Inflammation
And
Heart Disease

A New Awareness
Inflammation and Heart Disease

A New Awareness

What Science Is Saying Now

What in the world does inflammation have to do with heart disease?

We all know what inflammation is. It is the swelling that results from injury. It can be relatively harmless – though painful – like in the case of smashing one’s thumb with a hammer. The inflammation is isolated and temporary.

Sometimes the inflammation can be deeper but still evident. For example, in the case of an injured knee. The inflammation may last a lot longer and involve a deeper pain.

In both of the examples above inflammation is the body’s response to injury.

It is no different with chronic diseases – including heart disease.

The difference lies in the fact that we can’t see the inflammation associated with chronic disease. And we can’t really feel it as in the case of a smashed thumb.

A Little Doubtful?

If this idea is new to you, don’t feel bad. It is relatively new to most people. But, because you and I are used to thinking a certain way, you may be a little doubtful. So...

To make this point I am going to have to refer to some scientific documents. As you know technical documents can be terribly difficult to read so we are going to stay as light as possible. But stay with me.

We will unpack some of the highlights to see how important this whole idea of inflammation and heart disease is.

The first document is entitled:

Inflammation and Cardiovascular Disease Mechanisms.

The author is from the Harvard Medical School and Brigham and Women’s Hospital, Boston, MA.
The second document is entitled:

**AHA/CDC Scientific Statement Markers of Inflammation and Cardiovascular Disease.**

Actually the whole title is much longer. It was written by a long list of MDs and PhDs from various places.

The first document we will refer to as "Mechanisms". The second we will refer to as "Markers".

We will also refer to other documents as we go along.

In fact let’s start with one of those.

**A New Way of Thinking.**

Dr. Dwight Lundell begins his article entitled: "Heart Surgeon Speaks Out On What Really Causes Heart Disease" this way:

We physicians with all our training, knowledge and authority often acquire a rather large ego that tends to make it difficult to admit we are wrong. So, here it is.

I freely admit to being wrong.

As a heart surgeon with 25 years experience, having performed over 5,000 open-heart surgeries, today is my day to right the wrong with medical and scientific fact.

It is difficult to admit to being wrong. Especially when we have spoken for years as an authority figure. And when thousands of people have made difficult decisions – and even put their lives in our hands – based on what we have authoritatively said.

About what was Dr. Lundell wrong? He answers that question...

The only accepted therapy was prescribing medications to lower cholesterol and a diet that severely restricted fat intake. The latter of course we insisted would lower cholesterol and heart disease. Deviations from these recommendations were considered heresy and could quite possibly result in malpractice.

These recommendations are no longer scientifically or morally defensible. The discovery a few years ago that inflammation in the artery wall is the real cause of heart disease is slowly leading to a paradigm shift in how heart disease and other chronic ailments will be treated.

*I added the emphasis in that last paragraph.*
Out With The Old Traditionalism

Dr. Lundell is certainly no lone wolf in this campaign. We find similar language in the “Mechanisms” paper (mentioned above). It begins...

The traditional view of atherosclerosis as a lipid storage disease crumbles in the face of extensive and growing evidence that inflammation participates centrally in all stages of this disease, from the initial lesion to the end-stage thrombotic complications.

Investigators now appreciate that narrowing arteries do not necessarily presage myocardial infarction and that simply treating narrowed blood vessels does not prolong life.

That statement is not as difficult to understand as it may sound. We just need to unpack it a bit.

Atherosclerosis is simply a technical way of referring to cardiovascular disease. It is the build up of waxy plaque on the inside of blood vessels.

Some people use the word arteriosclerosis meaning hardening of the arteries. It is a more general term. Atherosclerosis is a type of arteriosclerosis.

In short it is hardening (and narrowing) of the arteries. It is what we mean by cardiovascular disease.

But what is lipid storage?

Lipids constitute a group of naturally occurring molecules including fats, waxes, sterols, fat-soluble vitamins (i.e. vitamins A, D, E, and K), monoglycerides, diglycerides, triglycerides, cholesterol, and phospholipids.

In one sense lipid storage disease can refer to how the body deals with triglycerides, cholesterol, and other fats resulting in excessive storage.

In other words the above statement is saying that it is no longer defensible to blame heart disease simply on the fact that your cholesterol and triglycerides are too high.

Instead, growing scientific evidence is pointing to the fact that...

Inflammation is at the core of every stage of atherosclerosis (coronary heart disease - CHD), from its beginning to its - too often fatal - end.

The second part of the statement above refers to one complication that is a result of CHD. That is... myocardial infarction. It is what we commonly refer to as a heart attack.

A heart attack involves the death of heart cells because of restricted blood flow. Traditionally we have believed that as the arteries become
Increasingly blocked, the heart is starved for oxygen and sections of it begin to die.

Researchers are now aware that the traditional model is too limited and that inflammation acts as an important factor in heart attacks.

The Mechanisms Document Further Explains

Twenty or 30 years ago, we understood atherosclerosis as a bland lipid storage disease: lipid deposits formed on the surface of arteries and grew until they restricted and eventually blocked the blood supply to the tissues, resulting in a cardiovascular event, such as myocardial infarction (MI) or stroke.

