

FOCUS ON: DIABETES

DAVID PERLMUTTER, MD



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FROM THE DESK OF DR. PERLMUTTER

A Note Before Reading

If you've followed my work for a sustained period of time, then you know that I spend a significant portion of time talking about the impact of diabetes, specifically Type 2, on total health. From hyperglycemia (elevation of blood sugar) to insulin resistance, the hallmark symptoms of Type 2 diabetes are harbringers of threats to come to your brain too. Additionally, diabetes is also known to enhance inflammation, and inflammation is indeed a cornerstone of Alzheimer's and dementia.

But, fortunately, fighting the lifestyle choices that cause Type 2 diabetes would have the added benefit of reducing your risk of serious brain disease. So, in the pages that follow, you'll find my thoughts on the latest science behind the relationship between diabetes and Alzheimer's, and how you can take meaningful steps *today* to reduce your risk of developing this tragic disease, one for which there is no cure!

When you've finished reading, do [visit my website](#) to learn and discover even more. I'll continue to scour medical journals for the latest research, and help you understand what that means for your health.

In good health,

David Perlmutter, MD



How “Sugar-Free” Spells Danger

Diet books, as a category, are among the most popular titles sold in bookstores, and with good reason. With soaring rates of obesity, type 2 diabetes, and other chronic conditions, and an overall lack of any meaningful “medical” fixes for these issues, consumers are desperately seeking out other venues that may provide answers and actionable information to combat these common maladies.

But whether a nutritionally-themed book is focused on blood type, targeting gene expression, lengthening telomeres, or even going gluten-free, one central theme that has emerged with widespread commonality is the importance of reducing sugar.

Despite criticism early on, well-respected, published research now recognizes dietary sugar for the villain that it is. As Gary Taubes, co-founder of the Nutrition Science Institute recently stated in the *The New York Times*:

I am a fierce critic of sugar and believe that it, in fact, may have prematurely killed more people than tobacco. The disorders for which it is the prime suspect – obesity and Type 2 diabetes – in turn elevate our risk for virtually every major chronic disease,

from heart disease to cancer and Alzheimer’s.

The negative sentiment towards sugar has not gone unnoticed by food manufacturers, producing a bumper crop of food products now “enhanced” with artificial sweeteners. After all, if sugar is so bad, artificially sweetened foods and beverages should be an easy sell...and they are. These products are soaring on the backs of research studies that hammer on sugar. After all, if sugar leads to weight gain, then why not drink sugar-free beverages that have absolutely no calories? Surely that should help with weight loss, or at least one would think so.

But that’s not what the science is telling us. In fact, over the past several years, researchers across the globe have shown that consuming foods containing artificial sweeteners dramatically increases risk for both obesity AND diabetes!

As an example, Canadian researchers, [publishing in the journal PLoS ONE](#), followed close to 1,500 adults for an average of 10 years. They measured a variety of health markers, including weight, body mass index, and abdominal obesity, and followed the participant’s diets, paying particular attention to their use, or non-use, of artificial sweeteners.

The study’s findings were remarkable. In comparing those who used artificial



sweeteners to those who did not, users showed a 53% higher incidence of abdominal obesity, a 2.6 cm larger waist circumference, and a fairly dramatic increase in body mass index.

At first, these results, and the results of similar studies, seem totally counterintuitive. But mechanistically, when considering the damaging effects that artificial sweeteners have on our gut bacteria, this all begins to make perfect sense.

The authors of the Canadian study stated that artificial sweeteners contribute:

...to weight gain and worsening glucose tolerance by inducing dysbiosis and

altering the composition and function of intestinal microbiota. The altered microbiota exhibit enhanced energy harvest pathways previously associated with obesity in mice and humans.

So, yes, do your best to eliminate sugar. But don't replace it with artificial sweeteners. Your 100 trillion microbial friends living in your intestines won't be happy with this choice and you may well pave the way for the very health conditions you're trying to avoid.

Prevention of Alzheimer's

There's so much in the news these days calling attention to the fact that diabetes is associated with a profoundly increased risk for developing Alzheimer's disease. In fact, just watch my [interview with Dr. Melissa Schilling](#) on the subject.

But there's an important point that is absolutely critical to understand. While it seems like a good idea for diabetic patients to take medication to control blood sugar, the research seems to indicate that diabetics taking these drugs do not improve their situation, in terms of lowering their risk for Alzheimer's.

To be clear, I am not saying that diabetics shouldn't take their blood sugar medications. But I am saying that this looks like this one very important issue, your risk of developing Alzheimer's, is *not* improved by medications designed to help normalize blood sugar.

Researchers, publishing in the journal [PLOS ONE](#), followed more than 70,000 newly diagnosed adult diabetic patients over an 11-year span. Risk of developing Alzheimer's, a disease for which there is *no meaningful treatment*, was increased by 76% in the diabetics compared to age-matched, non-diabetic controls.

More to the point of my report, the authors found that the risk was not reduced when the subjects took medications for their diabetes, stating:

The present study demonstrates an association between DM (diabetes mellitus) and future development of AD (Alzheimer's disease), suggesting that DM could play an important role in determining future risk of AD occurrence. However, we found that use of hypoglycemic agents (diabetes medications) had no beneficial effects for preventing development of AD. Further therapeutic strategies should be investigated for the prevention of AD, such as preventing DM or improving DM treatment.

Their last sentence is profound. They are clearly calling attention to the need to *prevent* diabetes as a way of preventing Alzheimer's.

