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English Composition II

05/04/23

The Dangers of Artificial Sweeteners

Thesis

In the United States and other developed countries, many people have become obese due to a diet of high-calorie meals. One of the main contributors to this diet is sugar and corn syrup. This makes sense, as just one cup of sugar has over 750 calories.

To reverse or prevent weight gain, many people have started to incorporate non-nutritive, or artificial sweeteners into their diets. With their growing popularity across first-world countries, artificial sweeteners have been subject to many different studies regarding their health effects on the human body and the health risks associated with them.

The results of these studies have been shocking. Artificial sweeteners are associated with an increased risk of numerous diseases including cancer and cardiovascular diseases. Artificial sweeteners may in fact be as harmful as added sugars.

Artificial Sweeteners and Cancer

There have been several studies linking the consumption of non-sugar sweeteners to cancer. In a large-scale study, the artificial sweetener consumption of over 100 thousand French civilians was monitored over the course of an average of 7.8 years. Other environmental factors such as age, sex, level of physical activity, family history of cancer, and other dietary habits were

considered and adjusted accordingly. What this study discovered was that people who consumed a larger amount of artificial sweeteners had higher rates of cancer than those who didn't (Debras, 1).

A study with over 100 thousand subjects will have reliable results. Furthermore, environmental factors were accounted for as best as possible in this study. Therefore, this study is indeed trustworthy, and the evidence points to the fact that artificial sweeteners may cause or contribute to the development of cancer.

This was not the only research done on the topic of artificial sweeteners and cancer. According to a study done by Philip Landrigan, there may be evidence to conclude that the consumption of the specific artificial sweetener, aspartame, is associated with an increased risk of cancer.

Landrigan notes that in 1997, the Ramazzini Institute, a non-profit, Italian-based research laboratory, conducted a study in which doses of aspartame in different sizes were administered to different groups of rats and mice. Over the course of this study, more than 3000 rodents were tested and observed. The studies concluded that there was a direct correlation between the consumption of aspartame and the development of cancerous tumors (2). Aspartame is one of the most popular non-nutritive sweeteners and is commonly used to sweeten low-calorie beverages. The findings of this study are alarming, considering that aspartame is found in many popular commodities including soda, gelatins, and chewing gum. There is certainly a great number of people affected by this.

Artificial Sweeteners and Gut Health

Cancer is not the only disease linked to non-nutritive sweeteners. There may be evidence to point to the conclusion that the consumption of artificial sweeteners has a direct correlation to a decline in gut health. According to a study comparing gut bacterial population growth rates, “These findings indicate that saccharin, sucralose, and aspartame all promote pathogenic changes in two model gut bacteria, *E. coli* and *E. faecalis*, which could worsen the effect of consuming artificial sweeteners in the diet on gut health” (Shil, 6).

These studies show a clear trend that artificial sweeteners may worsen or even be the underlying cause of many diseases. For this reason, it may be best to use them in moderation or eliminate them entirely.

This suggestion is of course based on the premise that the studies listed above are true. However, it may be possible that artificial sweeteners have no correlation to cancer and metabolic disease at all.

Counterargument

An article written by Sofia Pavanello titled, “Non-Sugar Sweeteners and Cancer: Toxicological and Epidemiological Evidence,” claims that there is in fact no conclusive evidence on the matter of artificial sweeteners causing cancer. This article analyzes thousands of different studies done on this topic and compared their results.

The results of all of these studies were inconsistent with each other. Some studies concluded that artificial sweeteners do cause cancer, while some said they were harmless and had no effect on the human body or a person’s risk of developing cancer. Pavanello acknowledges

that it is possible that artificial sweeteners do cause cancer but states that there is no definitive evidence to say so for certain (11).

This is similar to an article written by Szimonetta Lohner titled, “Health outcomes of non-nutritive sweeteners: analysis of the research landscape.” In this article, 372 studies done on artificial sweeteners were examined and compared. The difference between this article and Pavanello’s is that this one compares the results for numerous ailments including cancer, diabetes, tooth decay, and obesity, whereas Pavanello’s article only analyzed cancer. Lohner found that the results of these studies were all inconsistent and that further research is needed to reach a definitive conclusion (15).

