



ALZHEIMER'S

THE SCIENCE OF PREVENTION

Episode 11: Avoiding Brain Toxins



- David Perlmutter, MD: The environment we live in today is vastly different from that of our ancestors. The exposures we face through everything from our diet to the air we breathe have changed dramatically over the last hundred years, and we're now learning that some of the things we're exposed to through our interactions with our surroundings play a very real role in our health and wellness.
- David Perlmutter, MD: Even more specifically, we're seeing how these exposures actually influence the brain.
- David Perlmutter, MD: In this episode, we're going to learn how certain environmental exposures are threatening for the brain with specific emphasis on the potential links to Alzheimer's disease. We'll then provide practical tools to help you limit your exposure to these specific toxins.
- David Perlmutter, MD: I'm Dr. David Perlmutter, and this is Alzheimer's - The Science of Prevention.
- David Perlmutter, MD: In previous episodes of this series, we've learned that not only is Alzheimer's on the rise, but it is in fact a disease for which we have no meaningful treatment
- David Perlmutter, MD: But importantly, what we've revealed thus far is empowering information that shows us that our health destiny is not at the mercy of our genetics, and of course this applies in the context of Alzheimer's, as well. We've already reviewed some of the important tools available to you to help reduce your risk for this disease, including dietary strategies, nurturing your microbiome, optimizing sleep, and avoiding and managing Type II diabetes.
- David Perlmutter, MD: Again, all of these tools focus on reducing inflammation. Now we're going to take a look at some specific environmental toxins in the context of how they may threatening to your brain health.
- David Perlmutter, MD: Toxins are really looked upon as being a threat to the brain. What can you tell us about that?
- Mark Hyman, MD: Well, the traditional medicine is pretty ignored. The two most impactful things that cause disease, food and toxins we learn nothing about them. Clearly food is critical. We know that now, but toxins are still ignored. What about the role of all the neurotoxins that are in our environment that we're exposed to

through our food, through the air, through water, through household cleaning products, through cosmetics, literally everywhere? And I think we know that, that certain toxins are very neurotoxic, like heavy metals like mercury and lead. We know for example, that the average newborn baby in their umbilical cord blood before they take their first breath, has 287 known toxins. And this study was done over 10 years ago when they couldn't even measure all the toxins. So maybe there's more, and 210 of those toxins were neurotoxic.

Mark Hyman, MD:

Things like Phthalates and PCBs and dioxins and flame retardants and pesticides and heavy metals and mercury and lead floating around in the baby's blood even before they took their first breath. So what about the rest of us that have been out in this sea of toxins for 30 or 40 or 50 years? Clearly this plays a role and they're synergistic and they are clearly damaging our brains.

Sarah Gottfried, MD:

When it comes to environmental toxins, things like Bisphenol A or heavy metals, mercury, lead is what comes to mind. Unfortunately, conventional physicians are less likely to look at these things and to even consider them as they hear about your symptoms and hear about what's going on with you. I wasn't trained to look at them when I went through Harvard Medical School and residency training at the University of California, San Francisco. So I did learn it on my own. But once I started to test myself and then my patients, I was amazed at how many symptoms could then map on to environmental toxic load. So I'll give you an example.

Sarah Gottfried, MD:

When it comes to environmental toxins, in some ways, I don't think there is any place that we're not exposed to them. So we get it from the food that we eat, an example is being exposed to glyphosate. We get it from the air that we breathe. We know that pollution is a major cause of things like stroke and other brain problems. We know that we get exposed through skin products that we use, which is especially important to me because your skin can readily absorb environmental toxins. Things like xenoestrogens, which are fake estrogens. I think of them like party crashers, meaning that they come into the human body and they stimulate your estrogen receptors, and they basically just wreak havoc.

Dean Sherzai, MD, PhD:

There are factors in our environment that have changed over the last 50 years that significantly affect the brain more than

any other organ. Why? The brain is the most active organ in the body.

