

# How Linoleic Acid Wrecks Your Health

Analysis by [Dr. Joseph Mercola](#) ✓ Fact Checked

## STORY AT-A-GLANCE

- › Linoleic acid (LA) makes up the bulk — about 60% to 80% — of omega-6 and is the primary contributor to nearly all chronic diseases. While considered an essential fat, when consumed in excessive amounts, LA acts as a metabolic poison
- › Polyunsaturated fats such as LA are highly susceptible to oxidation, which means the fat breaks down into harmful subcomponents. OXLAMS (oxidated LA metabolites) are what cause the damage
- › Over the last 150 years, the LA in the human diet has increased from about 2 to 3 grams a day to 30 or 40 grams. LA used to make up 1% to 3% of the energy in the human diet and now it makes up 15% to 20%
- › The omega-3 to omega-6 ratio is also very important, but simply increasing the amount of omega-3 that you eat is ill advised. You really need to minimize your omega-6 to prevent damage
- › At a molecular level, excess LA consumption damages your metabolism and impedes your body's ability to generate energy in your mitochondria

**This article was previously published December 27, 2020, and has been updated with new information.**

In this interview, Tucker Goodrich and I discuss what will be the topic of my next book, namely linoleic acid (LA), which I believe is likely the leading contributing cause of virtually all chronic diseases we've encountered over the last century. Unfortunately, this

is a topic that most clinicians and health care practitioners who focus on natural medicine have only a superficial understanding of.

Goodrich has a business background as a stockbroker and asset manager, and developed an IT risk management system used by two of the largest hedge funds in the world. A string of health crises in his late 30s and early 40s prompted him to apply his research and troubleshooting skills to medical research.

As noted by Goodrich, "It was a very upsetting time in my life and medical professionals really weren't any help at all in trying to figure out what caused things." After a lot of reading and researching, he decided to cut out seed oils from his diet, and in just two days, his 16-year-long bout with irritable bowel disease started to dramatically improve.

"I started immediately feeling better," he says. He also lost a significant amount of weight over the next two months. After that, he stopped eating carbs and realized he must have had a severe case of gluten intolerance.

*"Being an engineer by trade, I did a lot of experimenting. What can I eat? What brings back the symptoms? What do I have to avoid to keep the symptoms away? And it was a transformation that made everybody I worked with comment on what a difference they saw in me. It was a very quick change," he says.*

## **Avoiding Omega-6 Fats Is Key for Good Health**

While considered an essential fat, when consumed in excessive amounts, which over 99% of people do, LA (an omega-6 polyunsaturated fat or PUFA) acts as a metabolic poison.

Most clinicians who value nutritional interventions to optimize health understand that vegetable oils, which are loaded with omega-6 PUFA, are something to be avoided. What most fail to appreciate is that even if you eliminate the vegetable oils and avoid them like the plague, you may still be missing the mark.

Chances are you're still getting too much of this dangerous fat from supposedly healthy food sources such as olive oil and chicken (which are fed LA-rich grains).

Another common mistake is to simply increase the amount of omega-3 that you eat. Many are now aware that the omega-3 to omega-6 ratio is very important, and should be about equal, but simply increasing omega-3 can be a dangerous strategy. You really need to minimize the omega-6. As explained by Goodrich:

*"The ratio is not really what's important. What's important is avoiding the omega-6 fats. There are disease models, like age-related macular degeneration (AMD), where that's starting to be clearly understood, and you can find papers saying explicitly that the important intervention that prevents AMD from progressing is reduction of omega-6 fats, and you can't prevent it by increasing your omega-3 fats.*

*I've got papers that show, in animal models, very nasty outcomes, such as liver failure, with a lower omega-6 to omega-3 ratio, but high absolute levels of both fats still allows pathology to progress."*

## **LA Is a Primary Contributor to Chronic Disease**

When we talk about omega-6, we're really referring to LA. They're largely synonymous, as LA makes up the bulk – about 60% to 80% – of omega-6 and is the primary contributor to disease. Broadly speaking, there are three types of fats:

- Saturated fats, which have a full complement of hydrogen atoms
- Monounsaturated fats, which are missing a single hydrogen atom
- PUFAs, which are missing multiple hydrogen atoms

The missing hydrogen atoms make PUFAs highly susceptible to oxidation, which means the fat breaks down into harmful metabolites. OXLAMS (oxidized LA metabolites) are what have a profoundly negative impact on human health. While excess sugar is

certainly bad for your health and should be limited to 25 grams per day or less, it doesn't oxidize like LA does so it's nowhere near as damaging.

Over the last century, thanks to fatally flawed research suggesting saturated animal fat caused heart disease, the LA in the human diet has dramatically increased, from about 2 to 3 grams a day 150 years ago, to 30 or 40 grams a day. Goodrich cites research showing LA used to make up 1% to 3% of the energy in the human diet and now it makes up 15% to 20%.