That is pretty straightforward. Our model for heart disease used to be relatively simple. We believed that lipids (i.e. cholesterol) build up on the inside of arteries until restricted blood flow causes serious heart events or strokes.

The document goes on...

This traditional concept viewed atherosclerosis as analogous to the build-up of rust in a water pipe. We now understand better the mechanisms responsible for the initiation and development of atherosclerosis. Inflammation plays a key role, and we view arteries as highly organized organs comprised of living cells, not as inanimate conduits.

We now know that arteries are much more complicated than we once thought and that inflammation plays a prominent role in every stage of CVD development.

Therefore simply dealing with cholesterol and triglyceride levels, and the amount of plaque build up is not enough. Any treatment that does not take inflammation seriously isn’t sufficient.

A New Emphasis on Markers

There is a reason we use the expression... “Sticks out like a sore thumb”.

When we have a swollen thumb it is apparent to everyone. It just sticks out there big and obvious. We even hold our arm differently in order to protect it. It becomes an obvious ‘marker’ that we have an injury.

But how do we know when we are swollen internally? And why is that question important?

Well, if chronic diseases – including cardiovascular disease – are connected to inflammation, then it is very important that we are able to detect inflammation, identify its causes, and take steps to eliminate it.

The way doctors identify internal inflammation is by the existence of what they refer to as ‘markers’.
Essentially markers are things that we can detect. And they are, in turn, caused by things we cannot directly observe. It is like sitting in our house looking out the window on a windy day. We cannot directly see or feel or hear the wind (from inside the house). But we can see the effects the wind has on things outside. We know it is windy because things are blowing all over the yard.

Doctors cannot look at you and immediately tell that you are suffering from internal inflammation. But they can run tests to identify substances that are always present when you are inflamed.

The presence of these ‘substances’ is what doctors refer to as ‘Markers’.

**We Suspected Something Was Up**

In 1998, the American Heart Association convened the *Prevention Conference V*. The purpose of the conference was to examine strategies for the identification of high-risk patients.

Sometimes we get the feeling that doctors just love to run tests. But it isn’t true. The conference was an attempt to better identify patients who are more likely to develop heart disease. And to identify the most effective tests.

For our purposes the important thing about the conference is its conclusion. This comes from the "Markers" paper...

> Among the strategies discussed was the measurement of markers of inflammation. The Conference concluded that "many of these markers (including inflammatory markers) are not yet considered applicable for routine risk assessment."

Fast forward to March, 2002 to another conference. This one was really a workshop. In fact it was entitled:

> “CDC/AHA Workshop on Inflammatory Markers and Cardiovascular Disease: Applications to Clinical and Public Health Practice”

Notice the shift. In the 1998 conference, inflammation markers were considered among other identification strategies. And these markers were considered impractical assessment tools.

Fourteen years later – at the workshop – inflammation markers were the whole focus. The purpose of both meetings was essentially the same... to identify ways of knowing who is most likely to develop heart disease. And to predict which tests are most useful in identifying health issues.
In section 2, the “Markers” document sounds a whole lot like the “Mechanisms” document. Even the subtitle of the section sounds like what we have already seen. It is:

Evidence for Inflammation as a Key Pathogenetic Mechanism in Atherosclerosis.

Listen to the first paragraph of that section...

A role for inflammation has become well established over the past decade or more in theories describing the atherosclerotic disease process. From a pathological viewpoint, all stages, i.e., initiation, growth, and complication of the atherosclerotic plaque, might be considered to be an inflammatory response to injury.

After some very technical discussion the paragraph continues...

Thus, virtually every step in atherogenesis is believed to involve cytokines, other bioactive molecules, and cells that are characteristic of inflammation.

We have already seen this, haven't we? The opening words of the section don't attempt to argue the connection between inflammation and heart disease.

The connection is assumed.

And – as we have already seen from the “Mechanisms” paper – inflammation is involved in every stage of coronary heart disease development... From its beginning... to the complications connected to plaque build up.

To rephrase the above quote...

Virtually every step in atherogenesis (development of atherosclerosis) is believed to involve... molecules and cells that are characteristic of inflammation.

An Impressive Case

As mentioned above... if the idea of inflammation being the basis of every phase of coronary heart disease development is new to you, you are not alone. You may not have even thought of it before. Most people haven’t.

We are used to thinking traditionally. That is, that too much cholesterol causes build up on the artery walls until the heart is starved for oxygen and it begins to die.

But the evidence is pointing away from this scenario. It is too simple. It leaves out the most important element. And that is...
**Inflammation – a response to injury – is the main cause of heart disease.**

Let's quote again from the "Markers" paper...

This working group sought to translate the rapidly growing body of evidence for inflammation as a key process in atherosclerosis into clinical and public health practice. Basic science and epidemiological studies have developed an impressive case that atherogenesis is essentially an inflammatory response to a variety of risk factors and the consequences of this response lead to the development of acute coronary and cerebrovascular syndromes.

**Slow to Change**

Science – and not a little science – supports the fact that inflammation is the real culprit in heart disease.