Dean Sherzai, MD, PhD:

This little three-pound organ, which is 2% of the body's weight, consumes 25% of the body's energy. So anything that's using its energy to that extent, will also be overwhelmed by toxins and environmental factors that can significantly damage it. But first and foremost, we don't have to focus on that. We have plenty of toxins in our environment such as the foods that we're eating, all the factors that we've added to the foods, and other factors that over time, just start chipping away at this reserve of the brain until you first see the manifestations in your 80s or 90s or actually earlier. But the damage has started much earlier in your 30s for that matter. So that's why we're talking about prevention much earlier than waiting till you're 80 or 90.

David Perlmutter, MD:

Environmental toxins appear to be almost everywhere in our modern world, and the evidence suggests that they may well be linked to an increased risk of developing Alzheimer's disease. Let's explore this important connection.

David Perlmutter, MD:

With so many toxins around, it can be hard to know exactly what to look out for, but two of the main toxins to really try to avoid are glyphosate and artificial sweeteners.

David Perlmutter, MD:

These two offenders are specifically problematic because they disrupt the microbiome which then affects the levels of inflammation in our body and our metabolism, as well.

David Perlmutter, MD:

As we've discussed in previous episodes, increased inflammation is directly linked to compromised brain health. Glyphosate has become an incredible popular chemical in the agricultural industry, and this is the active ingredient in things like Roundup. What makes glyphosate so concerning is that it seems to have a toxic effect on the microbiome, and this has been demonstrated in multiple animal studies.

David Perlmutter, MD:

Remember, the microbiome is the collection of microbes and their genetic material as well as their metabolic products found within the gut. The microbiome is powerfully influential in terms of maintaining our metabolism, our neurotransmitters, and even our hormonal balance in addition to its key role as the gatekeeper of inflammation in the human body.

- David Perlmutter, MD: This is a major reason why glyphosate should be avoided, but to add to the picture, glyphosate has been shown to be linked to an increased risk of developing cancer.
- Leo Galland, MD: The importance of organic food has to do with the chemicals that are found in food that is not organic and these days the chemical that contaminates so many foods that are not organic in origin is glyphosate or Roundup.
- Leo Galland, MD: Glyphosate is used to kill weeds. The use of glyphosate is related to the development of genetically-modified food, GMO food.
- Leo Galland, MD: The problem with GMO food is not that it's genetically modified, that could be good, that could be bad. It's the reason that food is genetically modified. It's modified to make it resistant to glyphosate.
- Leo Galland, MD: Consequently, on a large industrial farm, you can aerial spray all of the crops with glyphosate, kill the weeds, you don't need to have people down there removing weeds and the plant is not killed by the glyphosate.
- Leo Galland, MD: The problem is that now this food is contaminated with glyphosate and glyphosate creates problems for the bacteria in your gut and those problems may have long reaching effects on your metabolism.
- Leo Galland, MD: Toxic substances from the environment may impact the growth of bacteria in your microbiome.
- Leo Galland, MD: The microbiome also processes these toxins and may make the toxins more or less dangerous to you depending upon what the toxin is and what the microbes in your microbiome are. It's a very complicated area, but a very important one.
- Mark Hyman, MD: We have to be very aware of this in our diets and try to reduce the consumption of GMO foods. Now that, so because of the GMO, but because of the glyphosate, which is one of the biggest problems with GMO and we now are able to test in your urine how much glyphosate is there. I recently tested my glyphosate levels as I was curious, thinking that I eat organic diet, that I eat grass fed meats, that I try to be really diligent about not consuming any GMO foods. When I travel, I go out, I can't help it. And I found fairly significant levels of glyphosate in my urine

even though I consider myself at very low risk for glyphosate toxicity. So I think we all have to be aware that this is an issue that it's in all of us and that we can reduce our exposures, which also may have downstream benefits

Emeran Mayer, MD:

Toxins is a popular word in, I would say, the functional medicine area and with the lay public. People have all kinds of toxins that we're exposed to. There's fine particles, for example, that we all are exposed to living in cities. I think the one toxin that has received the most attention is glyphosate from Roundup, from the pesticides that are being used increasingly in the production of GMO produced food. This makes a lot of sense to me that glyphosate, by itself, was testing originally by the FDA in short term experiments in a test tube. No long term consequences. So, we don't really know what the consequences are on a human organism when it's processed by the microbiota. So, the microbiota have an ability to handle substances, so called xenobiotics, that they've never seen in evolution, any chemical substance, in a way that they break it down and either make it less toxic or potentially more toxic on the host.