The study revealed that female gender was also associated with increased risk of Alzheimer's, to the tune of about 24%. Of course, you can't choose your birth gender. On the other hand, your lifestyle choices

play a major role in determining whether you will join the ranks of Americans with diabetes, thus I applaud these researchers for their emphasis on prevention.

Alzheimer's is preventable, to a large degree, by favoring a diet that keeps blood sugar in check. That's the message from Dr. Georgia Ede in a terrific piece just published in [Psychology Today](#). What the Harvard-trained Dr. Ede has described follows, to the letter, the carb-lowering, sugar-eliminating, and fat-supportive recommendations that are central to [Grain Brain](#).

When *Grain Brain* was first published, the notion of food choices affecting brain health was greeted with a healthy degree

of skepticism. After all, that was way back in 2013 when people pretty much lived their lives as they chose, hoping that medical science would soon develop magic cures for their various health issues.

Now, 27 languages later, our recommendations are seeing welcomed validation with more and more research supporting prevention as our most important goal, and I'm happy to report that [The Grain Brain Whole Life Plan](#) takes this goal to a new level by emphasizing *how* to incorporate this exciting research into your day-to-day lifestyle decisions in a way that will pave the way for health.



Worrisome Diabetes Advice from Reader's Digest

Dear Reader's Digest:

I recently reviewed some content on your website that identified [The Best and Worst Drinks for Diabetics](#), and your recommendations were such that I feel compelled to author this response.

In this discussion, which is actually supportive of artificially sweetened beverages your page indicates:

... the American Diabetes Association still suggests that diet soda is a better alternative to a sugar-packed version for people watching their blood sugar. How much: If you already have a soda habit, it's probably OK to sip one a day instead of a sugary version.

This unfortunate recommendation will likely endanger many diabetics and countless non-diabetics.

As noted in [an extensive study published in the American Journal of Clinical Nutrition](#), involving nearly 70,000 women over 14 years, researchers found that subjects consuming sugar sweetened beverages were at an increased risk for becoming type 2 diabetics. Their risk was increased by around 34%. No surprise. But what was remarkable was the finding that

those women who chose to drink sugar-free, artificially-sweetened beverages experienced an increased risk for diabetes that was more than doubled this!

[Further research now shows](#) that the reason people become less glucose tolerant when drinking artificially sweetened beverages likely has to do with the profound changes that are induced in the gut bacteria as a result of consumption.

Granted, it would seem like opting to drinking sugar-free beverages is good advice, and it is. Your discussions about tea and coffee, and certainly water, are solid. But artificially sweeteners are strongly linked to both obesity and diabetes risk, and should absolutely be avoided.



Alzheimer's News

This Should Be Front Page!

It's a staggering statistic, but we are told that by the year 2050 as many as 16 million Americans will be living with Alzheimer's disease. Projected costs, mostly dedicated to nursing homes and homecare, are estimated to exceed \$1.1 trillion.

Research dedicated to Alzheimer's disease is laser-focused on finding a cure. Unfortunately, our most well-respected institutions are coming up empty-handed despite the incredible dedication of monetary resources in this area.

With these ideas in mind, it is unfortunate, if not heart-wrenching, to consider the simple fact that there is a profound relationship between Alzheimer's disease and diabetes.

Melissa Schilling, a professor at the NYU Stern School of Business, has just completed a [large scale study](#) in which she reviewed the extensive literature that clearly associates diabetes with Alzheimer's disease, both in terms of risk and now in terms of mechanism. She was able to find robust evidence that links insulin, as well as the enzyme that degrades insulin (insulin-degrading enzyme or IDE), and the development of Alzheimer's disease in itself. Her study strongly suggest that elevated insulin plays a critical role in the development of the various hallmarks characteristic of Alzheimer's disease.

To be clear, there are a variety of so-called "Alzheimer's drugs" on the market. These

drugs do not treat the underlying causes of Alzheimer's and are designed to simply work on reducing symptoms of the disease. That said, the overwhelming evidence indicates that these drugs are ineffective, even as it relates to managing symptoms.

I have nothing against research focused on finding a cure for this dreadful disease. However, I am quite taken by the fact that hardly any attention is given to the notion of preventing Alzheimer's in the first place, despite the fact that we now have such solid evidence that lifestyle choices, predominantly diet and exercise, play a huge role in determining who does or who doesn't end up with this diagnosis.

It is for this reason that I have been so deeply dedicated to supporting a low carbohydrate diet, a diet that's very restrictive when it comes to simple sugars, to do everything possible to reduce the risk for diabetes. The evidence relating dietary choices to diabetes risk is well substantiated at this point and should be, in my opinion, part of the routine discussion in a doctor's office. This discussion now takes on an even higher level of importance as we recognize this relationship between elevated insulin, as is seen in type II diabetes, and risk for Alzheimer's disease.

Back in 2013 when I wrote [Grain Brain](#), I emphasized the importance of insulin in terms of brain health, and included a fasting insulin level in laboratory recommendations.