Unfortunately, we are slow to change our thinking. We are used to thinking a certain way. But like the age-old shift from believing that the earth is flat, to realizing that it is round... we will get used to it.

If it is any consolation doctors have not quickly given up their traditionalism either. We already saw that with Dr. Lundell.

But if we are going to make strides in the battle against heart disease – and other chronic diseases – then we have got to begin to take seriously this whole idea of inflammation.

To put it another way... there are a number of factors that cause injury to our bodies. We will talk about some of these factors shortly. The body's response to injury is inflammation.

Inflammation has been implicated as a primary cause in heart disease. In order to combat heart disease we have got to be able to detect inflammation and treat it.

And further, you and I need to take responsibility to avoid – as a lifestyle – the things that tend to cause injury and inflammation.

**It Simply Isn't Working**

Whether or not we – as a culture – are desirous of changing the way we think, it is imperative that we do. Why? Because what we are doing now simply... 

IS NOT WORKING!
Obesity and diabetes are at epidemic proportions. Many people have reduced the fat content in their diets. A large portion of the American population is taking statins (very expensive statins). And yet...

More people are dying of heart disease than every before.

And the age of those developing heart disease are younger than they used to be.

So...let’s begin to add inflammation to our thinking when it comes to the battle against heart disease.

There is no lack of scientific documentation to demonstrate the connection between inflammation and chronic disease. We have limited our discussion to heart disease.

The discussions above should be sufficient to demonstrate the causal connection between inflammation and coronary heart disease. But the question still remains...

**What Causes Systemic Inflammation?**

The “Mechanism” paper mentions a few causes:

- The major injurious factors that promote atherogenesis—cigarette smoking, hypertension, atherogenic lipoproteins, and hyperglycemia—are well established.

Inflammation is an indicator and cause of CVD. Some of the factors that cause inflammation are mentioned above.

**Smoking**

We all know what smoking is. In spite of decades of warnings people still choose to smoke. But smoking doesn’t just affect the lungs. It causes systemic inflammation. And systemic inflammation promotes heart disease.

A friend of mine brings protein powder, vitamins, and exercise equipment to his work.

And then he takes several smoke breaks a day.

Smoking is one of those inflammation-causing habits that we can control. Many people choose to be controlled by it.

Smoking is simple. You can choose to do it. Or you can choose not to. But if you choose to smoke, know that you are engaging in an activity that is well established as causing systemic inflammation. And – among other things – you are promoting your own heart disease.
Hypertension

We all know what hypertension is also. But high blood pressure is not quite as simple as smoking. For now it is key to understand that there is a connection between hypertension and inflammation.

So, when you take steps to reduce your blood pressure you are also working to reduce your systemic inflammation.

You have always known that it is important to keep your blood pressure down for your heart health. Now you understand another connection.

Atherogenic Lipoproteins

Lipoproteins are molecules that carry cholesterol in the bloodstream.

Atherogenic lipoproteins (eg, very-low-density lipoprotein [VLDL], low-density lipoprotein [LDL], intermediate-density lipoprotein [IDL]) are lipoproteins that are believed to promote heart disease.

You and I already knew that there is a negative relationship between high LDL levels and heart disease. Particularly, it is oxidized LDL that promotes CVD.

But recent studies have demonstrated that oxidized lipids (like LDL) create protein products that initiate inflammation. And it is this inflammation that promotes atherosclerosis.

So it would seem reasonable to target oxidized LDL cholesterol as a prevention for CVD precisely because of the damaging inflammation it causes.

Hyperglycemia

This is the fourth major atherogenesis-promoting factor mentioned in the “Mechanisms” paper.

And in most cases it is this factor – along with smoking – that is most within our control.

Most of us are used to thinking of fatty diets, lack of exercise, and smoking as conducive to a poor cardiovascular system. And we are used to thinking about the relationship between diets high in sugary foods with weight gain and diabetes.

But I wonder how many of us are used to the connection between high blood sugar and CVD.

Let's turn our attention in that direction.

Blood Sugar, Inflammation, and Atherosclerosis

In an article entitled:
Hyperglycemia: New Mechanism Underlying Cardiovascular Disease Described...

Maria Gomez – scientist at Lund University Diabetes Centre (LUDC) – speaking on the subject of hyperglycemia, blood vessel damage, and cardiovascular disease says...

This is a previously unexplored track that can explain how high blood sugar levels damage the blood vessels. At the end of the chain is the protein osteopontin. Osteopontin is the black sheep of vascular biology. We know that elevated levels of this protein set off a cascade of inflammatory events that injures the blood vessel walls.

She continues...

Inflammation is a basic mechanism underlying atherosclerotic plaque formation, which causes cardiac infarction and stroke. These diseases are the cause of death of 70 to 80 percent of all diabetics and approximately half of Swedish non-diabetics.

Gomez assumes the relation between inflammation and cardiovascular disease. What she is adding is the fine print.

She is saying that high blood sugar results in a protein known as osteopontin. Too much of this protein kicks off a series of events. These events cause inflammation that damages the blood vessels. It is this damage that promotes atherosclerosis.

In another study entitled: Blood Glucose and Heart Failure in Nondiabetic Patients...

