Toxicology Expert Explains Why Aspartame is so Dangerous to Your Health

November 11, 2012 | 294,570 views

By Dr. Mercola

Aspartame is the technical name for the brand names NutraSweet, Equal, Spoonful, and Equal-Measure. While it's one of the most commonly used artificial sweeteners in the world, it's also one of, if not THE most dangerous food additive on the market today.

Aspartame accounts for over 75 percent of the adverse reactions to food additives reported to the FDA. Many of these reactions are very serious, including seizures and death.

In this interview, Dr. Woody Monte, professor emeritus at Arizona State University in food and chemistry, sheds light on what makes aspartame so hazardous to human health.

Dr. Monte, who also authored the book *While Science Sleeps: A Sweetener Kills*, is well-known as a world expert on the toxicities of methanol as it relates to aspartame, having studied it for the last three decades.

> *"I was asked by the soft drink beverage industry to look at aspartame [in 1983]... Basically, the summer of '81 is when aspartame first came out, but it first came out in powdered drinks only, and for good reason.*
>
> *Crystal Light, that kind of thing. They didn't want to put it into liquid form because they knew in the liquid form it would break down. It breaks down into methyl alcohol and what's left of the molecule. They didn't want to start doing that."*

Methyl Alcohol – The Root of the Problem with Aspartame

Aspartame is made up of aspartic acid and phenylalanine. But the phenylalanine has been synthetically modified to carry a methyl group as that provides the majority of the sweetness. That phenylalanine methyl bond, called a methyl ester and is very weak.

If the methyl alcohol is removed from aspartame as easily happens when drinks sweetened with it are exposed to higher temperatures, it no longer tastes sweet. This is precisely what happened to most of the diet soda sent to the Middle East for US troops. They received non sweet sodas that were loaded with dangerous levels of methanol which is more or less like drinking straight poison when it's in this already broken down state.

Dr. Monte explains the history of how methanol found its way into our food supply:

> *"Methyl alcohol is made from wood alcohol. Wood alcohol and methyl alcohol are two different names for the same thing. Methanol is called wood alcohol because If you take wood and heat it in a closed cylinder, the smoke that's evolved from that contains a large amount of methyl alcohol.*
>
> *Methanol is the smallest molecule of alcohol there is. It's one carbon... ethanol has two carbons... They are similar in many ways. So, if you want to make a really, really good tasting vanilla extract, you would use*

Story at-a-glance

Aspartame is the most dangerous food additive on the market today, accounting for over 75 percent of adverse reactions reported to the FDA, including seizures and death

Even though aspartame is touted as natural it has a synthetic methyl group on one of the amino acids that rapidly breaks down to methanol (wood alcohol). The sweetness associated with aspartame is largely the result of methyl alcohol bonded to the amino acid phenylalanine

Methyl alcohol is metabolized differently in the human body compared to other animals, and is FAR more toxic in humans which is why studies have trouble nailing down the hazards related to aspartame, because most rely on animal not human studies

Methyl alcohol, after it is taken up by the body as a “Trojan Horse” into susceptible tissues like the brain, converts rapidly into formaldehyde,. This causes severe damage to proteins and DNA that can contribute to many serious and chronic diseases, such as cancer, autism, Alzheimer’s disease, and multiple sclerosis

Fresh fruits and vegetables contain minute amounts of methanol, but there’s a natural mechanism that makes it harmless. Pectin firmly binds to methanol, allowing it to simply pass through your body and be excreted, because the human body does not have the enzymes to break that bond

Most Popular

1 Pulling Back the Curtain on the Organized Crime Ring That Is the Pharmaceutical Drug Cartel

2 The Perilous Road Ahead: Designer Babies and Other Patented Life Forms... Where Will It All End?

3 The Rich Benefits of Eating Chocolate

4 Ronnie Cummins on Turning the Tide Against Monsanto

5 How Biochar Can Help Reverse Atmospheric Co2 Levels and Soil Depletion

You Might Also Like

Latest Aspartame News

Aspartame is, by Far, the Most Dangerous Substance on the Market that is Added To Foods

NEW! Self-Funded Study Found HUGE Tumors from This Everyday Food...

methanol to do it. You could, because you would get more of the flavor essence out of it.

The food industry decided, 'We've got to test the methanol to see how safe it is.' They went to the laboratory and they tested animals. Back in those days, believe it or not, they did actually better laboratory testing than we did when it comes to toxicology. They would take a whole range of animals. They would take rabbits, dogs, guinea pigs, various kinds of ruminants besides rats and monkeys – different varieties of monkeys – and test them all.