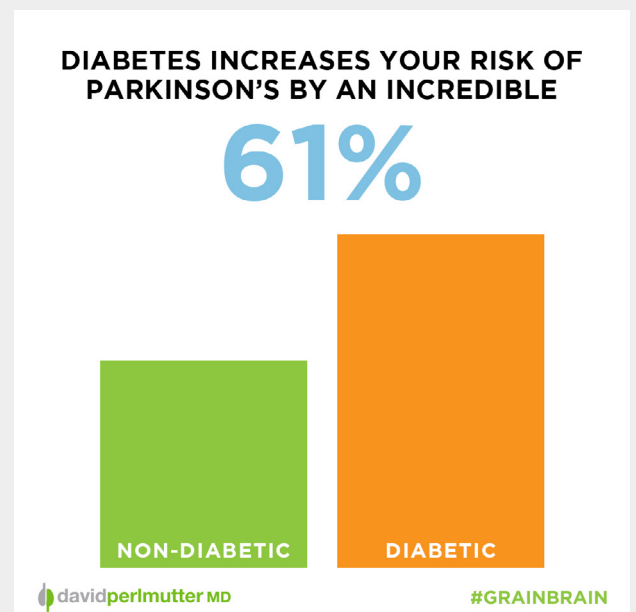
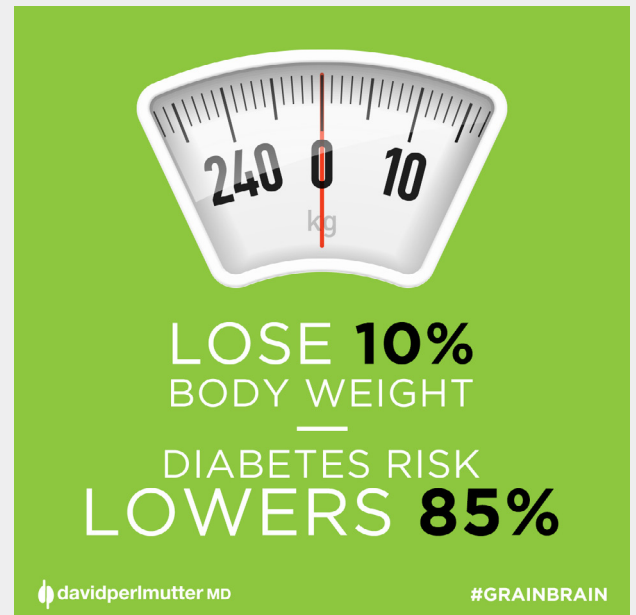
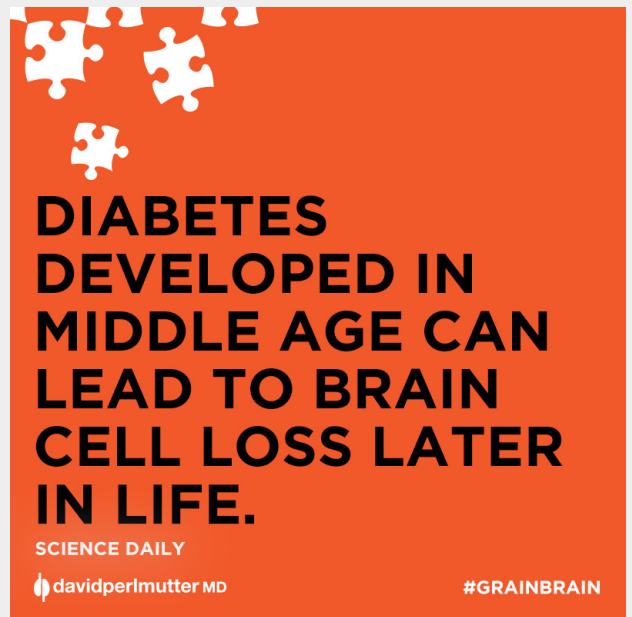
Dr. Schilling now confirms the fundamental importance of testing insulin levels precisely because of this implication for brain health. As she was recently quoted in [Diabetes News Journal](#):

If we can raise awareness and get more people tested for hyperinsulinemia (elevated insulin), especially those who have been diagnosed with or who are at risk for dementia, it could significantly lessen the incidence of Alzheimer's disease and vascular dementia, as well as other diabetes-related health problems.

You will also recall how in Grain Brain I emphasized the importance of focusing on eating foods that have a low glycemic index. It appears that Dr. Schilling agrees as she plans to petition the U.S. Food and Drug Administration to add glycemic index to food labels.

The take-home message is that brain health depends on keeping blood sugar levels normal, and thus avoiding elevated insulin.

I'm planning to interview Dr. Schilling for a future episode of The Empowering Neurologist, so keep an eye out for that, and comment here with any questions you'd like me to ask!



PCOS – Focus on Cause Not Just Symptoms

PCOS, or polycystic ovary syndrome, is becoming increasingly common. The syndrome is characterized by a multitude of features, including irregular or total loss of menstrual periods, heavy periods, acne, increased facial hair, ovarian cysts and metabolic issues related to insulin sensitivity and blood sugar regulation. It is the most common endocrine disorder of women in America, and affects an incredible 5% to 10% of women between ages 18-44.

Interestingly, as we move forward in our understanding of PCOS, it appears that, despite the name, ovarian cysts are certainly not required to make the diagnosis. That is to say that the cysts are a consequence of the underlying disease process, not the fundamental player.

What PCOS represents is primarily a metabolic disorder closely akin to type 2 diabetes in which the body becomes resistant to the effects of the hormone insulin.

For those of you following my blogs, you'll recognize that this issue with insulin seems to be a recurrent theme related to brain disorders, immune issues, and now PCOS, an ever more common situation with women that is described as having "no cure."

Many of the manifestations of PCOS, like the acne and increased facial hair, as well as

the menstrual changes, are a consequence of higher levels of male related hormones called androgens. As such, pharmaceutical intervention for PCOS often involves hormone therapy designed to re-establish balance between so called male and female hormones. In addition, the diabetes medicine metformin is frequently used to help regulate blood sugar.