Patients were studied to determine whether increasing blood glucose (sugar) is associated heart failure. More than 20,000 patients were studied. The results of the study showed that...

An 83% increase in heart failure [occurred] if baseline glucose was >109 mg/dl compared with <90 mg/dl.

And...

Patients with higher baseline blood glucose levels in the absence of diabetes and after adjustment for covariants have a significantly increased risk of heart failure.

It has long been known that diabetics have a higher risk of heart disease than non-diabetics. The value of this study is in demonstrating that high blood sugar levels promote heart failure even for people without other risk factors such as diabetes.

What does that mean to us? It means even if you are not an overweight smoker with diabetes, a diet high in sugar significantly increases your
risk of heart failure and cardiovascular disease. And as we saw above... it is because of the inflammation that high blood sugar causes.

**More On Inflammatory Foods**

We have hinted above that systemic inflammation may be foundational to most, or all, chronic diseases. Some doctors have stated that they believe all chronic diseases are caused by inflammation.

But the focus of this paper is the relationship between inflammation and heart disease. We just mention other diseases so that as you begin to take steps to reduce systemic inflammation, you will know that you are also improving your health in areas other than those related to heart health issues.

So let's shift our focus a little. We have just considered briefly the connection between high blood sugar and inflammation, and therefore heart disease.

All other things being equal, blood sugar levels are highly controllable through diet. Which begs at least two questions:

1) What foods promote high blood sugar?
2) What other factors (besides glycemic values) in our diet influence inflammation?

Or perhaps we should collapse both of these questions into one simpler question...

**How Can We Lower Systemic Inflammation Through Diet?**

Instead of worrying too much about the exact mechanisms that influence inflammation, let's approach the subject from another viewpoint. Let's consider...

1. Which foods tend to promote inflammation and...
2. Which foods tend to reduce inflammation?

Why is this important?

There are two connected reasons for this. One we have already seen. In fact it has been our entire focus up to this point. And that is...

Inflammation is a central and necessary condition for heart disease. That is to say, without systemic inflammation, coronary heart disease will not develop.

The other connected reason why this is so important is this... Food is something that affects our lives every day - year in and year out. And food is something we can control.
What we eat, is one of those influences that is not occasional. Our dietary habits influence our health over the entirety of our lives. We can never get away from this influence. It is always there.

So, what we eat over the course of our lives has an accumulative affect on our health. If we – like so many people today – eat foods that tend to promote inflammation... then we can expect the overall result to be increased systemic inflammation.

Said more plainly... if we habitually eat foods that cause inflammation, we can expect the inflammation to increase over the years.

And we can expect the likelihood of developing heart disease to increase as well.

It makes sense, then, to target food as a workable solution to the problem of inflammation and heart disease. So let's look first at...

**Foods That Cause Inflammation**

**Sugar**

We already started this topic above. Any foods that have a high glycemic value cause system inflammation.

Obviously we can’t list these foods. There are too many. But think of the average social get together. Tables filled with highly processed sugar concoctions. Cakes and cookies and frosting and sugary drinks to wash it all down.

All this sugar – highly processed – tipping the glycemic scale out of sight.

Then think of the average person’s life. How many times a day do people reach for a snack – not fruit or nuts – but highly processed sugar? And forget water or green tea. Most people drink cokes and sugary drinks.

It is no wonder diabetes is now an epidemic. But remember, non-diabetics also increase their likelihood for coronary heart disease when their blood glucose levels increase. We saw that in the research above.

So... when it comes to inflammation and diet, reducing your sugar intake needs to be your first plan of attack.
Trans Fats

By now we all know trans fats are destructive to heart health. Trans fats cause LDL (bad cholesterol) levels to increase, and HDL (good cholesterol) to decrease.

But trans fats also promote inflammation.

The sad truth about trans fats is 2-fold. In the first place, trans fats are the creation of our own science. In the mid twentieth century scientists became convinced that saturated fats were destructive to heart health. And unsaturated fats were good for us.

But the problem was we had gotten used to the taste and texture of saturated fats like butter. The solution? Take healthy unsaturated fats (oils) and heat them in the presence of a metal to increase the amount of hydrogen.

The process is called hydrogenation.

Of course they didn’t want to fully hydrogenate the oils. Fully hydrogenated oils are saturated fats. These are the villains they were trying to stay away from.

However, by stopping the hydrogenation process before it is complete, we are left with a product that looks and tastes great but is not a saturated fat. Instead...

It is partially hydrogenated.

The big problem is, the hydrogenation process causes some of the hydrogen to bond on the opposite (or trans) side of the molecule chain.

Hence the term: trans fats.

So in our attempt to avoid unhealthy fats we created a far more destructive fat. And we have been devouring trans fats ever since.

Remember I said the sad truth about trans fats is 2-fold? The other sad thing is this... Even though we now know how horrible trans fats are for us, we still fill our pantries with them.

Open your pantry and read the labels. Start with the crackers.

Don’t look for the words trans fats. Even foods labeled as ‘Trans Fat Free’ can have some trans fats in them. Instead look for the words...

Partially hydrogenated oil.
Unless you are shopping exclusively in health food stores you will find these words on your labels. Even your food bars and so-called energy bars are loaded with them.