David Perlmutter, MD:

Another way in which our environment may be affecting our brains is through the effects of air pollution. Air pollution has been linked to a variety of negative health effects, but researchers now indicate that it may indeed produce direct effects detrimental to the brain.

David Perlmutter, MD:

For example, a 2012 study showed that older women exposed to higher levels of air pollution experienced cognitive decline equivalent to two years of aging.

David Perlmutter, MD:

In addition, another study showed that older adults with higher exposure to air pollution made 50% more errors on mental exams in comparison than those with lower exposure.

David Perlmutter, MD:

Finally, a 2018 paper found that air pollution worsens performance on verbal and math tests and that these changes become more pronounced with aging.

David Perlmutter, MD:

Air pollution has also been linked to the development of brain inflammation and accumulation of certain proteins in the brain that are associated with Alzheimer's disease.

David Perlmutter, MD:

In order to reduce our exposure to air pollution, one simple precaution is simply to avoid going outdoors if levels of air pollution are particularly elevated.

David Perlmutter, MD:

In addition, if your exposure to pollution is more regular, then you might want to consider wearing a mask for protection. In addition to avoiding air pollution, we also should do our very best to avoid the use of artificial sweeteners.

David Perlmutter, MD:

Artificial sweeteners have been heavily marketed as an alternative to sugar giving many people the impression that these are actually healthy options. Unfortunately, the evidence suggests quite the opposite. The idea is both untrue and potentially dangerous. It's become increasingly clear that despite the opposite claims, artificial sweeteners have been shown to actually associate with increased risk for weight gain and even Type II diabetes.

David Perlmutter, MD:

This actually may well be the result of damaging effects of artificial sweeteners on the microbiome. Artificial sweeteners have been repeatedly shown to change how our gut bacteria function altering the balance and action of our microbes. Beyond just weight gain, this effect on the microbiome may also explain why these so-called zero-calorie sweeteners are linked to increasing risks of developing, as mentioned, Type II diabetes, a powerful risk for Alzheimer's disease.

David Perlmutter, MD:

With all these ideas in mind, artificial sweeteners are certainly not doing your brain any favors and should be considered environmental toxins.

David Perlmutter, MD:

There's so much emphasis these days on reducing sugar consumption and looks like people are drinking a lot of artificially sweetened beverages. Why might that be a bad choice?

Mark Hyman, MD:

Well, if you listen to the food industry, there's no harm from artificially sweetened beverages. In fact, about 100% of their studies show it's harmless, whereas almost 100% of the studies done by independent researchers show it's harmful. And I think we still are learning about what it does, but it can alter the microbiome in your gut, which can cause inflammation and insulin resistance and prediabetes or diabetes. It has certain things in it that can affect your brain. For example, aspartame is an amino acid derivative that can be an excitotoxin for the brain that can over stimulate the brain. We know, for example, many of my patients freaking about migraines when they stop through diet sodas, they go away. So we know that we shouldn't be consuming a lot of artificial sweeteners, that there's no

benefit to it in terms of weight loss, in terms of reversing diabetes, and there may be significant harm.

Emeran Mayer, MD:

Artificial sweeteners have been several studies in high profile journals by excellent labs around the world, particularly from Israel. So many of the artificial sweeteners are not absorbed in the small intestine. They're molecules that activate our sweet taste receptors. That's why we take them, we want to get the sweet taste, but then they're not absorbed which means they go down to the colon, to the microbes. The microbes handle them just like any other chemical that they get. They break them down, and what's been found is it has profound effects on the relative abundances of good and bad microbes, and one effect is that it leads to an increase in short chain fatty acid producing microbes in some parts of the colon, which are then reabsorbed and there's an additional energy harvest. So, you think you're actually taking in less or fewer calories, but in reality these calories are just salvaged by a microbiome that is now specialized in salvaging everything that comes down from the top.

