

Artificial Sweeteners

Introduction

The topic I chose for my fact sheet is artificial sweeteners. I thought this would be an interesting topic to do research on because I do not know much about them. Of course I hear things about artificial sweeteners here or there but I do not know the truth about them. I have heard that they are much better for you than real sugar but I also have heard that they are worse and can cause cancer, but what does not cause cancer these days? There has always been a debate about artificial sweeteners. Are they really better for you? I am very interested to find out the real facts about them. I am also interested in finding out what other types of artificial sweeteners are really out there. I am aware of all the basic ones such as Splenda, Equal and Sweet 'N Low but I know there is much more out there. I know many people who enjoy artificial sweeteners more than sugar so I will be able to update them on what I find out as well.

Section 1: Background and Problem Statement

- **Web site #1 Name: National Cancer Institute**
- **Web address: <http://www.cancer.gov/cancertopics/factsheet/Risk/artificial-sweeteners>**
- **Background Information:**

Artificial sweeteners are used in place of sugar. Artificial sweeteners are a lot sweeter than table sugar so they come in smaller amounts. All artificial sweeteners are regulated by the U.S Food and Drug Administration (FDA). The FDA regulates foods and drugs before they can be sold to customers. There was always the question of whether artificial sweeteners can cause cancer or not. They have done tests on animals and saw that it has caused bladder cancer but have not had any trouble with humans so far. Saccharin was proven to give rats bladder cancer in lab studies. This study was conducted in the 1970s. There is a warning label on products that contain saccharin stating that it may be harmful to human health, has caused cancer in laboratory animals. It was not proven that saccharin was harmful to humans because rats react different to substances than humans do. Saccharin was taken off the U.S National Toxicology Program in 2000. Some other artificial sweeteners that were approved by the FDA are aspartame, acesulfame potassium, sucralose and neotame.

- **Web site #2 Name: Sweet Nothings Not All Sweeteners Are Equal**
- **Web address: http://www.cspinet.org/nah/05_04/sweet_nothings.pdf**
- **Background Information:**

This Web site is very informational and tells you all the safe artificial sweeteners and which ones to watch out for. The artificial sweeteners business must be booming because of all the people who want their products with fewer calories. Many people are looking for foods that are diet or have lower calories, which lead

to us eating more artificial sweeteners. There are different low calorie sweeteners in each diet or low calorie food depending on what it is. People who are seeking foods with artificial sweeteners just have to keep in mind that there is a risk when eating unsafe ones such as saccharin. Problems may only arise when people take in the sweetener for many years. This is why the U.S Department of Agriculture suggests a limit of ten teaspoons of added sugar per day. Some artificial sweeteners can be safe but cause some disruption with the body if you have too much. Tagatose is one of these artificial sweeteners. It can be safe but if you have too much it can cause diarrhea. You should always check on the labels of products before eating them so you know how much you are in taking.

- **Web site #3 Name: American Pregnancy Association**
- **Web address:**
- **<http://www.americanpregnancy.org/pregnancyhealth/artificialsweetner.htm>**
- **Background Information:**

Dieting and nutrition is a big concern when it comes to pregnant women. They need to make sure they get the right amount of nutrients and not cut out important things from their diet. Most women try to cut back on the intake of sugar so they do not gain as much weight. This is where the artificial sweeteners come in but not all of them are safe for women who are pregnant. Regular sugar is safe during pregnancy and so are some artificial sweeteners. Some sweeteners that are safe during pregnancy are rebaudioside A (Stevia), acesulfame potassium (Sunett), aspartame (Equal of NutraSweet) and sucralose (Splenda). Each sweetener is used in different products and is safe for people who are or are not pregnant. There are two artificial sweeteners that are not safe to use during pregnancy. One of these sweeteners is saccharin because studies have shown that saccharin crosses the placenta and can get stuck in the fetal tissue. The second sweetener is cyclamate. Cyclamate has been linked to cancer and is currently banned from the United States. This sweetener is not safe for anyone to use let alone a pregnant woman.