In my mind, this radical change has had the most catastrophic impact on human health in the history of the human race, as it is the complete opposite of what you need for optimal health. This dietary change has undoubtedly killed millions, probably hundreds of millions, prematurely and still continues to do so because people don't understand this.

*"I'm a speed reader and I love reading medical journals ... but what nobody's really done is connect all the dots. There are a lot of people who understand little sections of [the science], but they haven't gone on to coalesce everything into a common explanation for these pathologies across different disease states.*

*I think that's what I've been able to do, and I think that's the key insight that makes this message really compelling," Goodrich says.*

On a side note, do not confuse LA with conjugated linoleic acid (CLA). While most think CLA and LA are interchangeable, they're not. CLA has many potent health benefits and will not cause the problems that LA does.

## **How Excess LA Consumption Damages Your Health**

At a molecular level, excess LA consumption damages your metabolism and impedes your body's ability to generate energy in your mitochondria. There is a particular fat only located in your mitochondria – most of it is found in the inner mitochondrial membrane – called cardiolipin.

Cardiolipin is made up of four fatty acids, unlike triglycerides which have three, but the individual fats can vary. Examples include LA, palmitic acid and the fatty acids found in fish oil, DHA and EPA. Each of these have a different effect on mitochondrial function, and depending on the organ, the mitochondria work better with particular kinds of fatty acids.

For example, your heart preferentially builds cardiolipin with LA, while your brain dislikes LA and preferentially builds cardiolipin in the mitochondria with fats like DHA. Goodrich further explains:

*"To give you an idea of how important this is, 20% of the fat in your entire body is contained in cardiolipin. So, for anybody who doesn't understand mitochondria, mitochondria are what distinguish us from bacteria. It's what allows us to be a multi-cellular creature. They are what produce the energy in your body, what's known as ATP, which is a chemical carrier of energy.*

*To give you an example of how important it is, cyanide, which we all know is highly toxic, breaks your mitochondria, and that's why it kills you so fast. It prevents mitochondrial respiration and therefore your entire body shuts down almost instantly.*

*So, [mitochondria are] something we want to take good care of because they're everywhere, in almost every tissue except for red blood cells ... There are studies showing that cardiolipin is directly controlled by dietary intake of fats. That is, to an extent, true. Obviously, different tissues build cardiolipin in the mitochondria out of different fats.*

*But they can vary that composition in fairly short order through changing the diet in rat models, like in the order of weeks. So, you can see changes pretty quickly. I notice things happening in days. What's unique about LA is that it is very susceptible to oxidation when it is in the cardiolipin molecule.*

*Two LAs that are adjacent to each other can oxidize each other. They're also attached to proteins in the mitochondria that contain iron, and that iron can*

*catalyze the oxidation of cardiolipin. This is a pretty fundamental process in the body."*

## **Oxidation of Cardiolipin Controls Autophagy**

Oxidation of cardiolipin is one of the things that controls autophagy. In other words, it's one of the signals that your body uses when there's something wrong with a cell, triggering the destruction and rebuilding of that cell. Your cells know that they're broken when they have too many damaged mitochondria, and the process that controls this is largely the oxidation of omega-6 fats contained within cardiolipin.

**“ Animals typically develop cancer once the LA in their diet reaches 4% to 10% of their energy intake, depending on the cancer.”**

So, by altering the composition of cardiolipin in your mitochondria to one that's richer in omega-6 fats, you make it far more susceptible to oxidative damage. Goodrich cites research showing that when the LA in cardiolipin is replaced with oleic acid, another fat found in olive oil, the cardiolipin molecules become highly resistant to oxidative damage.

*"That is basically what I think we need to go back to," he says. "We evolved with low levels of LA in our diet and therefore in our cardiolipin. One of the neatest papers I've ever seen looking at this, something that encapsulated this whole model that I'm talking about, fed rats either a regular high carbohydrate diet, or they added PUFAs to their diet.*

*Just adding the omega-6 fats to the diet caused the mice to become diabetic. They became insulin resistant, leptin resistant, obese, and the differences are pretty stark between the fat mice and the skinny mice on the high carbohydrate rat diet ...*

*The high-PUFA diet caused a breakdown in the cardiolipin content in the mitochondria in their hearts. So just adding seed oils caused heart damage through a change in the cardiolipin composition."*

As mentioned, the primary problem is the OXLAMS, the oxidized byproducts. One of them is 4HNE, which is relatively easy to measure. Studies have shown there's a definite correlation between elevated levels of 4HNE and heart failure. LA is broken down into 4HNE even faster when the oil is heated, which is why cardiologists recommend avoiding fried foods.

## **OXLAMS Trigger Cancer**

Heart disease isn't the only condition triggered by excessive LA intake and the subsequent OXLAMS produced. It also plays a significant role in cancer. As noted by Goodrich, to induce cancer in animal models, you actually have to feed them seed oils. "So, this is a really fundamental process that we're talking about here," he says.

