

# Research Assignment

## Lightwing Center

### Holistic Minister Practitioner Coursework

# A Look into Aspartame on our Overall Health

by Sean Murphy

Aspartame has been used as a food and drink sweetener since the early 1980's. Recent studies have suggested that it is harmful to our body systems and is the causal agent of many diseases and is being linked to cancer. What exactly is aspartame and is there a more benign alternative?

Aspartame is an artificial non-saccharide sweetener that is 180-200 times sweeter than sucrose (table sugar). It is often used in soft drinks, sodas, and other sweet food products, typically desserts. Aspartame is composed of phenylalanine (50%), aspartic acid (40%), and methanol (10%) (Humphries, Pretorius, & Naude, 2008). When methanol is broken down in the human digestive system, according to Humphries et al., formaldehyde, diketopiperazine (a carcinogen) and other derivatives are formed. They are linking these chemicals to emotional and behavioral issues in people with average to high intakes of aspartame in their diets. Headaches, insomnia, and seizures have also been reported in people with aspartame-high diets. (Humphries, Pretorius, & Naude, 2008).

On the contrary, a study conducted in Ireland on consumption of artificial sweeteners found that there were no significant effects of aspartame intake and adverse health

symptoms in Irish children (Martin, et al., 2016). They theorized that the children consumed far less aspartame than the acceptable average that the European Board of Health has established. This study also looked at the intake of acesulfame potassium (Equal), saccharin (a known carcinogen, Sweet and Low), and sucralose (Splenda). None of these produced statistically significant results in terms of adverse health risks in the children who consumed them (Martin, et al., 2016).

Jennifer Kuk and Ruth Brown evaluated the effects of body mass index (BMI) and correlated it to artificial sweetener intake in diets. Their results found that increased consumption of artificial sweeteners, particularly aspartame, is associated with a greater risk of obesity and a lower glucose tolerance (Kuk & Brown, 2016). This could also lead to Type II diabetes if insulin levels are not reflecting the sugar levels in the bloodstream in the long-term. Increased glucose tolerance is directly linked with type II diabetes (Martin, et al., 2016).

Degradation of aspartame has not been widely studied because the metabolites that are formed post-digestion are variable. Typically, the metabolite that is formed is methanol, a highly volatile form of alcohol that has negative side effects on the human body (Gliemmo, Campos, & Gerschenson, 2001). A study conducted in 2001 by Gliemmo et. al. found that a solution that contained aspartame alongside Potassium sorbate did not break down fast when subjected to various temperatures. However, when aspartame was combined with sucrose (table sugar), a high amount of degradation was observed.

This suggests that aspartame breaks down into its methanol metabolite faster when in foods that contain sucrose. Sucrose and other sugars are needed for fermentation, so when these are all combined in a human digestive system, one can infer that discomfort could follow in the short term from methanol production. Another study by Pattanaargson et al. found that aspartame is degraded at very high and very low pH's. The highest degradation reported was at a pH of between 7 and 10 using phosphate-citrate buffer solutions (Pattanaargson, Chuapradit, & Srisukphonraruk, 2001).

A more natural and benign alternative to aspartame is Young Living's Blue Agave Natural Sweetener. The syrup can be used in many baking applications, summer drink mixes, or just in a glass of unsweetened tea to give it a sweet kick to satisfy the sugary

cravings in a healthier way. The agave syrup is collected from the blue agave (*Agave tequilana*) which is also used to produce tequila when fermented with various yeasts.

Aspartame is one of the most studied artificial sweeteners since 1981, and yet its use is still controversial. There are typically natural alternatives to most of the foods we eat and Young Living's blue agave syrup can sweeten the foods and drinks in the home without the risk of consuming aspartame and other artificial sweeteners that may or may not harm our bodies in the long-term.

## Bibliography

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