Trans fats cause inflammation and promote heart disease. Avoid them.

**Got Milk?**

No? You couldn’t possibly be getting enough Vitamin-D or calcium. Your family needs milk. It is wholesome and builds strong bodies.

Or so advertisers have been telling us for several generations.

But the truth is, dairy products cause various stresses on our bodies and promote systemic inflammation.

A large portion of the adult population cannot digest milk. Many of us experience stomach distress when we consume dairy. Other symptoms include constipation, diarrhea, skin rashes, and even breathing difficulties.

Dairy is not the health savior that the dairy industry wants us to think it is. Many researchers believe that digesting milk as adults is difficult and unhealthy.

And this is another place where the manufactures of so-called health products dupe us.

Walk down the aisles of health and fitness stores and read the ingredients in their protein powders. It may be in the fine print. Often it is proudly printed in bold letters on the front of the can...

**Whey Protein.**

You need to know that whey is a byproduct (trash product) that is derived from milk.

Not only is dairy implicated in several digestive problems such as those mentioned above, but whey – its byproduct – is a major contributor to intestinal toxemia.

Intestinal toxemia involves undigested food particles in the intestines leading to an overgrowth of bacteria. Intestinal toxemia can lead to Intestinal Bowel Syndrome and Crohn’s Disease.

The vast majority of protein powders on the market are made from whey. Does that mean you should stay away from protein powders?

Absolutely not. In fact supplementing with protein powder is an important part of a detox or anti-inflammatory diet.
But you need to be very selective when buying protein powders. Look for non-whey, non-animal sources of protein.

Pea protein is a top choice.

It is purely vegetative, high in protein content, and is highly digestible. That means your body uses it well and doesn’t have any of the negative characteristics of whey and meat based proteins.

**Beef. It’s What’s for Dinner.**

Yet another slogan you may be familiar with from advertisers trying to convince us to eat what they are selling.

I love beef. But it is also implicated in causing inflammation.

In the first place commercially produced beef are fed grains like soy - I know you have heard soy is good for you - and corn. But both soy and corn are high in omega-6 fatty acids... and therefore pro-inflammatory.

It isn’t that omega-6s are bad for us per se. In fact they are necessary for health. However, our diets are full of foods that are high in omega-6. And our diets are not very high in omega-3 fatty acids.

Diets with a high omega-6 to omega-3 ratio cause inflammation and promote heart disease. You could combat the problem by taking a high quality omega-3 supplement. Or you could reduce the amount of commercially produced beef you eat.

Or you could do both.

By eating more foods high in omega-3 – such as wild salmon – you will at the same time eat less commercially produced beef.

Another problem with commercial beef is the hormones and antibiotics they are injected with. The hormones we consume through commercial livestock are causing major hormonal issues... and not only for women.

But the problems of hormonal imbalance and excessive use of antibiotics is beyond out current discussion.

Another issue with red meat was discovered by researchers at the University of California San Diego School of Medicine. They found that red meat contains a molecule that humans don't naturally produce called Neu5Gc.
After ingesting this compound, the body develops anti-Neu5Gc antibodies – an immune response that may trigger chronic inflammatory response.

**Should you go vegan?**

That is up to you. But keep in mind that eating commercially raised red meat contributes to a number of health issues - not the least of which – is inflammation leading to cardiovascular disease.

**The Surprising Truth About Oils**

In order to avoid saturated fats more and more people are turning to polyunsaturated fats. The thinking is that unsaturated fats are a healthier choice because saturated fats cause heart disease.

However many unsaturated fats have a dirty little secret.

Many vegetable oils like...

- Grape
- Cottonseed
- Safflower
- Corn
- Sunflower

... have a high omega-6 to omega-3 ratio. And as we saw a moment ago, an omega-6 to omega-3 imbalance causes systemic inflammation.

It has long been known in the research community that a high omega-6 to omega-3 ratio causes heart disease. Western diets are naturally high in omega-6 and tragically low in omega-3.

The American Heart Association has recommended that anyone with coronary heart disease should supplement their diet with 2 grams of omega-3 per day.

By consuming extra omega-3 we can shift the omega 6 to 3 imbalance. We can further shift away from the imbalance by consuming less foods (including oils) that are high in omega-6 and low in omega-3. As the imbalance is reversed we promote a reduction in systemic inflammation.

Some oils – like macadamia and extra virgin olive – contain a better balance of omega-6 and omega-3. Substitute these oils to help reduce your systemic inflammation.
I’ll Drink to That

For many of us the fact that a glass of red wine a day is believed to help reduce heart disease is good news. Amongst all the talk - of what we shouldn’t eat and drink if we are to avoid heart disease - there is this one silver lining. At least we can have our wine.

But – as we all know – too much of a good thing can be bad.

Regular high consumption of alcohol has been known to cause irritation and inflammation of the esophagus, larynx, and – of course – the liver.

Over time, the chronic inflammation promotes tumor growth and gives rise to cancer. So yes... a glass or two of wine may have a positive influence on your heart health.

But more is not better.

Alcohol causes inflammation. So you should limit your consumption of it.