As I mentioned above, animals typically develop cancer once the LA in their diet reaches 4% to 10% of their energy intake, depending on the cancer. In the breast cancer model, cancer incidents increase once 4% of calories are in the form of seed oils.

Disturbingly, most Americans get approximately 8% of their calories from seed oils. "So, we're way over what these thresholds in the lab would suggest is a safe level of these fats based on the laboratory work in animals," Goodrich says, adding:

*"We've got this huge disconnect between what the lab science tells us we should be doing and what our dietary guidelines tell us we should be doing. The scientists are saying, 'Oh, look, it's poison. It causes all the chronic diseases,' and the government's saying, 'Eat lots of it.' That's not a good thing."*

4HNE is a mutagen, in other words, a toxin that causes DNA damage. One of the primary genes it damages is the P53 anticancer gene. Mutations in the P53 gene are found in 15% of cancers, making it one of the most common. As noted by Goodrich, "P53 is literally a cancer prevention gene. It's how your body regulates cancer. You can all draw

your own conclusions about the wisdom of eating something that can cause that to break."

On a side note, one of the major jobs of glutathione is to detoxify 4HNE. You can often tell that you have excess 4HNE if your glutathione levels are low, as this means it's being used up detoxifying 4HNE.

## **LA and Obesity**

High-LA diets also cause obesity. "If you feed mice lots of saturated fat, they don't get fat and they don't get sick. It's only when you increase the LA in the diet from 1% to 8% that they become obese," Goodrich says. Now, mice and rats are not exactly like humans, so how do we know all of this applies to us? Goodrich explains:

*"What Alheim and Ramston observed is that, back in 2006, there was a drug introduced called Rimonabant, which was an anti-obesity drug. It was a bit of a miracle drug. I want to quote this exactly because it's so important to understand the effects that this drug had on humans.*

*'Large randomized trials with Rimonabant have demonstrated efficacy in treatment of overweight and obese individuals with weight loss significantly greater than a reduced calorie diet alone.*

*In addition, multiple other cardiometabolic parameters were improved in the treatment groups, including increased levels of HDL, reduced triglycerides, reduced weight circumference, improved insulin sensitivity, decreased insulin levels. And in diabetic patients, improvements in HBA1C.'*

*This paper was released in 2007. Unfortunately, Rimonabant had a side effect that it caused people to want to kill themselves. So, it was withdrawn from the market and it largely killed research for several years into that area.*

*But what Alheim did in 2012 was demonstrate that the mechanism behind Rimonabant is to block the metabolism of seed oils into the chemicals in your*

*body and the endocannabinoid system that cause overeating. My experience when I stopped eating seed oils was that I forgot to eat carbohydrates.*

*The effect of Rimonabant in these mouse models is to make them crave carbohydrates and to stimulate them to eat sweet foods and carbohydrates. Everybody's familiar with this effect. It's called the munchies. And it's what you get after you smoke pot, because the endocannabinoid system is the system that marijuana affects and the chemical that Rimonabant blocks is your body's homologue to the THC in marijuana.*

*So essentially what we've done to ourselves is given ourselves a chronic case of the munchies, which is blocked by this unfortunately very harmful drug. This is as open and closed a case for causation as you're going to find in the medical literature.*

*We have a human drug that treats this, and as I just read, it treats all these different aspects of this disease. And it works through this one pathway that we have a clear demonstration of in animal models. In this case, the drug is completely pointless because the dietary fix is well known and is simple."*

## **Increased LA Also Increases Your Risk of Sunburn**

So, to summarize, the dramatic increase in LA – and the oxidative end products that cause the damage – is the primary cause behind the increase in chronic diseases such as obesity, diabetes, heart disease and cancer.

Simply lowering your LA intake to what your great-great grandparents used to eat, you can essentially eliminate almost every single one of the diseases that are now prematurely killing us.

Interestingly enough, there's even evidence showing eliminating seed oils from your diet will dramatically reduce your risk of sunburn, which is something Goodrich experienced first-hand. "Susceptibility to UV radiation damage is controlled by how much PUFAs are

in your diet," he says. "It's like a dial. They can control how fast it happens, and how fast you get skin cancer."