When you test all of these animals to see how dangerous methanol is compared to ethanol, ethanol comes out to be more dangerous by a factor of about 30 percent, depending on the animal. Right away they decided this is important because... methanol is cheap to make. We can make it taste good, and there is no tax on it..."

Methyl Alcohol Metabolizes Differently in Humans Compared to Other Animals

Food and drug companies decided to use methyl alcohol (wood alcohol) to make a variety of flavor extracts and other accoutrements that they'd previously used ethanol for. They also began using methyl alcohol for cough syrup. As Dr. Monte says, all hell broke loose after that. Starting around 1904, and for the next 40 years, doctors wrote extensive articles detailing the health problems suffered by their patients, including blindness and death, pleading with the food and drug industry to reevaluate their products.

"Here is the story: there is a major biochemical problem here," Dr. Monte says. *"Methyl alcohol is known now, and has been known since 1940, to be metabolized differently by humans from every other animal."*

Both animals and humans have small structures called peroxisomes in each cell. There are a couple of hundred in every cell of your body, which are designed to detoxify a variety of chemicals. Peroxisome contains catalase, which help detoxify methanol once it is to formaldehyde. Other chemicals in the peroxisome then convert the formaldehyde to formic acid, which is harmless, but this last step occurs *only* in animals.

When methanol enters the peroxisome of every animal **except humans**, it gets into that mechanism. Humans do have the same number of peroxisomes in comparable cells as animals, but *human* peroxisomes *cannot* convert the toxic formaldehyde into harmless formic acid.

"The methanol bounces off the catalase or bounces off something there," Dr. Monte says. *"What happens then is every cell in your body cannot metabolize methanol. Wherein the animal body, every cell can metabolize and turn it to formic acid, which is safe.*

What happens to the methyl alcohol?

That's the key. In humans, methyl alcohol could just as easily not be metabolized at all. That would be the ultimate and best outcome, and you could urinate it away or sweat it out and you would be fine. Unfortunately, there are some locations in the human body, particularly in the lining of the vessels of your body... especially in your brain that are loaded with alcohol dehydrogenase (ADH) that converts methanol to formaldehyde and there is no catalase present to enormous amounts of damage are created in the tissues."

Formaldehyde May Be a Significant Contributor to Chronic Disease

According to Dr. Monte, there are about 11 areas of the human body where you find alcohol dehydrogenase, which is capable of converting methanol into formaldehyde. He discusses the details of this in his book. Unfortunately, the areas where formaldehyde tends to be created are some of the most sensitive areas in terms of creating serious, chronic disease, such as multiple sclerosis (MS), and Alzheimer's disease.

"If you look in the cell, you say, in what part of the cell is this happening? That's the key. That enzyme, the alcohol dehydrogenase, is not associated with any organelle that can handle formaldehyde. It's just floating around in the cell. That means that you can convert methanol into formaldehyde right next to your nucleus. You could do it next to the cell membrane. You could do it next to an important organelle.

And when that happens, when methanol turns into formaldehyde, you have a methylating monster inside of your cell.

It's very difficult, if not impossible, to get formaldehyde into the cell otherwise. When you breathe formaldehyde, it's so extremely reactive – it reacts with the tissue it first makes contact with. It's considered a carcinogen in that case."

This cellular methylation alters DNA functioning. It turns off the DNA by preventing it from producing protein. The damage from methylation is not necessarily permanent, but if not controlled, it will definitely have a negative impact. It could possibly be reversed, and ubiquinol and optimizing leptin and insulin signaling are likely very helpful for this as they upregulate repair processes. This becomes crucial if we ever hope to address the methylation damage which is a major concern in cancer and autism.

Interestingly enough, tobacco smoke also causes methylation, similar to that of aspartame. Dr. Monte explains:

> *"Tobacco is fermented. When you ferment tobacco in the field, [it creates] spoilage bacteria that liberates the methanol from the pectin, which normally we couldn't liberate. That's what really makes the methanol content high. It's not just the smoking process itself, but it's the way cigarettes are produced... Basically, the methanol produced by one pack of cigarettes would be equivalent to the methanol liberated from a liter of diet Coke."*

How Can You Prevent Methanol from Turning into Formaldehyde?

Curiously, *ethanol* prevents methanol from turning into formaldehyde. If you look up methanol toxicity in the medical literature, you will find that most of it points to formic acid as the cause of the problems associated with methanol poisoning in humans.

> *"The literature will also point to the fact that small amounts of methyl alcohol that are consumed, that are breathed in or consumed during the day, will all be processed by your liver. This is not true,"* Dr. Monte says.