All of us have heard for a long time that drinking green tea is good for heart health. And many of the components in green tea that support a healthy cardiovascular system are also in black teas.

However there is one big difference between green and black teas. Black teas are inflammatory. Green teas are not.

So, even though there are heart healthy components in black teas, green teas are a better choice because they do not cause inflammation.

Wonder Bread

Perhaps from a marketing perspective the name ‘Wonder Bread’ was a brilliant idea. But it is also an oxymoron. Wonder Bread may be a wonder. But it can only technically be considered bread.

Many people give up eating bread to lose weight. And – considering the kinds of bread many people eat – it is a great idea. But there is a vast difference between breads made from whole grains and what the average person picks up at the market.

So many grains we eat today are highly processed and - what we refer to as - refined. And this doesn’t only apply to bread. Anything made from grains today has a refined counterpart.

Refined grains no longer have the bran, or the germ, or the aleurone layer intact. They are stripped of their most nutritious components.
Grains – as they are in nature – are high in protein, complex carbohydrates, and fiber, as well as vitamins and minerals.

But refined grains are not. They – like refined sugar – are empty calories and have a high glycemic value. And as we discussed in the section on sugar above – high blood sugar causes systemic inflammation. And inflammation causes heart disease. To repeat the research referenced above...

Patients with higher baseline blood glucose levels… have a significantly increased risk of heart failure.

So avoid refined, highly processed grains wherever you find them. Grains found in products like...

- White rice
- White flour
- White bread
- Pasta
- Biscuits
- Pastries

Especially those containing partially hydrogenated oil.

Look for products made with whole grains that have not been processed or refined. If you have a bread maker – and you should – make breads with unrefined flour (unless you have an allergy to certain grains.)

Better still… purchase a grain mill and grind your own flour. Once grain is processed into flour it begins to lose its nutritious value. The longer flour sits the more nutrition it loses.

**Just The Highlights**

There are other foods that are pro-inflammatory. We have discussed some of the big players. The foods above are found in most shopping carts rolling around grocery stores today. We eat them day in and day out… month in and month out… year in and and year out.

We cannot expect to bombard our bodies for decades with pro-inflammatory foods and not suffer from the effects of systemic inflammation.

But this is only part of the story. Avoiding foods that cause inflammation is only half a game plan. Every sport has a defensive component and an offensive component. To build a good defensive strategy is to play half a game. Or in military language you cannot win a war only being on the defensive. Sooner or later you must take the battle to the enemy.

How does that apply to food and inflammation? We must also eat...
Foods That Are Anti-inflammatory

There are a number of foods that can actually reduce systemic inflammation. A few of them you will find in the grocery store. Some of them may even make their way to your table. Let’s take a look at some of the top contenders. And let’s start with one that is relatively easy to get.

Wild Salmon

We all know eating wild salmon is good for us. Wild salmon is high in EPA and DHA, two potent omega-3s. We have already talked about the relationship between omega-3, omega-6, and inflammation.

Most of us need far more omega-3 than we are getting. Eating wild salmon is one of the best ways of increasing your omega-3 intake.

Most people today are aware that higher levels of omega-3 help reduce the risk of heart disease, cancer, symptoms of autoimmune diseases, and some psychological disorders.

The question is... are we getting enough omega-3? Eat more wild salmon!

Vegetables

To just mention three...

Sweet Potatoes are a good source of complex carbohydrate, beta-carotene, manganese, vitamin B6 and C as well as dietary fiber. These antioxidants work together to reduce systemic inflammation.

Spinach was Popeye’s favorite go-to veggie. And for good reason. Spinach is a rich source of anti-inflammatory and anti-oxidative flavonoids and carotenoids.

The list of important, and anti-inflammatory, vitamins and minerals is impressive: Vitamins A, B2, B6, C, E, K, calcium, folate, iron, magnesium, manganese, potassium and tryptophan.

Broccoli also has anti-inflammatory characteristics and is high in phytonutrients such as sulforaphane. Additionally broccoli is very high in vitamin C.

A high intake of broccoli has been found to reduce the risk of aggressive prostate cancer. Broccoli consumption may also help prevent heart disease.
Fruits

Some fruits have particularly strong anti-inflammatory properties like...

Papaya – Christopher Columbus’ ‘fruit of the angels’ – contains papain. Papain is strongly anti-inflammatory enzyme and is useful in treating backache, muscle soreness, joint and prostate inflammation, and as a digestive aid.

Papaya is also highly alkaline counteracting the highly acidic diets of most westerners. Acid diets promote inflammation.

Pineapples contain an ingredient called Bromelain which has long been used to treat digestive disorders. It has also been used to treat inflammation such as in arthritis. Unfortuanealy Bromelain is concentrated in the stem instead of the fruit. For maximum benefit you would want to take supplements.

Blueberries are high in phytonutrients and antioxidants, and are therefore helpful in fighting infection and strengthening the immune system. The potent phytonutrient count also makes then highly anti-inflammatory.

Tart Cherries are a good source of anthocyanins. These are compounds that behave very similarly to prescription anti-inflammatory medications by blocking the Cox-1 and Cox-2 enzymes associated with the inflammatory response.