## **Seed Oils Raise Risk of ARDS and COVID-19**

Considering the metabolic and mitochondrial damage caused by LA, there's reason to suspect LA may also play a role in COVID-19, as some white blood cells convert LA into leukotoxin. Essentially, LA contributes to the inflammatory domino effect that eventually kills. Goodrich explains:

*"Yes. That's certainly what the conclusion that I drew. I did an enormous post on this, looking at the effects of LA in SARS COV-2 and SARS in general. SARS is a severe acute respiratory syndrome. SARS kills you by giving you acute respiratory distress syndrome (ARDS).*

*ARDS can be caused by lots of different things, not just these viruses. You can get it from influenza. You can get it from inhaling acid into your lungs. What's fascinating is the human literature is quite clear that you can induce ARDS through feeding seed oils.*

*Very sick people who can't eat are fed intravenously. It's called total parenteral nutrition (TPN). Generally, this is used through a product called Intralipid, which is made out of soybean oil and sugar. When you start to understand all this stuff, it's just mind boggling. Doctors did an experiment after they noticed that a lot of their patients who came into the ICU and got TPN then subsequently got ARDS.*

*So, they started playing with what they were feeding them, and what they discovered was this soybean oil formula increased the patient's rate of getting ARDS. The fatality rate from ARDS is 30% to 60%. Feeding seed oils increased the rate of ARDS by seven times."*

As explained by Goodrich, the key toxin that produces the symptoms of ARDS is called leukotoxin, and leukotoxin is made from LA by white blood cells to kill pathogens. It's

toxic enough to where if you inject high-enough amounts of it into animals, it kills them in minutes. Leukocytes incubated with LA convert all of the LA into this toxin until there's none left, so, a major part of the disease process in ARDS is the conversion of LA into leukotoxin. That is what ends up killing patients.

*"It is often noted in the popular press that what kills people is this cytokine storm. What I'm describing is the mechanism of the cytokine storm. Leukotoxin is uniquely what causes the symptoms of ARDS, as has been clearly demonstrated in the animal models," Goodrich says. "So, it seems to me that a sensible thing to do would be [to] change your diet. Why wouldn't you want to do that?"*

## **How LA Triggers Heart Disease**

Goodrich also explains how high LA levels cause heart disease. One of the first things that happens in atherosclerosis is your macrophages, another type of leukocyte, turns into a foam cell, essentially a macrophage stuffed with fat and cholesterol.

Atherosclerotic plaque is basically dead macrophages and other types of cells loaded with cholesterol and fat. This is why heart disease is blamed on dietary cholesterol and fat.

However, researchers have found that in order for foam cells to form, the LDL must be modified through oxidation, and seed oils do just this. Seed oils cause the LDL to oxidize, thereby forming foam cells. LDL in and of itself does not initiate atherosclerosis. LDL's susceptibility to this oxidative process is controlled by the LA content of your diet.

*"That's a result that's been repeated several times, so subsequently, the definition of an atherogenic lipid in your blood is one that contains oxidized omega-6 fats. That's the definition," Goodrich says.*

*"The standard explanation of why you get heart disease and why it progresses the way it does is because the omega-6 fats in your blood get oxidized and*

*become toxic, and progress you all the way through atherosclerosis until it finally kills you.*

*That's the standard explanation for what causes heart disease. I can't tell you how many cardiologists I have talked to who don't understand that that's what the medical literature says is causing this disease.*

*Now, it's worse if you're also on a high carbohydrate diet. A ketogenic diet is somewhat protective against the negative effects of this, but I can't stress enough that this is the standard explanation for cardiovascular disease in the medical literature – that seed oils oxidize and that's what causes the pathology."*

## Understanding Olive Oil

As mentioned, olive oil also contains LA, but it also has other healthy fats. This makes olive oil a bit tricky. The main fat in olive oil is oleic acid, which is one of your body's favorite fats. Your body actually makes it, which is why it's not considered an essential fat. Oleic acid is much more resistant to oxidation than LA, which is why olive oil is a pretty decent cooking oil.

According to Goodrich, oleic acid is protective against both cardiolipin oxidation and LDL oxidation. Interestingly, oleic acid can also replace LA in LDL. Other fats, such as palmitic acid, cannot do that. The problem with olive oil is that it also has a fair amount of LA.

"The percentages that I've seen quoted in literature range from 2%, which is awesome, to 22%, which is not good," Goodrich says. The other problem is the olive oil market is hugely corrupt and fraught with fraud. Many olive oils are cut with cheaper seed oils, which raises the LA content.

So, in summary, if you're using olive oil, I strongly recommend keeping close track of your total LA intake. Anything over 10 grams a day is likely to be problematic (although the exact cutoff is still unknown, so this is merely an educated guess).

If you really want to be on the safe side, consider cutting LA down to 2 or 3 grams per day, to match what our ancestors used to get before all of these chronic health conditions became widespread. If olive oil puts you over the limit, consider cooking with tallow or lard instead. Beef tallow is 46% oleic acid and lard is 36% oleic acid.

## High-LA Sources to Avoid

As Goodrich suggests, if you want to protect your health, you'd be wise to avoid all concentrated sources of LA. Top sources include chips fried in vegetable oil, commercial salad dressings, virtually all processed foods and any fried fast food, such as french fries.