Emeran Mayer, MD:

So, instead of the body getting the calories from the sugar up in the small intestine, now the calories come from the colon. It also has been shown to change the mucus layer, the permeability, the leakiness. These studies, kind of an exception, have really been confirmed in humans. The intake of artificial sweeteners can make diabetes worse, blood sugar control worse, than if you eat the same amount of sugar, which is remarkable. We don't know if every artificial sweetener behaves the same way. This had been done now for three or four. I wouldn't say every artificial sweetener has that negative effect, but the ones that have been studied, the most common ones, clearly have become almost like a toxin for our microbes and for our GI tract.

Emeran Mayer, MD:

The evidence from studies evaluating the negative health effects of artificial sweeteners, of those artificial sweeteners that have been studied, it's pretty clear the evidence both from mouse studies and from human studies, that they can be considered harmful. You could even say some kind of a toxin to the human host.

David Perlmutter, MD:

We now understand that toxins such as glyphosate and artificial sweeteners harm the microbiome. Damage to the microbiome is linked with increased inflammation, a cornerstone mechanism in Alzheimer's disease.



- David Perlmutter, MD: While damage to the microbiome through exposure to toxins indirectly increases inflammation in the brain, certain toxic substances can also directly increase inflammation in the brain. This is because when the immune cells in the brain are exposed to toxins, they start a cycle of inflammation.
- David Perlmutter, MD: We've mentioned the damaging effects of inflammation on the brain throughout this documentary, but let's take a moment to see exactly how this all ties together. Just like the rest of the body, the brain is strongly connected to the immune system. Let's just get technical for a moment.
- David Perlmutter, MD: In the brain, one of the most important parts of the immune system are what are called the microglia cells. The microglia are immune cells that help to monitor the environment within the brain and performs a variety of functions, but here's the key. When the brain is inflamed, the microglia appear to change in a way that worsens the inflammation. In addition, when conditions are unhealthy, the microglia cells themselves may start a cycle of inflammation within the brain.
- David Perlmutter, MD: One of the things that might lead to this damaging state in which microglia create inflammation is when they are exposed to environmental toxins.
- David Perlmutter, MD: Another way that toxins harm our brains is through disrupting our hormones. Hormones are immeasurably important when it comes to our body's overall health as well functionality. You can think of hormones as chemical messenger molecules that travel throughout the body and play a variety of different roles helping ourselves and organs do their work.
- David Perlmutter, MD: If hormones become imbalanced, this can cause a cascade of downstream effects including weight gain, mood problems, fatigue, sleep problems, and many, many more, and as you might've guessed, hormone dysregulation is also linked to Alzheimer's disease. Our brains are deeply dependent on healthy hormone signaling for healthy functioning, and when these hormones are altered, problems are quick to show up.
- David Perlmutter, MD: Let's see how common environmental toxins like BPA can disrupt our hormones.
- Sarah Gottfried, MD: We definitely know that there's a strong link between being exposed to environmental toxins and your hormone balance. So

I'll give you a few examples. Bisphenol A is one of the most common environmental toxins. You get exposed to it through eating canned food, through plastic bottles, and even the non-BPA plastic often can expose you to similar compounds. So what does BPA do in terms of your hormones? It is an estrogen disruptor, it's an androgen disruptor. So it disrupts your DHEA and also your testosterone. It also is an insulin disruptor. So another term for that is an obesogen.

Sarah Gottfried, MD:

Now, what we know is that certain environmental toxins, especially heavy metals come to mind, but BPA also, can lead to problems in the brain as well. So is this a direct effect? Is it through the hormonal response? Is it through the gut-brain axis? I don't know that the details are so well defined. But in some ways that doesn't matter as much as knowing that these exposures increase your risk.