Small studies have shown that drinking cherry juice reduces inflammation caused by overexertion. Tart cherries have also been shown to reduce markers associated with inflammation in the bloodstream.

Kelp

Kelp has been valued as an anti cancer ‘drug’ in traditional Chinese medicine for centuries. Scientific research supports this belief. Kelp contains a substance called fucoidan. Fucoidan is a complex carbohydrate that is anti-tumor and anti-inflammatory.

A number of research papers found in such databases such as PubMed demonstrate positive effects of fucoidan treatment in cases of cancer, heart disease and reducing systemic inflammation.

For many of use, Kelp, has not been a main part of our diet. But it is a valuable anti-inflammatory food. Kelps such as kombu, wakame and arame are good sources of fucoidan.
Be careful with the seaweed snacks though. Such snacks can be high in salt and added vegetable oils.

**Turmeric**

Turmeric is an Asian spice found in curry powder mixes. It contains a compound called curcumin. Curcumin is anti-inflammatory.

Studies have shown that curcumin reduces cerebral ischemic injury. One such study concluded this way...

> Our results as described above suggested that PPAR γ induced by curcumin may play a critical role in protecting against brain injury through suppression of inflammatory response. It also highlights the potential of curcumin as a therapeutic agent against cerebral ischemia.

Other studies with curcumin have demonstrated it to exhibit a variety of potent beneficial effects including acting as an antioxidant, being anti-inflammatory and reducing fibrosis.

It has also been demonstrated to improve cardiac function after ischaemia reperfusion, which is damage caused by the restoration of blood to the heart after the blood flow has been restricted.

**Mushrooms**

There are a number of mushrooms containing anti-inflammatory compounds. For example...

**Reishe Mushrooms** contain polysaccharides which have been shown to have anti-inflammatory and anti-tumor effects. Polysaccharides increase the body's ability to defend itself against infection and cancer.

The only problem is Reishe have a bitter taste and are not used in cooking. Normally they are used in dry form (as in Chinese medicine) or in capsule form as a health supplement.

There are other healthy mushrooms that have anti-inflammatory effects. Some are tasty (like the Shiitake). Others are used for strictly medicinal purposes and are not normally eaten.

Some notable healthy mushrooms are...

**Caterpillar Fungus** (not truly a mushroom) grows out of the body of an underground moth larvae. Because it cannot be grown artificially it is very expensive. A cultivated variety is used in supplements.
Some studies suggest that extracts from the caterpillar fungus could be useful against:

- Cancerous tumors
- Kidney damage
- Diabetes
- Inflammation
- Bone marrow and intestinal injuries from radiation exposure
- High blood cholesterol
- Oxidative damage

**Bamboo Fungus** – a tropical mushroom – contains 7 amino acids as well as metallic ions and is rich in Vitamins C and E, thiamine, beta-carotene, riboflavin, niacin, calcium and phosphate. Though tasteless it is often used in cuisine.

Research suggests that bamboo fungus – in addition to its anti-inflammatory properties – reduces LDL cholesterol and increases HDL cholesterol.

**Maitake** is a culinary mushroom reaching a massive weight of about 100 pounds. Extracts from the maitake help strengthen the immune system and inhibit tumor growth. Positive results have been reported in treating lung and liver cancer and leukemia.

Two other mushrooms with anti-inflammatory (and additional health) properties are Almond Mushroom and Lion’s Mane. Both of which can be used in cuisine.

Wild mushrooms – like those mentioned above – can be difficult to get and rather expensive. Some are being successfully cultivated which has brought down the cost.

**Green Tea**

As mentioned above, green tea is anti-inflammatory. Black tea, though containing many heart healthy components, is pro-inflammatory.

Green tea is rich in antioxidants, which scavenge free radicals. Free radicals are rouge cells that attack our body’s cells causing oxidative damage.

Oxidation is implicated in numerous chronic diseases such as cancer and heart disease. In fact studies have shown that when LDL cholesterol becomes oxidized it promotes cardiovascular disease.

And as you have guessed, it is this oxidation that is implicated in inflammation.
Trading in your black teas for green teas is a very good health choice. But what about all your other beverages? Modern cultures love highly acidic sodas, not to mention highly inflammatory sugary drinks.

Green tea is a great substitute for any of these beverages. You can even buy green tea bags for making ice tea. The taste is not as strong as ice tea made from black varieties. But you will quickly adjust.

**Healthy Oils**

Oils (fats) are a necessary part of your anti-inflammatory diet. But, many oils that have been touted as ‘healthy’ actually have a dark side. We talked about this above. Many oils contain high amounts of omega-6 fatty acids.

Though these oils are not saturated – which is why they are believed to be heart healthy – they do promote an imbalance of the omega-3 to omega-6 ratio. And this imbalance is pro-inflammatory which actually promotes heart disease.

Here are two oils worthy of mention...

**Extra Virgin Olive Oil** is a great all around oil. It can be used in low heat cooking, used as a salad dressing, added to homemade bread, and as a replacement for buttering your homemade bread.

Olive oil is one reason that the Mediterranean diet is so heart healthy. It is a monosaturated fat rich in polyphenols.