And as it is with the more than 26 million diabetics in America, the first choice in PCOS, as it relates to elevated blood sugar and loss of insulin sensitivity, focuses on drug intervention and not lifestyle manifestation. But please recognize that the metabolic issue related to elevated insulin is absolutely a central issue in PCOS, not something that just appears along with the rest of the symptoms.

It turns out that the elevated level of insulin actually has a direct effect when it comes to the primary hormonal issues of PCOS. [As described in this report from the Medical College of Virginia](#), elevated insulin stimulates the ovaries to increase their production of androgens, upsetting the male/female ratio of hormones and leading to the many downstream manifestations of PCOS.

With this understanding of the central role of insulin elevation in terms of directing the rest of the symptoms of PCOS, it truly shines a light to the importance of lifestyle issues that are directed at not only the

treatment of type 2 diabetes, but perhaps even more importantly, its prevention.

The diet of Americans is anything but ideal. And as it relates to young women at risk for PCOS, the profound exposure of young women to sugars and carbohydrate rich foods, because of their role in increasing insulin, is clearly related to tipping their hormonal balance in favor of masculinizing androgen hormones, a fundamental feature of PCOS.

I believe PCOS is a preventable situation with diet and lifestyle well-deserving of our

attention. As is so often the case in Western medicine, the focus seems to be on fixing problems with drugs long after the cow has already left the barn. We need to focus on keeping the barn door closed in the first place, a metaphor for changing our focus to prevention, as opposed to treating issues once they have arisen.

In upcoming blogs I will explore other ideas now emerging that may relate to PCOS including environmental toxins as well as changes in the microbiome. So stay tuned.



Artificially Sweetened Drinks are Not a Healthy Choice



Most people wouldn't be surprised to learn that drinking sugar-sweetened beverages would be associated with an increased risk for developing type 2 diabetes (T2D). In fact, this association has been demonstrated in several well-respected studies. It would be hard to imagine that persistent exposure to such a high dose of refined sugar would not have consequences.

Even though consumers have become more aware of the association of sugar consumption with T2D (and weight gain as well for that matter), there has been a fairly dramatic increase in the consumption of artificially sweetened beverages. To be sure, it's not just the health risks associated with sugar that have catapulted sales of diet drinks. Manufacturers of these products have dedicated incredible sums in the promotion of these products capitalizing in the misguided belief that they represent a better choice when compared to sugar sweetened drinks. They don't.

We are now seeing research that quite clearly demonstrates that drinking diet drinks, containing no sugar at all, significantly increases a person's risk for obesity as well as the development of diabetes. In a recent report in the American Journal of Clinical Nutrition, French researchers evaluated more than 66,000 women over a 14 year period and found that those who favored sugar sweetened beverages have an increased risk of T2D,

by about 34%. Incredibly, those choosing artificially sweetened drinks had a risk increase for T2D that was more than twice that amount.

The authors of the study attempted to provide a mechanism whereby drinking sugar beverages could lead to diabetes.

and carbs, how many calories are extracted from our foods, and even whether we feel hungry or satisfied. Beyond these functions, our gut bacteria even play a pivotal role in the regulation of chemicals that affect our mood from one moment to the next – the neurotransmitters.

French researchers evaluated more than 66,000 women over a 14 year period and found that those who favored sugar sweetened beverages have an increased risk of T2D, by about 34%.

They reasoned that because diet drinks don't contain sugar, they don't cause the body to secrete the hormone insulin. Aside from lowering blood sugar, insulin reduces appetite. So people drinking these drinks end up eating more food, consuming more calories, developing obesity, and becoming diabetic.

But there may be another mechanism at work. Israeli researchers recently demonstrated that in both laboratory animals as well as humans, glucose intolerance (which sets the stage for full blown diabetes) is related to changes in the gut bacteria induced by artificial sweeteners. Consumption of these chemicals induces changes to the microbiome, the collection of microbes and their genetic material that live within our bodies, for the most within the intestines.

We now understand that the microbiome, the more than 100 trillion organisms that reside in our digestive system, helps regulate all manner of metabolism within the human body. The organisms play a key role in determining how we handle sugar

So choosing diet drinks as a substitute for sugar-sweetened drinks represents a clear and present danger. Of course, this information should in no way be construed as a vote in favor of regular sugar-sweetened drinks! There's always water, or sparkling water flavored with fruit, kombucha, iced coffee and tea.



Low
Carbs
High
Fat

Low Carb = Low Diabetes Risk

Type 2 diabetes now affects some 26 million Americans. The mainstay of treatment remains pharmaceutical with an unfortunately small dedication to getting the word out that lifestyle changes, like diet and exercise, matter on whole lot as it relates to the actual treatment of this disorder.

But let's take a step back and review pertinent literature that relates diet not to the actual treatment of the disease, but to risk for becoming a type II diabetic in the first place.