*"What amazes me is people who go to all these measures and I'll hold up my girlfriend as an example. She was a vegan when we got together, had a farm and grew organic food and went to extremes to avoid toxins in food and then went home and cooked with seed oils," Goodrich says.*

*"There are so many people who are like this, who are genuinely trying to do their best to have a healthy diet and then they're chugging down LA that turns into a metabolic toxin in your body, and they wonder why they can't lose weight.*

*By the way, after I told her, what I just said here: Avoid seed oils, avoid refined carbohydrates, eat animal food and animal fats, she lost 56 pounds in two and a half months and her autoimmune disease, fibromyalgia, went into complete remission."*

## The Importance of Carnosine

Beef, even conventional grain-finished beef, has low LA. Grass fed beef has higher DHA and CLA, which makes it a healthier option. Beef is also the primary source of carnosine, which has been shown to be anti-atherogenic.

Carnosine is also a mitochondrial stimulant, a sacrificial scavenger of advanced lipoxidation end products (ALEs), which is very similar to advanced glycation end

products (AGEs). AGEs is another name for HNE and all the other reactive oxygen species generated from oxidizing LA.

Carnosine is the most effective scavenger for HNE. Carbonylation of proteins is basically the process through which proteins in your body get damaged and become ineffective. HNE damages 24% of the proteins in your cells, so carnosine can go a long way toward warding off this cellular damage. As explained by Goodrich:

*"In heart failure, Alzheimer's and in AMD, one of the things they see is an inability of the cell to produce enough energy. The mitochondria are getting damaged. HNE does that damage. It damages 24% of the proteins in the cell, primarily around energy production.*

*One of the worst cancers is glioblastoma, a brain cancer. A researcher up in Boston, [Thomas Seyfried], decided to try and figure out why the mitochondria are getting damaged in glioblastoma, and found they all have oxidized cardiolipin. Every single cancer cell he looked at had damaged cardiolipin in it.*

*One of the ways your cells produce energy is they basically ferment glucose into pyruvate outside of the mitochondria. This is a perfectly normal part of metabolism and they produce something called pyruvate. A molecule called pyruvate dehydrogenase takes pyruvate into the mitochondria and converts it to acetyl-CoA so the mitochondria can burn it very efficiently for fuel.*

*Well, one of the things HNE does is it breaks pyruvate dehydrogenase, and they see this in Alzheimer's where their cells are no longer able to produce enough energy. This is why your cells are dying in Alzheimer's. The beta amyloid plaques in Alzheimer's disease are induced by HNE. There's a great model that came out of Harvard a couple of years ago showing that.*

*And in cancer, if you can't get pyruvate out of the cell, out of the cytosol, the part of the cell surrounding the mitochondria, it has to ferment there and turn it into energy, which is what we call the Warburg effect, where you start shifting over to this damaged primitive fuel system. The evidence seems to be that that's because you've broken your mitochondria.*

*Even the critical, the most important part of the mitochondria, complex 5ADP synthase – which is what takes all the energy coming from your mitochondria and turns it into ATP, which is what fuels the rest of your body – is damaged by HNE. This is a huge issue. There's no more fundamental problem in aging and health than protein damage."*

## **Take Control of Your Health by Lowering Your LA Intake**

As you can see, the evidence strongly suggests excessive LA is driving all the killer diseases today. The solution is simple though. Just lower your LA intake. There's an easy way to do this. You don't have to send all your food out for analysis. Simply use an online nutritional calculator such as Chronometer to calculate your daily intake.

Chronometer will tell you how much omega-6 you're getting from your food down to the 10th of a gram, and you can assume 90% of that is LA. Again, anything over 10 grams is likely to cause problems. Since there's no downside to limiting your LA, you'll want to keep it as low as possible, which you do by avoiding high-LA foods.

Keep in mind you'll never be able to get to zero, and you wouldn't want to do that either. So, just what should you eat to keep your LA intake low? Goodrich summarizes his own diet:

*"I eat mostly beef. I eat vegetables. I cook mostly in butter. I eat a little bit of fruit. I eat occasional grains. Occasionally I'll have corn, a little bit of rice and potatoes. I'm mostly on a cyclical keto diet. Once you fix your metabolic system, then you can go back and forth a lot easier and I don't see any reason to be on strict keto long term. I think [cyclical keto] is healthier."*

*They looked at a ketogenic diet in rodents and found they were protected. The reason they were protected is because they were able to burn HNE as fuel. But if you add a little bit more insulin into the system, then it turns off fat-burning and HNE goes out of the mitochondria and does more damage."*

This is yet another reason for working out in a fasted state, which Goodrich also recommends. "I think working on a fasted state is one of the most important health things that you can do, without question," he says. Goodrich also points out that the reason a strict ketogenic diet can cause liver failure is due to the omega-6 fats in the diet. It's crucial to make sure the fats you eat are actually healthy.