Section 2: Research

- **Web site #1 Name: WebMD Better Information. Better Health.**
- **Web address: <http://www.webmd.com/diet/news/20080211/artificial-sweeteners-increase-weight>**
- **Summary of the research:**

Do artificial sweeteners make weight control harder? There was a small animal test done to show that they can actually make weight control harder. The study was done with rats at Purdue University. Some rats were fed regular food and others food that contained low-calorie saccharin. The rats who ate the food with the low-calorie saccharin actually gained more weight than the ones who ate the regular food. Researchers believe that over time the use of low-calorie sweeteners adapt the body to thinking that there are no calories associated with sweetness. This may lead to overeating which causes people to gain more weight. The body

needs to have a certain amount of calories each day, which can be gotten from sugar. The same time that the sales for artificial sweeteners went up was also when there was an increase rate of obesity. Some believe that this study is not a good one because humans are different than rats and feel that artificial sweeteners help weight loss.

- **Web site #2 Name: The American Journal Of Clinical Nutrition**
- **Web address: <http://www.ajcn.org/cgi/content/abstract/76/4/721>**
- **Summary of the research:**

There was a study done in 2002 to try and clear up the question of how artificial sweeteners regulate body weight. The study was conducted over a ten week period. The experimenters took a group of overweight people and had half eating foods and drinks containing sucrose and half eating food and drinks containing artificial sweeteners. They had to keep in mind that on average the sucrose contained 3.4 MJ and 152g sucrose/d and the artificial sweeteners contained 1.0 MJ and 0g sucrose/d. They watched closely how the people in the experiment changed. After a ten week period they concluded that the people who ate large amounts of sucrose had increased body weight, fat mass, energy intake and blood pressure. The people who ate the food with artificial sweeteners had a small decrease in sucrose and energy intake. They also decreased in body weight and fat mass. We can conclude that artificial sweeteners are better for you when trying to lose weight.

- **Web site #3 Name: Pub Med.org**
- **Web address: <http://www.ncbi.nlm.nih.gov/pubmed/20078374?dopt=Abstract>**
- **Summary of the research:**

Epidemiological data that was collected has shown a relationship between artificial sweeteners and weight gain. Evidence of the relationship between artificial sweeteners and weight gain are limited, as well as the relationship between artificial sweeteners and other metabolic health. It was shown that artificial sweeteners and weight gain do happen when tested on animals they were not one hundred percent when it came to humans. Eighteen different studies were conducted. One study that was done was with children who drank artificially sweetened drinks. They kept an eye on them to see if there was any weight gain or any metabolic health issues. They used a randomized control and concluded that there was no clear evidence of metabolic health issues or weight gain. Therefore, artificial sweeteners can be better for your children when it comes to having a sweet drink. They will not cause weight gain or any other health problems.

Section 3: Statistics

- **Web site #1 Name: American Cancer Society**

- **Web address:**
<http://www.cancer.org/Cancer/CancerCauses/OtherCarcinogens/AtHome/aspartame>
- **Summary of the statistics:**

Aspartame is one of the most common artificial sweeteners used today. It is found in Equal and NutraSweet. It has fewer calories than regular sugar and is 200 times sweeter so you can use less. Aspartame can be found in many foods and drinks that people eat. It can be found in cold cereal, chewing gum, dry drink mixes, coffee and tea, puddings, fillings and more. Aspartame is safe to take in daily. Experts recommend that people take in 50 milligrams per kilogram of body weight. The FDA has tested aspartame and concluded that it does not cause cancer so a daily intake is okay. Aspartame can be dangerous for some. It is not safe for those who have a rare genetic disorder called phenylketonuria (PKU). Research on artificial sweeteners still goes on today. So far the FDA has not found anything in artificial sweeteners that will increase the risk of cancer.