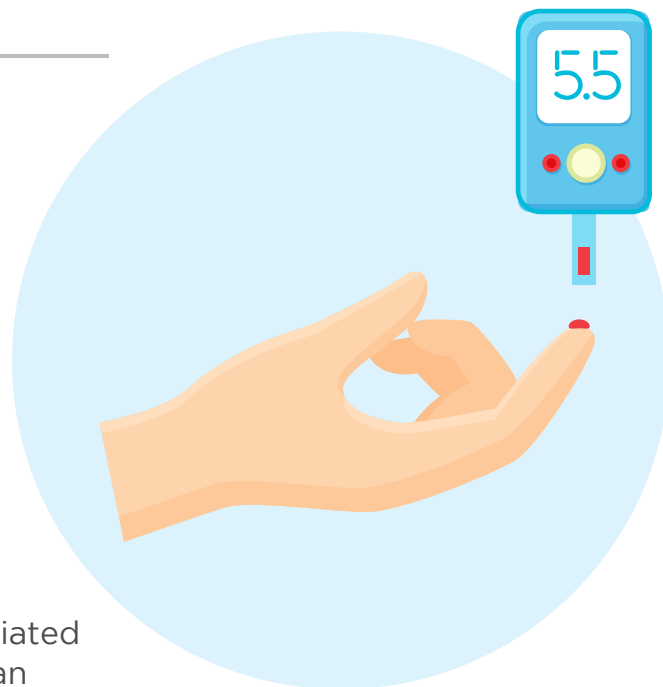
[In a study appearing in the American Journal of Clinical Nutrition](#), risk for developing diabetes was evaluated in more than 85,000 women who were followed over a 20 year period of time. In this group of women, 4670 cases of diabetes appeared. The researchers did an analysis of the diets of each of the participants and specifically determined the amounts of carbohydrate fat and protein that these subjects consumed. In addition, they applied an analysis called glycemic load to the diets with the understanding that diet higher in glycemic load foods are those which tend to increase blood sugar.

This is an extensive study with an incredibly large number of participants carried out over two decades, and the results are therefore very meaningful. What the researchers found was that a “higher dietary glycemic load was strongly

associated with an increased risk of diabetes.” In fact, comparing those whose diets were lowest in glycemic load foods compared to those consuming the highest glycemic load diets, risk for type 2 diabetes was found to be increased about 250% in the latter.

This is striking information for a number of reasons. First, it is very empowering in that it indicates that a diet that is higher in fat, for example, while lower in carbohydrate, is a diet that is associated with reduced risk for becoming diabetic. Moreover, as I alluded to above, becoming a type II diabetic significantly increases a person's risk for all kinds of other problems, many of which are devastating.

Second, it seems to be taking a long time for the science to catch up to the various popular diabetes related organizations in terms of what they are putting out with reference to dietary recommendations. Science is telling us that we need to eat less carbohydrates – food's lower on the glycemic load scale, and welcome healthful fat back to the table, if we want to reduce our risk for diabetes. So please take a look at the report as it offers up some very valuable information.



Antibiotics & Risk for Diabetes

If you've been following the microbiome story you are likely aware of the emerging literature that squarely places gut bacteria in a pivotal position as it relates to any number of physiological processes. From regulating the balance of the immune system to determining the level of inflammation that a person may experience, it is now becoming mainstream knowledge that our gut bacteria are poised to regulate our most critical, life-supportive processes.

In [Brain Maker](#), and certainly on my blog, I have written extensively on the important role of the microbiome in terms of regulating blood sugar and insulin sensitivity. As such, we would expect that environmental events that disrupt the gut ecology might have a causative role, or at least show correlation with type 2 diabetes.

Recall that several months ago I called attention to the interesting [study from Israeli](#) researchers in which changes to the gut bacteria brought on by exposure to artificial sweeteners were dramatically associated with increased risk for issues related to glucose regulation, insulin sensitivity, and, therefore, type II diabetes.

You might therefore expect, based upon your understanding of this relationship between the gut bacteria and regulation of blood sugar, that there might be a correlation between risk of type 2 diabetes and exposure to antibiotics. Antibiotics, while representing a powerful medical

modality for a variety of bacterial infections, nonetheless dramatically affect the array of bacteria within the gut, for the most part negatively.

That said, [a new study](#) has in fact revealed a dramatic relationship between antibiotics exposure and risk of type 2 diabetes. The research, carried out in Denmark, correlated the development of type II diabetes with antibiotic exposure in a review of 5.6 million individuals over a 12-year period of time. The results of the study clearly related risk for developing diabetes to the degree of antibiotic exposure an individual experienced. Over the course of the study, risk of type 2 diabetes was increased by 53% in individuals receiving antibiotics of any type.

In their conclusion, the authors stated:

There is now mounting evidence from rodent models suggesting that antibiotics may drive changes in insulin sensitivity, glucose tolerance, lipid deposition, and energy



*harvesting potential by
altering the gut microbiota
composition.*

For the record, I again want to state that antibiotics play an important role in healthcare. At times they are life-saving treatments for individuals experiencing bacterial infections.

It is clear however that we are dramatically overusing antibiotics. In fact, the World Health Organization has now indicated that over usage of antibiotics represents one of the top three global health threats of this decade.

Further, recognize that at least 80% of the antibiotics sold in America are actually used in livestock and poultry, whereby exposure to antibiotics makes animals gain weight, much as they do in humans. According to a recent publication in [Consumer Reports](#), this misguided use of antibiotics represents a clear and present danger to humans.

With this new research, we are seeing a powerfully strong correlation between antibiotic exposure and risk of developing type II diabetes. So the take-home message is to think twice before you take an antibiotic the next time you have a cold or sore throat. Chances are, if you if you walk into a clinic with a cold, you will walk out with a prescription for an antibiotic. But please understand, well-respected, peer-reviewed scientific publications are now making it quite clear that taking an antibiotic is not a free ride.

Take care of your microbiome!