Goodrich is currently in the process of writing a book about this, as am I, in which all of this information will be laid out in even greater detail. In the meantime, you can learn more by visiting Goodrich's blog, [Yelling-Stop](#), or [follow him on Twitter](#). In closing:

*"I can't say anything that you haven't already said in this talk, honestly," Goodrich says. "You want to eat like your ancestors ate because your ancestors were healthier and they were not eating industrial seed oils. They were not eating industrial processed carbs in high quantities.*

*They were making sure that they got lots of animal meat and animal fat and they were getting exercise. I mean, it doesn't really matter what kind of exercise you're doing, just as long as you're doing it.*

*I think I have helped many people in many different ways by telling people this. And it's typically a short conversation, like my girlfriend who cured her autoimmune disease, fibromyalgia. She'd been in constant pain for almost 30 years and it went away in a couple of weeks. I mean, that's amazing, and it's so simple to do.*

*This is, I believe, the fundamental problem with our modern health – this issue of LA. There are lots of other things that play into it. There's no doubt about that, but that's the fundamental thing. If you fix that, you can get away with doing a lot of other things that aren't exactly optimal, but still be healthy."*

**[forbiddenhealing](#)**

The question of oxidized oils goes straight to cell and mitochondrial membranes..misconstructed membranes do not transport oxygen or ions properly, poor oxygen delivery aborts the conclusion of the electron transport chain resulting in a build up of ROS/lactic acid, inefficient ATP electron output and oxidative damage/aka inflammation....which relates to yesterday's article on Vitamin C and antioxidant intake and internal production...which determines body charge terrain...which effects all biochemical activity and the preservation or oxidation of the organism.....A false fear of cholesterol and artery disease drove the public to seed oils/grain based Ag and away from sat fats...Just like a false flag fear of terrorists drove them to sacrifice their sons to war...Just like false covid panic completed the destruction of society and a deeper level of austerity and forced enslavement....We are all caught in this nefarious agenda to the degree we are dependent on the system and the drone of its media narrative.

Posted On 12/13/2020

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## Guillermou

Yes, RANDALL. Glycation and lipoxidation are processes that cause disease and aging. Sugars and lipids (polyunsaturated, cholesterol), when they are abundant, in an oxidative environment, show reactivity with proteins and fats, forming an excess of AGE / ALE products. Excess AGE / ALE in tissues can be caused by: high intake of AGE / ALE, and / or by increased glycation and lipoxidation in the body due to repeated and persistent increases in sugars and / or polyunsaturated lipids with excess omega 6, with associated oxidative stress. As a result of an excess of omega 6 our cell membranes are thick and inelastic. The body must work harder to feed itself and expel toxins. The tissues become clogged and inflamed. Inflammation is the main symptom of many diseases. Omega 3 deficiency is also related to diseases such as insulin resistance, diabetes and mitochondrial dysfunction

In addition to considering 4HNE as a mutagen, reactive oxygen species degrade polyunsaturated lipids, forming malondialdehyde (MDA). This compound is one of the many reactive species that causes oxidative stress in cells and forms adducts in proteins, the so-called Advanced Lipoxidation End-Products (ALE). MDA is considered a biomarker of the level of oxidative stress in an organism. MDA reacts not only with proteins but also with DNA promoting chronic and degenerative diseases including cancer. [pubmed.ncbi.nlm.nih.gov/16054557](https://pubmed.ncbi.nlm.nih.gov/16054557) (2005)

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Posted On 12/13/2020

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**Wani47**

Bravo, forbiddenhealing! Write on!

Posted On 12/13/2020

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**rrealrose**

Fobidden Captn Redox Detox - nice analysis of dependence on the system.

Posted On 12/13/2020

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**mourningwarbler**

Thanks for explaining the cellular level stuff. I think doctors killed my mother-in-law with their bad advice to not eat eggs and butter. And I thought corn oil was the way to go for years!

Posted On 12/14/2020

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**katguy**

Amen to that Forbidden. The media needs to go, social and mainstream. We need a free and fair press or the country burns. Right now it is burning fast.

Posted On 12/14/2020

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**giles22**

was just about to read jamNjim comment, just below yours, anyway I think your on the mark again, but 9 times out of 10 you are, my only issue is weather we created this dependent, conformist, lazy society or did it create us (insert conspiracy theory or reality here), not so much that chicken and egg,

which one came first theory. More was this a series of lots of wrong turns or a orchestrated sign posted, follow the masses experiment.

