 1 0

## Does Diet Coke Cause Convulsions? Lets Ascertain the Truth About Aspartame.

By: Richard Vuksinic, ND

Aspartame is a synthetic, non-nutritive sweetener used in over 6000 products in over 90 countries worldwide (including Diet Coke) (1). It is more commonly known as “NutraSweet”. It was introduced into the food market as a sugar substitute in the early 1980’s. Since then, its use has been shrouded in controversy. This controversy stems from a number of conflicting studies (animal, human and epidemiological), case reports and anecdotal evidence that point both to its safety and its toxicity. Although “the weight of evidence” points to aspartame’s safety in doses ranging from 34-50 mg/kg body weight, it should be noted that several of these studies were funded by the NutraSweet Company itself and should be taken with a grain of aspartame- *ahem*, I mean, salt (3,4).

When aspartame is ingested via soft drinks, or food, it is broken down and absorbed into the plasma as three natural compounds found within the aspartame molecule: phenylalanine (an amino acid), aspartic acid and methanol (wood alcohol, which can be toxic at doses of 10 ml, and leads to the formation of formaldehyde in the human body) (5,7).

It is the un-natural absorption of phenylalanine, without other amino acid buffers (such as those found in whole foods), that is of interest when studying the possible neurological effects of aspartame. This un-buffered rise in phenylalanine plasma levels easily crosses the blood brain barrier, where it is thought to interfere with enzymes that are necessary for normal neurotransmitter function in the brain (6). It is somewhere in this pathway of neurotransmitter disruption that aspartame is thought to contribute to mood changes, headaches, inappropriate behavioral responses and seizures (6).

There are 131 mg of aspartame in each can of diet coke. Although the majority of people drinking large amounts of diet coke daily may be well under the FDA’s approved daily dose of aspartame, (50 mg/kg body weight/day) it is important to account for biochemical individuality and lifestyle factors when trying to establish what is safe vs. unsafe. There are individual susceptibilities and dietary habits to be mindful of when assessing the real risks associated with aspartame consumption. One of these susceptibilities includes a genetic problem in metabolizing phenylalanine. The main lifestyle factor that potentiates one’s susceptibility to the negative effects of aspartame seems to be a diet that is high in carbohydrates and low in protein (a diet that is not uncommon in people who consume more than 1 Liter of diet coke/day) (13).

Several studies show the safety of aspartame and point to the extremely high doses of NutraSweet used in animal studies to induce seizures. They claim that these high doses are well above the FDA approved daily dose of 50mg/kg of aspartame (8,9). These studies fail to account for the potential differences in phenylalanine metabolism in rats and humans. It is believed that rat metabolism of phenylalanine into tyrosine occurs much more efficiently than in humans. This would suggest that much less aspartame may be needed to effect brain health in humans than in rats (13).

Some case reports suggest that Grand Mal seizures have occurred after the consumption of aspartame by people with no prior history of epilepsy (10,11). Another case report points to the increase of EEG spike waves (unstable seizure like brain wave activity) in children with a history of absence seizures, after the ingestion of a drink containing only 40mg/kg aspartame (12). Oddly, one study that points to the safety of aspartame can be quoted as saying: “In patients with epilepsy, excessive intake of aspartame can decrease the threshold for seizures, or prolong them once they appear (14).

In short, the evidence is conflicting and no direct link between aspartame and neurological health has been fully established. However, in the language of medicine, it is important to assess the risk-benefit ratio of consuming aspartame. Whenever a substance is prescribed to a patient, it is the duty of the attending doctor to weigh whether the associated risks of taking that medicine outweigh the risks of not taking it. If benefit outweighs risk, then a prescription may be warranted. What about the daily consumption of food additives such as aspartame? Is its prescription warranted?

For the sake of objectivity, lets assess the risks and benefits of drinking diet coke. Potential risks include headache, behavioral changes and seizures. The benefits include the subjective enjoyment of an arguably tasty, sugar-free, nutrition-less carbonated beverage. Is the consumption of aspartame worth it? This is a question that people need to answer for themselves. However, the truth is that, for my own neurological health, avoiding aspartame is a no brainer!

**Richard Vuksinic, ND lives and practices naturopathic medicine in London, Ontario**

**For comments, questions or references contact:**

**[richvuksinicnd@gmail.com](mailto:richvuksinicnd@gmail.com)**

**[www.enrichedrootsnaturopathy.com](http://www.enrichedrootsnaturopathy.com)**