KETOGENIC DIET

SHOWN TO HAVE THERAPEUTIC USES
IN CONDITIONS INCLUDING

DIABETES
ACNE
NEUROLOGICAL DISEASES
CANCER
CARDIOVASCULAR DISEASE

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**DIET AND EXERCISE ARE
TWICE AS EFFECTIVE AT
PREVENTING DIABETES
AS MEDICINE ALONE**

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**DIABETES
ACCOUNTS FOR**

12%

**OF DEATHS
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How Sweeteners Are Reshaping Your Gut Bacteria

[My recent blog revealing a profound increased risk for developing diabetes](#) in people who consume artificially sweetened beverages clearly struck a note, and with good reason. These days we are being heavily lobbied by beverage manufacturers to rethink our position on sugar sweetened beverages, no doubt because of the ever expanding medical literature that indicates that these dietary choices are profoundly threatening to our health.

In comparing risk for diabetes in individuals consuming artificially sweetened beverages compared to sugar sweetened beverages, there was actually a profound increased risk for diabetes in those consuming artificially sweetened drinks. Clearly, this seems counterintuitive. [But now, new research is actually revealing the mechanism by which this actually occurs.](#)

In a series of elegant experiments, Israeli researchers have demonstrated, in laboratory animals and humans, that the effect of artificial sweeteners on changing the gut bacteria has a profound role in changing metabolism, especially the metabolism of sugar. These researchers have been able to induce diabetes in laboratory animals at will, simply by feeding them artificially sweetened foods. They then were able to characterize the changes in the gut bacteria. Even more profound was their research that demonstrated that by taking fecal specimens from the animal that had been exposed to artificial sweeteners

like aspartame, and transplanting these fecal specimens into laboratory animals that did not have gut bacteria, the risk for diabetes was also increased.

If that wasn't compelling enough, they then showed that similar changes occur in human gut bacteria when humans consume artificial sweetener, as well as the fact that these changes in the gut bacteria relate to metabolic changes that pave the way for diabetes.

Over the next few years we're going to see more and more advertising for artificially sweetened beverages as the news related to the dangers of sugar sweetened beverages gets more traction. But clearly, this should in no way be interpreted as giving the green light for artificially sweetened beverages as we know see really good science demonstrating that risk or some of our most devastating medical conditions is actually even higher with these foods are consumed.

Finally, just so there's no misunderstanding, my purpose in presenting this information is not to have you reach the conclusion that drinking sugar sweetened beverages is the right choice! And aside from soda, it's important to recognize that even fruit juice is high in sugar with a 12 ounce glass of orange juice containing 36g of carbohydrates which translates to 9 teaspoons of sugar.



Drink for Your Health

No doubt, if you've been following my blog, or reading Grain Brain, you've certainly gotten the message that you've got to do everything you can to avoid consumption of sugar. Scientific research has certainly made it clear that sugar consumption strongly relates to such maladies as coronary artery disease, obesity, and type 2 diabetes.

Unfortunately, this aggressive castigation of sugar consumption has led to an increase in people choosing to drink "sugar-free" beverages with the misguided sense that this represents a healthy alternative. The reality of the situation is that nothing could be further from the truth. [In a study appearing in the American Journal of Clinical Nutrition](#), French researchers attempted to determine the risk of developing type II diabetes in individuals who consumed artificially sweetened beverages in comparison to those who actually consumed sugar sweetened beverages. The study was extensive in that it evaluated more than 60,000 women over a period of approximately 14 years.

The researchers found, as expected, that there was clearly an increased risk of developing type II diabetes in women drinking the most sugar sweetened beverages. But what was truly an eye-opener was their finding that those women who consumed high levels of "diet drinks," meaning artificially sweetened beverages, had an increased risk of diabetes more than

double the risk of those consuming the sugar sweetened beverages.

Now to be clear, please do not interpret these results to justify drinking sugar-sweetened beverages. Clearly that is not my intention in bringing this information forward. The important point of the publication is that, despite aggressive advertising, there is nothing safe or healthy about drinking diet sodas. We now understand that artificial sweeteners including aspartame have a significant role in terms of increasing appetite so that while there is no caloric content to these seemingly benign beverages, they nonetheless may ultimately lead to significant increase in caloric consumption, and this clearly may relate to their association with obesity, and, as we now have learned, a dramatic increase risk for developing type II diabetes.





It's Never Nice to Fool Mother Nature

With all this talk about avoiding sugar being so important to health, you might feel that maybe this is a cause for people to jump on the artificial sweetener bandwagon. I'm going to tell you that that's not what you want to do. We are seeing a lot of literature that challenges the wisdom of this notion that we should be using artificial sweeteners. Let's take a look:

This is what we're told to do: If you don't want to drink a sugar-sweetened beverage you should reach for diet-this and diet-that. But it looks as though new literature is challenging the wisdom whether we should be doing that or not.

A report titled "Fueling the Obesity Epidemic? Artificially-Sweetened Beverage Use and Long-Term Weight Gain" was published in the journal *Obesity* back in 2008. The researchers looked at 3,682 adults and followed them for 8 years and looked at their consumption of artificially-

sweetened beverages, and at the same time, looked at how many of these individuals became overweight or obese by looking at what is called their Body Mass Index.

What they found was truly remarkable. Looking at how many artificially-sweetened beverages were consumed per week at the base line of the study, and the change in the body mass index over time. Those individuals who did not consume artificially-sweetened beverages had no change in their BMI. The more consumption of artificially-sweetened drinks per week, there was a dramatic increase in BMI. The researchers indicated, "we observed a classic, positive dose-response relationship between artificially-sweetened beverage consumption and long-term weight gain" Meaning that it's just like a drug; the more you do, the more you get the response. For example, if you took a blood thinner,

the more you took, the thinner your blood would be. In this case, the more artificially-sweetened beverages you consumed, the bigger your belly would be.