So much of society seem to have blinkers on and don't or can't be bothered looking at things objectively, I mean ignorance is bliss, but you would have to be underground to realize things don't add up. Alright off to jamNjim thoughts, another smart dude, and a great life story

Posted On 12/27/2020

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## **katguy**

We are all caught in this web of lies. I hear some say it is because of the cost of correcting these nutrient lies. I say can we afford not to fix this mess. 1st World Epidemics in 2020: ^ Autism 1:36 ^Attention Deficit 1:10 (70% medicated) ^ Asthma 1:10 ^Allergy 1:4 ^Diabetes 1:4 ^Obesity 1:3 ^Major Depression 1:2 ^Cancer 1:2 ^Dementia 1:1

Posted On 12/28/2020

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## **Guillermou**

In consideration of Dr. Mercola report we must consider balanced diet in saturated fat from grass-fed animals, plus DHA and CLA (including organic eggs and dairy), coconut oil, fish and shellfish, guaranteed quality cold pressed virgin olive oil (protects against oxidation of cardiolipin and cholesterol), vegetables, nuts (limited. omega 6 content at the end of the comment. Macadamia rich in oleic) and fruits (limited. Berries) so that the omega3 / omega6 ratio is close to unity and that the amount of omega 6 is preferably less than 10gr (ideal 2-3 gr) of linoic acid . Also a limited intake of sugars and foods with a high glycemic index. We must promote endogenous antioxidants and a diet rich in antioxidants and supplements that protect against glycation and peroxidation.

If we offer too much Omega-6 and little Omega-3 to our body, the excess of Omega-6 is converted into the prostaglandins PGE-2, which inhibit the protective actions of PGE-1 and therefore represent a great problem for our Health. As a result of an excess of omega 6 our cell membranes are thick and inelastic. The body must work harder to feed itself and expel toxins. The tissues become clogged and inflamed. Inflammation is the main symptom of many diseases. Omega 3 deficiency is also related to diseases such as insulin resistance, diabetes, and mitochondrial dysfunction. Omega 3 deficiency is also linked to high bad cholesterol.

Elevated insulin levels activate the enzyme delta-5-desaturase (D-5-D) of fatty acid metabolism, increasing the synthesis of arachidonic acid (AA) from LA, thereby increasing the production of pro-inflammatory molecules. "Bad" trans fatty acids inhibit the enzyme delta-6-desaturase (D-6-D) of fatty acid metabolism, blocking the production of anti-inflammatory molecules. If cell membranes contain a large amount of AA and little EPA and DHA, only pro-inflammatory molecules can be generated, this production being accentuated by excess free radicals.

Posted On 12/13/2020

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## Guillermou

Omega-3s from fish modulate cellular metabolism and insulin resistance in peripheral tissues with an impact on metabolic function and the management of insulin resistance in humans. Studies underscore the potential role of mitochondrial morphology and dynamic behavior in determining mitochondrial dysfunction and the onset of insulin resistance. [www.ncbi.nlm.nih.gov/.../PMC5872768](http://www.ncbi.nlm.nih.gov/.../PMC5872768) (2018)

We must also consider a diet that provides exogenous and endogenous antioxidant power. Oxidative stress occurs when the body's antioxidant capacity cannot maintain the balance between antioxidant and pro-oxidant molecules, and pro-oxidant molecules are in excess; This depends on the nutrient "kit" and especially on the amount and balance of omega 3 and omega 6, the support of omega 9 and the phytochemicals in foods. Glycation and lipoxidation are processes that cause disease and aging. Sugars and lipids (polyunsaturated, cholesterol), when they are abundant, in an oxidative environment, present a reactivity with proteins and fats, forming an excess of AGE / ALE products.

AGEs are known as pro-inflammatory mediators with a wide spectrum of pathological effects, including increased vascular permeability, inhibition of vascular dilation by interfering with nitric oxide, oxidation of LDL, the ligation of cells such as macrophages, cells endothelial and mesangial cells to induce the secretion of a wide variety of cytokines and thereby increase oxidative stress. Lipoxidation or lipid peroxidation refers to the oxidative degradation of lipids, mainly affecting polyunsaturated fatty acids under pro-oxidant conditions. Vitamin E and enzymes such as superoxide dismutase, catalase, glutathione, and lipoic acid are good sources of antioxidants, carnosine including lipid peroxidation.

[www.researchgate.net/publication/296938877\\_Malondialdehyde\\_MDA\\_Structu..](http://www.researchgate.net/publication/296938877_Malondialdehyde_MDA_Structu..) (2016)

Posted On 12/13/2020

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## Guillermou

In addition to considering 4HNE as a mutagen, reactive oxygen species degrade polyunsaturated lipids, forming malondialdehyde (MDA). This compound is one of the many reactive species that causes oxidative stress in cells and forms adducts in proteins, the so-called Advanced Lipoxidation End-Products (ALE). MDA is considered a biomarker of the level of oxidative stress in an organism. MDA reacts not only with proteins but also with DNA promoting chronic and degenerative diseases including cancer. [pubmed.ncbi.nlm.nih.gov/16054557](https://pubmed.ncbi.nlm.nih.gov/16054557) (2005) [search.proquest.com/openview/5fa6c2d218c9f92886997e60baf4925b/1?pq-ori..](https://search.proquest.com/openview/5fa6c2d218c9f92886997e60baf4925b/1?pq-ori..) (2014) [link.springer.com/.../s004150200025](https://link.springer.com/.../s004150200025) (2016) [www.hindawi.com/.../7147235](https://www.hindawi.com/.../7147235) (2019)

Foods with high GI (glycemic index) and also fruit containing large amounts of fructose, highly reactive with proteins, are important contributors to the development of AGEs. Pentosidine is an AGE that can be determined in serum and urine, being a good biomarker of glycoxidation and oxidative stress. Excess AGE / ALE are pro-inflammatory, affect protein function, and contribute to the appearance and development of most chronic pathologies. Industrialized and denatured feed increases AGE / ALE. Vegetable foods that have a favorable omega-3 ratio and that limit omega 6 content are: Vegetables, mushrooms, fruits, preferably berries.