Lisa Mosconi, PhD:

There are compounds like BPA found in plastic that is a known Xenoestrogen. So it's estrogen that is not produced by 11% but comes from the outside and not in a good way. And these Xenoestrogens are known neuro endocrine disruptors, which means they mess up your brain and your hormones. And they have been associated with an increased risk of cancer in women and also with a very precocious puberty, anger, and also with medical conditions like man boobs, so busy they really disrupt your hormones, but the point is that they also disrupt your brain.

Lisa Mosconi, PhD:

So anything that is toxic in your body, increases inflammation and inflammation is really bad for your brain as well. And if your hormones are not functioning correctly, then your brain is also really strongly affected.

David Perlmutter, MD:

Now, if you read the labels on a lot of processed foods and meats, you may have noticed the words nitrates or nitrites. These are the types of food additives that lead to the formation of damaging nitrosamines.

David Perlmutter, MD:

Nitrosamines are toxins that have been shown to cause insulin resistance, and as we found out in episode five on diabetes, insulin resistant is directly linked to an increased risk of Alzheimer's disease.

Suzanne De La Monte, MD, MPH:

There's also evidence that nitrosamines cause insulin resistance and so I'm a big fan of completely avoiding any exposure that's possible and that there's a whole list of things that have them

including some beers. So you want to make sure that you're not getting those exposures because over the long term they will contribute to insulin resistance diseases. Usually, if you're looking at a package, it'll say nitrates and nitrites 2%, and sometimes they'll say nitrates and nitrites at none added, I don't know what that means because it means that they didn't add it, but it was there beforehand. So basically reading the package to know if any has been added, but the safer way is to simply go after, if you can, organic meats and things like that, and just looking at products that you know don't have any nitrosamines.

Suzanne De La Monte, MD, MPH:

Basically they're caused by the fact that you add nitrates and nitrites as preservatives, as color modifiers, most of the processed meats have it or many of them do, I have to say that over the last several years I've noticed that manufacturers seem to be taking them out and they're putting big labels on it saying that they've done that, so that's a good thing. So basically reading the labels is what really matters.

David Perlmutter, MD:

Finally, I think it's really important that we take a look at a specific over-the-counter medication, a type called a proton-pump inhibitor, or acid-blocking drug. These drugs are incredibly common and are used to treat heartburn by blocking stomach acid.

David Perlmutter, MD:

To be sure, these drugs are not a free ride and they can wreak havoc on your brain, specifically by disrupting the delicate balance of bacteria in your gut. We learned a great deal about how important these bacteria are in episode seven.

David Perlmutter, MD:

Now, we'll explore even more deeply the relationship between acid-blocking drugs, disruption of the microbiome, and potential risk for Alzheimer's disease.

Leo Galland, MD:

I've had a campaign against the acid blocking drugs for 25 years. They are among the most widely used drugs in the western world.

Leo Galland, MD:

That's because a lot of people have heartburn and the main reason they have heartburn is they're eating too much or they're eating too quickly. They're not slowing down to eat and enjoy their food.

Leo Galland, MD:

Heartburn is not due to too much acid. It's due to the enzymes that are found in the stomach. Getting up to tissues above the

stomach that are very sensitive to the pain what those enzymes produce.

Leo Galland, MD:

The enzymes required acid for their activity. These acid-blocking drugs are used to relieve the symptoms and they may or may not work.

Leo Galland, MD:

The problem with those drugs is that you need stomach acid. By using acid-blocking drugs to prevent the symptoms of heartburn, you're not really dealing with the true cause of heartburn, which is the reflux of stomach enzymes up into the esophagus. That's where the problem lies.

Leo Galland, MD:

What you really need to do is to tighten the valve that keeps stomach contents in the stomach and prevents them from rising up into the esophagus.

Leo Galland, MD:

When you start to suppress acid secretion, that does several things. One of the things is it allows an overgrowth of bacteria in the stomach and in the upper parts of the small intestine.