French researchers have also looked at the wisdom of consuming these artificially-sweetened beverages and did a very large study. They looked at over 66,000 women and followed them for 14 years, looking at their consumption of sugar-sweetened beverages in comparison with those who consumed artificially-sweetened beverages, and wanted to determine if there was a relationship between the consumption of these beverages and a development of type 2 diabetes. You'd think that the people who used the sugar-sweetened beverages would have a higher risk of becoming diabetic, but here's what they found:

They measured the amount of beverages consumed each week and measured it against the risk of developing type 2 diabetes, and they found that those individuals that consumed artificially-sweetened beverages had a dramatically higher risk for developing type 2 diabetes in comparison to those who drank sugar-sweetened beverages.

Next, we look at why it might be happening:

We've puzzled this over quite some time. Why is it if you're not consuming sugar, you would have a higher risk of becoming obese or diabetic? Israeli researchers had a very interesting quote towards the end of their study:

"Together with other major shifts that occurred in human nutrition, this increase in non-caloric artificial sweetener

consumption coincides with the dramatic increase in the obesity and diabetic epidemics. Our findings suggest that artificial-sweeteners may have directly contributed to enhancing the exact epidemic that they themselves were intended to fight."

What these researchers discovered was that the likely mechanism that relates artificial-sweeteners to increased risk of obesity and type 2 diabetes is the changes that these artificial-sweeteners induce in the microbiome.



[Click here
to watch
full video](#)



Statin Drugs & Diabetes: What You Need To Know

Because of the close correlation between becoming a diabetic and increasing your risk for Alzheimer's, you really want to be doing everything you can to not become a diabetic and keep your blood sugars under control. A new study has discovered that exposure to a certain chemical can increase the risk of diabetes by as much as 48%. Let's take a look at that study.

This is a study looking at women that encompassed more than 160,000 women and showed that when exposed to this chemical, their risk of becoming type 2 diabetic increased by 48%. What was that chemical? The chemical was a statin drug used to treat cholesterol. This was a study published in the Archives of Internal Medicine, a journal published by the American Medical Association. This was a very robust study, looking at over 160,000 women followed for a five-year period. They looked at the risk of developing type

2 diabetes in those who were using statin drugs versus those who were not, and here's what they found:

A 48% increased risk of becoming type 2 diabetic in women taking statin drugs. Let me remind you, if you become type 2 diabetic, you double your risk for Alzheimer's, a disease for which there is no treatment. This study shows that women taking statin medications have a 48% increased risk of becoming diabetic. This is important information I really think you should think about.



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THE EMPOWERING NEUROLOGIST

David Perlmutter, MD & Dr. Sarah Hallberg

SH If we remember that insulin is our fat-storage hormone, we can really see how this creates a vicious cycle for patients.

DP You brought up a really important point that insulin is telling our body “winter is coming, make and store fat”. The obesity issue is related to our stimulation of insulin in our bodies which happens because of our sugar and carbohydrate consumption.

DP So, really what we’re seeing is a manifestation of a mismatch between the body that we have through a evolutionary perspective and the current environment in terms of the food choices that are available. This physiology, as it relates to insulin and glucose management, has been working for millions of years and suddenly, we bombard the system with this poison [insulin] and our bodies are just not equipped because we haven’t evolved that rapidly enough to deal with this onslaught of sugar and carbohydrates.

SH Absolutely, and I think if we dial back and ask “when did this start getting bad?” it’s when we were told to put all the carbohydrates into our diet in this attempt to avoid fat. We were told we couldn’t eat fat, but people needed to eat something. When we dialed back the fat, we really increased the carbohydrates and unfortunately, they became easy-to-package carbohydrates.

SH One of the key things is to make people NOT feel restricted. Healthy fats are natural fats, that does include some saturated fats and lots of olive oil.

DP We’ve been recommending this type of diet because it’s good for the brain. We don’t want people to be pre-diabetic and certainly not diabetic. Type 2 diabetes may increase a person’s risk for Alzheimer’s, cancer, and coronary artery disease. It’s why we can make the broad stroke recommendations to go lower-carb, getting rid of sugar, and welcoming healthy full-fats back to the table.





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DIABETES FAQ

WHAT EFFECTS DO MALTODEXTRIN, ASPARTAME, ETC. HAVE ON THE BODY?

> Maltodextrin is a processed starch made from things like corn, rice, potato or wheat. So it may contain gluten and is therefore best avoided. Aspartame may specifically change the sensitivity of the brain to hormones that regulate appetite. Higher aspartame consumption is associated with a dramatic increased risk for obesity and even diabetes, even though it is sugar free.

SHOULD DIABETES BE RENAMED TO SUGAR INFLAMMATION SYNDROME?

> While inflammation is certainly a troubling consequence of diabetes, perhaps an even *more sinister* consequence is a *dramatic increase in the production of damaging free radicals*, a situation called oxidative stress. This damages protein, fat, mitochondria, and even our DNA. So I guess one *could consider naming it Sugar Inflammation Oxidative Stress Syndrome*, but let's just stay with diabetes for now.

WHAT IS THE RELATIONSHIP BETWEEN DIABETES AND ALZHEIMER'S DISEASE?