> *"Scientists have shown that most people, not all the time, but most people have a little bit of ethanol in their bloodstream. If that's the case, then the small amount of methanol that comes from aspartame or whatever will not be metabolized in the liver, because there is just that little bit of ethanol... So what happens is – and this is not good – the methanol gets through your liver completely... and gets into your circulatory system."*

The methanol will continue to circulate through your body until there's no ethanol left in your body, and at that point, any alcohol dehydrogenase available will get converted to formaldehyde... According to Dr. Monte, this in part explains why small amounts of alcohol each day seem to have a protective effect against many diseases, including atherosclerosis and Alzheimer's.

Dr. Monte believes the major benefit of consuming alcohol that is widely known to lengthen lifespan, is related to it being safely excreted before methanol is converted to formaldehyde. A far safer and likely just as effective strategy however would be to optimize your gut flora as one of the byproducts of healthy gut flora is ethanol that could provide the same methanol sparing formaldehyde conversion benefit.

What about Methanol in Fruits and Veggies?

The manufacturers of aspartame counter the claims of methanol being a harmful aspect of aspartame by pointing out that it also occurs naturally in fruits and vegetables. So why would it cause a problem in aspartame?

First, methyl alcohol, while present in significant quantities in plants and vegetables is typically safely bound to pectin and since we do not have any enzymes capable of breaking that bond, once the methanol in fresh vegetables or fruits is eaten, it is safely eliminated in the stool.

However the methyl alcohol can be liberated by putrefying bacteria that spoil fruits and vegetables and in fact methanol is an indication of *spoilage* in fruits and vegetables. Dr. Monte recommends cutting off all spoiled parts before eating your fruits and veggies. I believe most people avoid eating spoiled produce. If not, it would be a wise move. It's the putrefaction that liberates the methyl alcohol.

> *"If you have a good whole fruit and vegetable, unspoiled, fresh off the field, the amount of methyl alcohol in that is extremely low,"* he says. *"There is methyl alcohol exuded by leaves and this sort of thing. It's part of their process of growing and all that. But the mechanism to get rid of it is there."*

Remember when you consume methanol in soda, it *easily* breaks off from the phenylalanine in aspartame in your duodenum, and this is a major difference between consuming methanol in the form of aspartame versus getting it from fresh fruits and vegetables. Contrary to the bond between pectin and methanol, which is very strong, the bond holding the methanol in aspartame is extremely weak.

> *"It's the weakest methyl ester [bond] I've ever seen,"* Dr. Monte says. *"Chemically, it doesn't want to be there and it wants to liberate methanol. But pectin binds extremely tightly – the methanol that is bound to pectin gets through your digestive system and comes out with the fiber."*

Processed Foods High in Methanol

Processed foods are another matter, however. When fruits and vegetables are canned, the methanol becomes liberated from the pectin. At room temperature, it only takes one month for 10 percent of the methanol to be released. After about six months, virtually all of the methanol is liberated. Dr. Monte is convinced that methanol and the subsequent conversion to formaldehyde from certain processed foods and foods containing aspartame is a major culprit in a variety of diseases, especially MS.

> *"Multiple sclerosis behaves sort of a like an autoimmune disease. How can methanol cause this? The formaldehyde is*

what causes it," he says.

Methyl alcohol can slip through your blood brain barrier, and your brain is one of the areas where you find alcohol dehydrogenase, which converts methyl alcohol to formaldehyde. This causes the destruction of myelin basic protein, which is one of the triggers for MS.

> *"We know that methyl alcohol is known to be a demyelinating agent,"* Dr. Monte says. *"We don't know why. In general, it's accepted as a demyelinating agent. You have the symptoms associated with the demyelination, and they're identical between multiple sclerosis and methanol poisoning, and people who consume aspartame."*

Dr. Monte believes many diseases such as MS can be prevented if we start avoiding methanol, and he offers a methanol-free diet on his website. Items to avoid, especially if you have MS or symptoms of MS, include:

Cigarettes	Tomato sauces, unless first simmered at least 3 hours, no lid on pan
Diet foods and drinks with aspartame	Smoked food of any kind, particularly fish and meat
Fruit and vegetable products and their juices in bottles, cans, or pouches	Chewing gum, most chewing gum in the USA contains aspartame
Jellies, jams, and marmalades not made fresh and kept refrigerated	Slivovitz and other fruit schnapps
Black currant and tomato juice products, fresh or processed	Overly ripe or near rotting fruits or vegetables

More Information

You can learn more by reading Dr. Monte's book *While Science Sleeps*, or by visiting his website, www.WhileScienceSleeps.com.[1] His site contains all the articles referenced in his book, about 600 of them, so that you can read through them and verify the details for yourself.

There, you can also find, free of charge, the Monte Diet,[2] which will give you more details about the 10 primary sources of methanol mentioned above.

[+] Sources and References

[+] Comments (132)