Leo Galland, MD:

You start getting bacterial overgrowth there, you're going to get a lot of metabolic activity by these bacteria that your body is not prepared to handle. There will be toxic substances produced. There may be symptoms like gas and bloating.

Leo Galland, MD:

These acid-suppressing drugs also interfere with the digestion of protein, which makes protein much more allergenic.

Leo Galland, MD:

People who have food allergies have a dramatic increase in the level of allergic antibodies to those foods when they start taking the acid suppressors.

Leo Galland, MD:

I've created a whole protocol for helping people get off their alliance of acid-suppressing drugs. I use it in my practice frequently.

Leo Galland, MD:

I have described it in two books that I published. One is a Kindle eBook called, [The Heartburn and Indigestion Solution](#) and the other is a book on the reversal of the allergy epidemic called, [The Allergy Solution](#), which was co-written with my son Jonathan.

Leo Galland, MD:

These protocols are out there. They're easy to follow. It helped at least 90% of the people that I've treated get off their alliance on acid-surprising drugs.

- Emeran Mayer, MD:** PPIs are way over prescribed. They are given for any complaint, and gastrointestinal complaint that people have, or bought over the counter. I think we are, just like we do with other medical interventions, with dealing with a system, we're harboring a system that we don't even completely understand. I would say caution when taking PPIs unless there's really a true medical indication such as severe acid reflux or ulcer disease.
- David Perlmutter, MD:** We absolutely cannot avoid the idea that environmental exposures are threatening to the brain. Take a moment to consider your lifestyle. Are you eating a lot of GMO foods that may contain glyphosate?
- David Perlmutter, MD:** Do you consume artificial sweeteners with the mistaken belief that it's better than sugar? Both are threatening. Are you currently taking acid-blocking drugs? Are you regularly exposed to air pollution? All of these things can contribute to Alzheimer's disease risk. I hope that you're realizing how important this subject is for your health both today and certainly in the future.
- David Perlmutter, MD:** There are many practical steps you can take to reduce your toxin exposure. Avoiding environmental toxins is one of the tools that you have in your toolkit to prevent Alzheimer's disease.
- David Perlmutter, MD:** Let's review some steps you can implement right now to reduce your exposure to environmental toxins
- Sarah Gottfried, MD:** I would say when it comes to the gut-brain axis, the number one most important influence is food. Organic food is essential. You want to make sure that you're eating food that's super nourishing for you. That's filling in all those nutrient gaps that you have and that doesn't have these other party crashers coming along for the ride like pesticides, herbicides. Things like glyphosate, which can disrupt the gut-brain barrier and lead to neuroinflammation, lead to hormonal disruption
- Sarah Gottfried, MD:** When it comes to organic foods, one of the issues is that it's not always possible to get organic food. So I travel a lot, for instance, and sometimes I'm just stuck at the airport and I've already run out of the food that I brought with me in my suitcase. In the best of all worlds, we would all be able to eat organic. But what we know in the US, for instance, is 99% of farmland is not organic. So it can be difficult, it can sometimes

be more expensive to eat organic food. So what we need to do is the best that we can.

Sarah Gottfried, MD:

Reduce exposure whenever possible. So use organic skin products, drink filtered water from a stainless steel container, cooking pans that are stainless steel or don't have plastic coatings. The second opportunity is to detoxify. So to test yourself to see, are you exposed to environmental toxins? Do you have a heavy metal load in your body that's potentially affecting your brain and acting as a dementia? And so we have to detoxify, we have to know and test and also detoxify.

Lisa Mosconi, PhD:

It's really important as much as possible to be mindful of what you put in your body. And anything from just the foods you eat, to the place where you live because pesticide contamination is a risk factor for Alzheimer's, especially in people with a genetic predisposition.

David Perlmutter, M.D:

If toxins are so important in terms of the brain and its health, what can people do to either identify or more importantly offload some of those toxins?