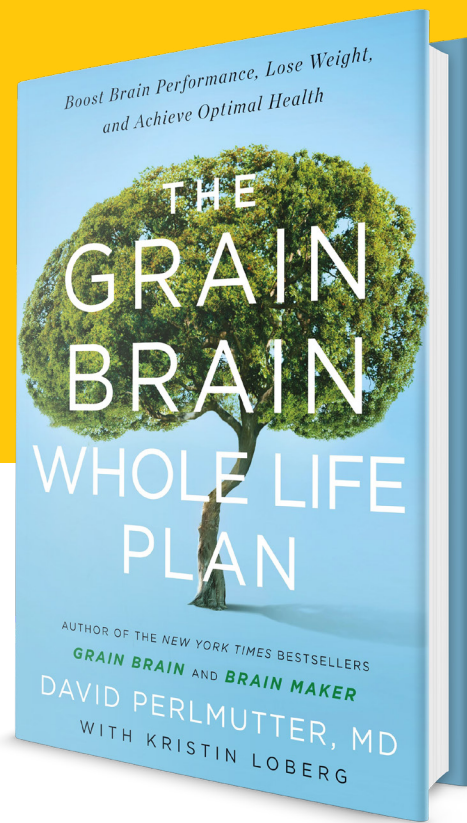
> Becoming a diabetic will double your risk for Alzheimer's disease, a disease for which there is no treatment. Elevated blood sugar attaches to proteins in the body and this process dramatically increases the production of both free radicals and chemicals involved in inflammation. Both of these are strongly involved in damaging the brain in Alzheimer's as well as Parkinson's and multiple sclerosis.

SCIENCE AND STUDIES

- > Advanced glycation end products, diabetes, and the brain. *Neurology - American Academy of Neurology*, 2011 [\[LINK\]](#)
- > Adverse associations between visceral adiposity, brain structure, and cognitive performance in healthy elderly. *Frontiers in Aging Neuroscience*, 2013 [\[LINK\]](#)
- > Association of Duration and Severity of Diabetes Mellitus With Mild Cognitive Impairment. *Journal of the American Medical Association*, 2008 [\[LINK\]](#)
- > Biomarkers for Insulin Resistance and Inflammation and the Risk for All-Cause Dementia and Alzheimer Disease. *Journal of the American Medical Association*, 2012 [\[LINK\]](#)
- > C-Reactive Protein and Glycemic Control in Adults With Diabetes. *Diabetes Care*, 2003 [\[LINK\]](#)
- > Central obesity and increased risk of dementia more than three decades later. *American Academy of Neurology*, 2008 [\[LINK\]](#)
- > Diabetes, Glucose Control, and 9-Year Cognitive Decline Among Older Adults Without Dementia. *Journal of the American Medical Association*, 2013 [\[LINK\]](#)
- > Effects of Initiating Insulin and Metformin on Glycemic Control and Inflammatory Biomarkers Among Patients With Type 2 Diabetes. *Journal of the American Medical Association*, 2009 [\[LINK\]](#)
- > Evaluation of sexual function in women with type 2 diabetes mellitus. *Diabetes and Vascular Disease Research*, 2009 [\[LINK\]](#)
- > Evaluation of sexual function in women with type 2 diabetes mellitus. *Diabetes and Vascular Disease Research*, 2009 [\[LINK\]](#)
- > Fructose-mediated non-enzymatic glycation: sweet coupling or bad modification. *Diabetes / Metabolism Research And Reviews*, 2004 [\[LINK\]](#)
- > Glycated Hemoglobin, Diabetes, and Cardiovascular Risk in Nondiabetic Adults. *New England journal of Medicine*, 2010 [\[LINK\]](#)
- > Glycemic Index: Physiological Significance. *Journal of the American College of Nutrition*, 2009 [\[LINK\]](#)

SCIENCE

- > Guidelines Ease Up on Glycemic Control for Some Patients With Type 2 Diabetes. *Journal of the American Medical Association*, 2013 [\[LINK\]](#)
- > Insulin Resistance in Cognitive Impairment. *Journal of the American Medical Association*, 2005 [\[LINK\]](#)
- > Risk Factors and Preventive Interventions for Alzheimer's Disease. *Journal of the American Medical Association*, 2011 [\[LINK\]](#)
- > Risk of Parkinson Disease Onset in Patients With Diabetes. *Diabetes Care*, 2012 [\[LINK\]](#)
- > Statin Therapy is Associated With Lower Total but Not Bioavailable of Free Testosterone in Men with Type 2 Diabetes. *Diabetes Care*, 2009 [\[LINK\]](#)
- > Skeletal muscle mitochondrial dysfunction & diabetes. *Indian Journal of Medical Research*, 2007 [\[LINK\]](#)
- > Statin Use and Risk of Diabetes Mellitus in Postmenopausal Women in the Women's Health Initiative. *Journal of the American Medical Association*, 2012 [\[LINK\]](#)
- > Trans-palmitoleic acid, metabolic risk factors, and new-onset diabetes in U.S. adults: a cohort study. *Annals of Internal Medicine*, 2014 [\[LINK\]](#)



About The Grain Brain Whole Life Plan

It's time to turn advice into action. The Grain Brain Whole Life Plan is your practical, comprehensive empowerment guide for achieving optimal health, preserving brain vitality, losing weight and reducing your risk for chronic diseases. Dr. Perlmutter leverages the leading edge of published science on nutrition and wellness, taking the lessons of Grain Brain and Brain Maker to create a powerfully actionable plan for optimizing health and achieving peak mental performance. The Grain Brain Whole Life Plan – live happily ever after.



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