- **Web site #2 Name: Mindfully.org**
- **Web address: <http://www.mindfully.org/Food/Neotame-Sweetener-Approved-FDA5jul02.htm>**
- **Summary of the statistics:**

The FDA has approved a new sweetener that is 13,000 times sweeter than regular sugar. The sweetener is neotame which is used by NutraSweet. The president of NutraSweet would like to really push the product and get it used more. The main products that are going to be using neotame are soft drinks, yogurt, frozen dairy products and gum. They would like to sell it primarily in soft drinks and food items rather than having the product out for people to use directly. Neotame is very sweet and would take 8,000 teaspoons of regular sugar to match one teaspoon of neotame's sweetness. The president is trying to push this product to be used by soft drink companies. The companies will be able to create the same taste of the drink with fewer sweeteners and more water which will also cut down the cost to make the soft drinks. The FDA has already approved neotame for use in foods and poultry. The president of NutraSweet would like to see it in more soft drinks and will have to work to make that happen.

- **Web site #3: The New England Journal of Medicine**
- **Web address: <http://www.nejm.org/doi/full/10.1056/NEJM198003063021001>**
- **Summary of the statistics:**

There was a study done on the relationship between artificial sweeteners and lower-urinary-tract cancer. The experimenters took 592 patients with lower-urinary-tract cancer (94% had a bladder tumor) and a group of 563 controls taken from the general population. The history of the use of artificial sweeteners and everyone's diet was evaluated by an interview that was done before the study. Compared with one nonuser of artificial sweeteners, people who have used

artificial sweeteners were estimated that 0.9% had the relative risk of lower-urinary-tract cancer. For men, it was estimated at 0.8% risk of those who do or do not use artificial sweeteners. For women the risk was 1.6% and 1.5%. The conclusion to this study was that people who use artificial sweeteners have little or no risk of getting lower-urinary-tract cancer.

Section 4: Consumer Information

- **Web site #1 Name: Consumer.**
- **Web address: <http://www.consumer.org.nz/reports/sugar/artificial-sweeteners>**
- **Summary of the information:**

People are increasingly turning to the diet foods or foods with fewer calories. This is why the use of artificial sweeteners in food is very popular. There are claims that artificial sweeteners are worse for us than actual sugar. One of the controversial artificial sweeteners is aspartame. Some claim that it is a “deadly poison”. The New Zealand Food Safety Authority, Dietetic Association and Nutrition Foundation are worried that consumers will worry about aspartame because of the continuing controversy. It has been tested many times by the FDA and was approved over and over again. The only people who really have to worry about the use of aspartame are those who have the rare genetic disorder called phenylketonuria (PKU). All labels will have a warning stating that the product contains aspartame, which will help people with this disorder be cautious. People who use artificial sweeteners may also worry about in taking the products daily. You do not have to worry about that either because food regulators have come to the conclusion that artificial sweeteners are acceptable for daily intake. Many studies have been done on artificial sweeteners and would not be released if they were not safe.

- **Web site #2 Name: ConsumerReports.org**
- **Web address: <http://www.consumerreports.org/cro/food/resource-center/sweeteners-10-07/overview/sweet-ov.htm>**
- **Summary of the information:**

Many low calorie sweeteners go great to sweeten up your tea, coffee, lemonade or drinks, but do they get the job done when it comes to baking? There were 13 low-calorie and non-calorie sweeteners tested in drinks and baked goods. The baked goods with the low-calorie sweeteners did not bake as well with those who used regular sugar. So in this case you cannot bake a cake without sugar. They found that the best “fooler” sweetener used in lemonade and baked goods are fructose. The only down fall about this was that it has almost as many calories as the real recipe and was five times more expensive. A piece of cake baked with sugar had 77 calories and a piece of cake baked with fructose had 72 calories. A person needs to decide if they want to spend five times the amount of regular sugar just to save a couple calories.

- **Web site #3 Name: Whole Foods Magazine**

- **Web address:**
<http://www.wholefoodsmagazineonline.com/grocery/features/artificial-sweeteners-sent-sidelines>
- **Summary of the information:**

More and more people are turning to artificial sweeteners rather than sugar. More people prefer artificial sweeteners to control their weight or simply because they cannot have real sugar. A health survey done in 2006 showed that the majority of the American population is trying to avoid real sugar. The sales for artificial sweeteners are sky rocketing. If a store does not have their shelves stocked with artificial sweeteners they are losing a sale. People are looking for a good tasting alternative to real sugar. There is a lot of controversy over whether artificial sweeteners cause cancer or weight gain so people are beginning to ask for a more natural artificial sweetener. Artificial sweeteners are definitely popular for the new generation. Sales will increase for artificial sweeteners and most likely there will be a more natural sweetener coming out soon.