Olive oil is healthy because it can be a substitute for any unhealthy oil. But – more than that – it actually has anti-inflammatory properties. The polyphenols in olive oil protect the blood vessels and heart from inflammation.

**Virgin Coconut Oil** – the unrefined form – is believed to be anti-inflammatory because of a number of laboratory studies. Like olive oil, coconut oil also contains polyphenols that neutralize free radicals and prevent inflammation.

**A Brief Recap**

The belief that heart disease is all about watching your cholesterol and triglycerides and not eating too many saturated fats is... yesterday’s news. It is a paradigm that many people stick to. But scientifically it just doesn’t hold water.

Current research has established that systemic inflammation is implicated in every phase of coronary heart disease. In short, if there is no systemic inflammation then heart disease – and perhaps cancer – simply won’t develop.
For many people it is a new way of thinking. But the research is just too convincing to ignore the central role inflammation plays in heart disease and other chronic diseases.

There are a few areas in which our habits promote systemic inflammation and – therefore – chronic disease.

One area mentioned is smoking. For many years we have known that smoking is a serious risk to health in so many areas. Now we know it has largely to do with the fact that smoking is so inflammatory.

Another area mentioned in the research – that we saw above – is atherogenic lipoproteins. A prime example of this is oxidized LDL cholesterol. Not just LDL, like the old model suggested, but oxidized LDL.

High blood pressure is another one. It is damaging to the cardiovascular system and promotes inflammation... which in turn causes heart disease. For some people it is easier to control their blood pressure than it is for others. Whether it is easy or difficult for you, it is imperative that you keep your blood pressure down.

Another area that has received much attention is hyperglycemia. As we noticed in Dr. Gomez’ research above, high blood sugar kicks off a series of events that promotes inflammation.

This research opens up a whole area of discussion on pro and anti-inflammatory foods. Why is a discussion on food so vital? For a couple of reasons.

1) Different foods either promote or discourage inflammation. Either they promote chronic disease as a byproduct of inflammation... or they fight against it.

2) Food is something that is with us every day through our whole lives. What we habitually eat and drink has an enormous influence on inflammation and, therefore, our health.

Diet is an area that we control. The habits we build around diet are very influential concerning inflammation. So diet needs to be a central point of attack in the war against inflammation and chronic disease.

So There You Have It

Have what? Perhaps a little bit of knowledge you didn’t have before. But if it ends there you have gained nothing. Without action we will not win this battle.

So what do you do?
Here are a couple small steps that you can begin to take. Steps that can lead to lifelong habit changes... which in turn can lead to better long-term health.

I.

If you have not read the 30-Day Challenge Guide then you need to. The 30-Day Challenge Guide talks about inflammation briefly. But the diet itself is an anti-inflammatory, pro-detox approach to eating. It is designed to get you started towards developing dietary habits that will dramatically improve your health.

You really can improve your health with the 30-Day Challenge. We get phone calls from friends who for some time were hesitant to try it. But once they do they are amazed at how well they feel, how much energy they have, how alert they are... And in some cases... how much medication they don't need.

It is designed to be the jump-start you need to turn that corner on health promoting dietary habits. And for many people it has given them back their health. The 30-Day Challenge Guide and the current document go hand-in-hand towards that end.

Read both of them carefully and the emails that support them.

www.optimal-heart-health.com/30-Day_Challenge_Guide.html

If you have read both documents carefully, then what?

II.

Sign up for the Optimal Health Newsletter. For monthly articles on heart health and other chronic health concerns... More discussion on the importance of detox and anti-inflammatory diets... Just the opportunity to stay up on topics of health... Get the Optimal Health Newsletter.

It shows up in your email inbox every month. It really is the smart thing to do. Simply use the link below to start your subscription. And, yes, of course it is FREE!

www.optimal-heart-health.com/newsletter.html

III.

This may be the best opportunity of all. Because we value our faithful Optimal-Heart-Health readers we are offering a free consultation about the 30-Day Challenge.

What is the Challenge all about? How do you go about it? How does one start? Where do you get the best products at a discount?
Like yours, our time is valuable. But because we want everyone to understand the importance of making lifestyle changes like those discussed in the 30-Day Challenge, we want to make ourselves available to you... FREE.

And for everyone who takes advantage of this offer we have a gift. The...

30 Days to Feeling Fit guide.

It is a step-by-step guide to beginning your Challenge for a lifetime of feeling better.

Which particular foods to avoid and which to include as you put together your diet for the 30 days. Which products you need for the Challenge and how they fit into your daily diet. More information like...

- Suggestions on what to eat and when.
- How to plan your meals.
- What substitutions you can make.
- Helpful websites.
- Seven simple steps to get started.
- Discussions on healthy fats, high fiber carbs
- A meal plan and shopping guide
- Which local stores have what foods. And of course...
- Some recipes.

Don't miss out on this. Simply use the email link at the bottom to drop us a line. Just tell us you would like to talk to us about how to get started. We can answer your questions and help you take that first 30-day step to healthier living.

Don't put it off. Take the first step toward making lasting decisions that could make lasting changes in your life.

Our best to you,

Greg and Jennifer

HeartHealthyHabits@gmail.com