Because the results of so many studies analyzing the effects of artificial sweeteners were inconclusive, perhaps these sweeteners do not pose a significant risk for most people. If artificial sweeteners truly made a substantial difference in people’s risk of developing cancer, perhaps more studies would have reached this conclusion, as it would have been more obvious, and the results would have been more polarizing.

It may be foolish or hasty to recommend eliminating these sweeteners from the diets of so many people, based purely on inconclusive evidence that they might contribute to cancer or metabolic disease.

This claim does have merit, however, the evidence in favor of artificial sweeteners causing cancer and metabolic diseases is more substantial than what these articles give it credit for.

Rebuttal

The largest studies on this matter are the ones in favor of artificial sweeteners causing cancer. For example, Debras's study tracked over 100 thousand people over the course of years. Results from so efficient a study are hard to dispute.

Furthermore, there were many studies that pointed to the conclusion that artificial sweeteners cause cancer, but very few, if any, scholarly studies claim that artificial sweeteners reduce the risk of metabolic diseases and cancer. If the results of these studies were inconsistent based purely on chance, then there should theoretically be as many studies claiming that artificial sweeteners reduce cancer risk, but this is not the case.

Based on the evidence provided by the largest studies, it can be assumed that non-nutritive sweeteners do in fact pose a significant health risk to the general population.

Even if artificial sweeteners do not have any health risks, it is still unknown. Therefore, it is prudent to avoid artificial sweeteners or use them in moderation, since the long-term effects are still being studied. This is the safest option, as it is a bad idea for someone to remain in uncertainty and obviously consume substances that are detrimental or damaging to their health.

Sugar Health Risks

It has been established that artificial sweeteners likely pose a health risk to many people, and should generally be avoided, but are artificial sweeteners more damaging to one's health than sugar? Sugar has existed for a much longer time than artificial sweeteners. It has been common knowledge for a long time that sugar is detrimental to human health, and studies are frequently done to prove this.

Sugar and Cardiovascular Disease

There may be evidence linking the consumption of added sugars to an increased risk of cardiovascular disease. A study by Zhang Yang examines a population of people and their sugar consumption.

What Yang discovered was that people who get more than 10% of their daily calories from sugar had a significantly higher risk of developing cardiovascular disease than those who consumed less than 10% of their daily calories from sugar (1).

Sugar and Cancer

Cardiovascular disease is not the only disease that a high daily sugar intake can lead to. An article by Margeaux Epner analyzes the consumption of added sugars in many people's diets. A definitive result is yet to be reached in the study, but findings indicate that consuming larger amounts of sugar than the recommended dose resulted in an increased risk of many types of cancers by significant margins (15). If this is true, then sugar should certainly be avoided, as cancer is one of the leading causes of death in developed countries.

Perhaps one contributing factor to cancer being so common and so deadly in first-world countries is the excess consumption of sugar.

Sugar and Diabetes

Excess sugar consumption is also linked to diabetes. Data from 165 countries were used in an analysis to find rates of diabetes compared to per-capita sugar consumption. This analysis states, "a strong positive correlation coefficient (0.599 with $p < 0.001$) was observed between prevalence of diabetes mellitus and per capita sugar consumption using data from all 165

countries” (Weeratunga, 1). According to the results of this article, there is a clear trend that excess sugar consumption is related to an increased risk of diabetes. People who already have diabetes should be extra wary of consuming sugar.

Diabetes is a serious illness, causing over one million deaths every year. The rates of diabetes have increased over the years, most likely due to an increase in sugar in the diet.

Sugar VS Artificial Sweeteners

Clearly, avoiding sugar in the diet will reduce a person’s risk of many diseases including cancer, diabetes, and cardiovascular disease. Are artificial sweeteners more detrimental to health than sugar, and are they viable replacements for sugar?