Mark Hyman, MD:

Well, there's two strategies. One is in order to remove toxins from your life, you have to identify the sources. And there's a great website, ewg.org an environmental working group that has done deep research on what exists, where the exposures are and how to minimize them. So you can learn what skincare products you can use that don't have lead in them or parabens. You can learn which household products don't have toxins in them that you use to clean your house, which foods to eat, for example, which vegetables have the least pesticides and have the most which meats and fish to eat that are safer for you and on and on.

Mark Hyman, MD:

So we have great guides on how to reduce your exposure, the same time you have to up regulate or increase your body's capacity to get rid of these and they're clear strategies to do this. Food is number one, one, get rid of the worst toxin, which is sugar, but then you have to increase certain foods that have phytochemicals, which are these plant compounds that work with your body to do good things that help detoxification for example, like Broccoli or collards or kale, that whole family of brassicas.

Mark Hyman, MD:

Garlic and onions, green tea, pomegranate, these all have powerful detoxifying properties that you can use to your

advantage by eating these foods. So eating a diet rich in polyphenols and antioxidants, plant rich diet and certain specific vegetables can help. And also making sure you're pooping and peeing regularly, which many people don't. Your urine should be clear. It shouldn't be dark yellow. You should be going to the bathroom once or twice a day and a patient, I once said to her, "So are you regular?" She was, "Yeah, I'm regular." I said, "How often do you go?" She says, "I go once a week." I said, "That's not regular." She says, "Regular for me I go every week." And I think we, we don't understand the importance of eliminating waste, so pooping, peeing, sweating. These are really key strategies for helping remove toxins and then of course there are supplements you can take that regulate pathways like glutathione for example, and Acetylcysteine or milk thistle or selenium or zinc or lipoic acid. That all help to up regulate the body's capacity to detoxify and including those as part of your regimen can be very helpful.

David Perlmutter, MD:

We are so grateful to our guest speakers for sharing their incredible knowledge with us about environmental exposures. We've learned that decreasing our exposure to environmental toxins is absolutely essential for brain health, and here are some actionable steps you can take today to help you avoid toxins:

- Eat organic. Choose non-GMO foods. The reason we want to avoid genetically-modified foods is because by and large foods that are genetically modified are foods that are sprayed with glyphosate. It's the glyphosate that's the toxin.
- Pay attention to air quality reports if you live in an area exposed to air pollution.
- Avoid consuming artificial sweeteners.
- Read your food labels to avoid consuming nitrates or nitrites.
- Try to avoid eating out of or drinking out of plastics whenever possible, or use BPA-free plastics.
- Use cooking pans with stainless steel components instead of plastic coatings.
- Now that you know the damaging effects upon the microbiome of acid-blocking drugs, ask your health provider if a drug like that is really in your interest.

David Perlmutter, MD:

These simple, but powerfully effective steps will help you decrease your exposure to potentially damaging environmental toxins. Remember, every step you can take to help lower that risk of Alzheimer's is important.



- David Perlmutter, MD: As it relates to toxins, making positive changes can be as simple as switching from a plastic to a metal water container or reading the ingredient list on food and selecting products without nitrates. Every little bit counts.
- David Perlmutter, MD: In our modern world, we don't always have control over the things that we're exposed to.
- David Perlmutter, MD: Despite this, we know that we can have a significant say in what does go into our bodies or not. When we understand that environmental toxins can play a role in the development of Alzheimer's disease, it's very important that we take this message to heart. It's really up to each and every one of us to decide how much we allow our brains to be influenced by the toxins that are seemingly all around us.
- David Perlmutter, MD: Taking control over our exposures is one very important tool we have in our Alzheimer's prevention plan.
- David Perlmutter, MD: In our next episode, we're going to take a deep dive into ways we can improve brain health and prevent Alzheimer's through supplementation.
- David Perlmutter, MD: Targeted supplementation for brain health is one of the tools we should all be taking advantage of in an Alzheimer's prevention toolkit, Let's discover which supplements are useful and how to use them.
- David Perlmutter, MD: I'll see you in our last episode, Support Your Brain With Supplements.