Section 5: Solutions to the Problem (or Issue)

- **Web site #1 Name: American Heart Association**
- **Web address:** <http://americanheart.org/presenter.jhtml?identifier=4447>
- **Summary of the information:**

The problem of diabetes is a struggle for some people. A person with diabetes has to be careful about what they eat and what foods contain sugar. This is where artificial sweeteners come into play to help them. Many people who have diabetes rely on artificial sweeteners to sweeten up their food or drinks. People who are also trying to lose weight can do the same. Saccharin has been known to cause bladder cancer in animal testing but has not shown anything with human so far. It is safe to use if you have diabetes or are trying to lose weight. The FDA has approved many artificial sweeteners that can be used by everyone. They also have a long shelf period and do not go bad as quickly. Many doctors recommend artificial sweeteners to those who are trying to lose weight or have diabetes.

- **Web site #2 Name: American Diabetes Association**
- **Web address:** <http://www.diabetes.org/food-and-fitness/food/what-can-i-eat/artificial-sweetners/>
- **Summary of the information:**

Many people may have a hard time trying to figure out if artificial sweeteners are the right choice for them. There is much controversy over the topic and many people do not know what to believe. If you are craving something sweet but want to lose weight or have diabetes it is smart to turn to foods or drinks with artificial sweeteners in them. You may be asking, “Well, which ones are safe?” There are five artificial sweeteners that have been tested and approved for use by the U.S. Food and Drug Administration (FDA). Those five artificial sweeteners are

acesulfame potassium, aspartame, saccharin, sucralose and neotame. All of these are good for use. They are also sweeter than actual sugar itself, which is why it is easier to use less of it and help with your diet. These sweeteners are used by food companies to make their products “low-calorie” or “diet”. Stevia is a newer sweetener that was just approved by the FDA. It comes from the sweetest part of the stevia plant and is a hundred times sweeter than regular sugar. As long as the products are tested by the FDA they are okay for use.

- **Web site #3 Name: Whole Foods Magazine**
- **Web address:**
<http://www.wholefoodsmagazineonline.com/grocery/features/artificial-sweeteners-sent-sidelines>
- **Summary of the information:**

“The Fight for Natural”

Consumers are asking for an all-natural sweetener. The vice president of sales and business development for Omezing LLC of Aventura, FL, Jake Jacobson is a strong believer in making natural artificial sweeteners. He supports the natural products industry and thinks that natural alternative sweeteners can be done. Jacobson believes that it is not what is in the sweetener but what is being done to it. He feels that jobs can make them and thinks that it would be interesting to see what different industries come up with. There is a newly natural alternative sweetener that was just released called stevia. The founder of stevia said that it was a difficult job creating it because it was hard to go through the FDA. Some believe that stevia may take over the market and even replace real sugar. Stevia will soon be on the market and so will other natural alternative sweeteners and may even take over the sales of real sugar.

Conclusions

I learned a lot about artificial sweeteners that I did not know before doing this project. I always heard the myth about artificial sweeteners causing cancer but never knew if I should believe it or not. I now know not to believe the myths I have heard. They have found that it causes bladder cancer in rats but have not found anything about humans yet. There was always a big debate over artificial sweeteners and it still goes on till this day. Some believe that they are not good for you and some believe that they are good when it comes to losing weight, having diabetes or just an alternative for sugar. After doing this research and finding out all the facts about artificial sweeteners I feel that they are safe to use. The FDA is always doing tests on different products before they are allowed to go out on the market and they have done plenty of tests on artificial sweeteners. I think that they should come out with more natural alternative sweeteners for people to use. I was never one to use artificial sweeteners, but I am willing to try them now that I know more information about them. I learned that they are much sweeter than sugar.

Five-minute Twitter Brief

Neotame is 13,000 times sweeter than sugar and you would need 8,000 teaspoons of sugar to match the sweetness of one teaspoon of neotame (CN)

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