Sugar and non-nutritive sweeteners both pose serious health risks, and both should be limited in the human diet for optimal general health. However, sugar is likely more unhealthy than artificial sweeteners.

As mentioned before, sugar has over 750 calories per cup, but artificial sweeteners have as few as 0 calories. This means if a person replaced all of their sugar with artificial sweeteners and changed nothing else about their diet, they would reduce their daily calorie intake, therefore lowering their weight over time. This makes artificial sweeteners a great option for weight loss and the main reason for their popularity.

The health risks associated with artificial sweeteners do not come from their calories, but rather from how they impact the body by increasing rates of cancer, cardiovascular diseases, and other ailments.

The research on artificial sweeteners is still limited, but the data on sugar has been around much longer, and it has been definitively proven many times that added sugar when taken in large quantities is very detrimental to one's health and is a contributing factor to many ailments including obesity, cancer, diabetes, cardiovascular disease and more. It is certain that sugar has numerous health risks, but the research linking artificial sweeteners to these diseases is still limited.

Natural Sweeteners

It must be noted that the artificial sweeteners talked about in this essay are not related to natural, plant-based sweeteners such as monk fruit and stevia.

Stevia and monk fruit are both sweeteners containing no calories. Because of this, they are just as effective for weight loss as artificial sweeteners such as aspartame.

Because monk fruit and stevia are harvested from plants, it is important to distinguish them from artificial sweeteners. The health risks and benefits of these sweeteners must also be analyzed to discover if they are a viable replacement for sugar.

The Safety of Monk Fruit as a Sweetener

In 2019, a scientific article titled, "Safety of Use of Monk Fruit Extract as a Food Additive in Different Food Categories," analyzed the effects of monk fruit. The EFSA Panel on Food Additives and Flavourings analyzed and discussed many studies and pieces of data regarding monk fruit. This panel concluded that there was insufficient evidence to link the consumption of monk fruit to any adverse health effects (Younes, 20).

While there is no evidence in the studies and data presented in this article to say that monk fruit has any health risks, there is also no evidence to say otherwise. Until further research is conducted on this matter, it may be best to avoid or limit the consumption of monk fruit in the diet.

The Effects of Stevia

While the effects of monk fruit are still debated, there may be evidence that the natural sweetener, stevia, is associated with positive health benefits.

According to an article assessing the effects of stevia on the risks of diabetes, “In this present systematic review and meta-analysis, the effect of stevia and its active compounds on diabetes in the animal models has been observed, and it was confirmed that stevia has antidiabetic activity. The subgroup analysis also showed that the antihyperglycemic activity of stevia was higher at higher doses” (Chowdhury, 2876). Essentially, consuming stevia lowers the risk of diabetes according to this study.

If stevia lowers the risk of diabetes, then it may in fact be a viable replacement for sugar. This article acknowledged that more clinical trials are recommended for a more definitive result on this matter (Chowdhury, 2876). Although more data is yet to be revealed, the evidence seems to indicate so far that stevia is associated with positive health effects.

Conclusion

Based on the evidence available today, it can be concluded that sugar is likely more of a health risk than artificial sweeteners. However, both of these types of sweeteners are very detrimental to overall health.

Sugar should be consumed in great moderation or eliminated from the diet entirely for optimal health. Artificial sweeteners also pose health risks and should be avoided as well, especially until further research is conducted that conclusively shows the health risks associated with them.

Natural sweeteners may be a viable replacement for sugar. More data is needed to show the effects of monk fruit on human health, but the data for stevia shows promising results, in that it may lower the risk of diabetes.

Stevia is likely a viable replacement for sugar as a sweetener. Artificial sweeteners such as aspartame should be avoided.

When a desire for sweet food causes a person to consume sugar, they are putting their health at risk. That is why it is important to look for alternatives to sugar. Until further research is revealed to say otherwise, sugar and artificial sweeteners should be avoided, while stevia appears to be a viable substitute.

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