Totally discard the cereals. For example omega 3 / omeg6 ratio of spinach (5.4 with 92 mg of omega 3), New Zealand spinach (5.1), Green Cauliflower (3.6), Chinese broccoli (3.4), broccoli and turnip greens (2.3), Brussels (2.2), and cabbage (1.6). Top 10 Foods with the Highest Omega 3 to Omega 6 Ratio: [www.myfooddata.com/articles/foods-with-a-high-omega3-to-omega6-ratio.p..](https://www.myfooddata.com/articles/foods-with-a-high-omega3-to-omega6-ratio.p..) Omega 6 from nuts: [www.marksdailyapple.com/nuts-omega-6-fats](https://www.marksdailyapple.com/nuts-omega-6-fats) Fatty acid ratio in food [en.wikipedia.org/.../Fatty\\_acid\\_ratio\\_in\\_food](https://en.wikipedia.org/.../Fatty_acid_ratio_in_food)

Posted On 12/13/2020

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## Guillermou

The polyunsaturated fatty EPA / DHA are very powerful precursors of SPM, which include resolvins, proteins and maresins. Furthermore, they are associated with a less aggressive inflammatory onset in COVID-19, after competing with  $\omega$ -6 fatty acids for eicosanoid synthesis. Therefore, it makes sense to consider the use of these fatty acids for the clinical management of COVID-19 patients, EPA / DHA PUFAs can be administered orally, enterally, or parenterally.

The resolution of inflammation involves the participation of some anti-inflammatory cytokines, mainly IL-10, but it is mainly controlled by a group of molecules called specialized pro-resolution mediators

(PMS). EPA and DHA are precursors of resolvins and DHA is the precursor of proteins and maresins, all SPM. Resolvins and proteins are released during cell-to-cell communication during the resolution phase of inflammation, through transcellular biosynthesis, and are involved in the regulation and resolution of inflammation.

EPA and DHA can also inhibit the synthesis of proinflammatory cytokines by modulating the activation of gene transcription factors, such as nuclear factor (NF)  $\kappa$ B and peroxisome proliferator-activated receptor, and by destabilizing membrane lipid rafts. Activation of the peroxisome proliferator activated receptor by agonists has been proposed as a therapeutic target for modulation of the cytokine storm in COVID-19 and may be supported by EPA / DHA. Nutritional PPAR- $\gamma$  ligands, such as turmeric, lemongrass, and pomegranate, possess anti-inflammatory properties through the activation of PPAR- $\gamma$ . proposing a dual approach based on strengthening the immune system as an attempt to prevent / treat cytokine storm in the case of coronavirus infection. [www.mdpi.com/.../htm](http://www.mdpi.com/.../htm) (2020)

Posted On 12/13/2020

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## Guillermou

In patients with acute respiratory distress syndrome (ARDS), the enteral use of polyunsaturated  $\omega$ -3, EPA / DHA has been associated with improving oxygenation, reducing the duration of mechanical ventilation and reducing the length of stay in the unit. intensive care (ICU).

[www.sciencedirect.com/science/article/abs/pii/S0899900718305501](http://www.sciencedirect.com/science/article/abs/pii/S0899900718305501) (2019) Critically ill patients who received parenteral nutrition therapy enriched with fish oil lipid emulsion (rich in  $\omega$ -3 PUFAs EPA and DHA) were reported to have decreased risk of infection and sepsis (40% -56%, respectively) and a reduction in hospital and ICU losses by around 2 d [www.scopus.com/record/display.uri?eid=2-s2.0-85068157708&origin=in..](http://www.scopus.com/record/display.uri?eid=2-s2.0-85068157708&origin=in..) (2020)

The infusion of a lipid emulsion composed of pure fish oils (LEFO), it has been proposed to some patients without an indication for parenteral nutrition as an immunopharmaceutical-nutrient. Other researchers also found this practice safe and beneficial in critically ill patients with sepsis and in critically ill elderly patients. [www.sciencedirect.com/.../S0899900720301830](http://www.sciencedirect.com/.../S0899900720301830) (2020)

Posted On 12/13/2020

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## k31069

Where does that leave nuts in this? They contain linoleic acid. Is that something we should not consume?

Posted On 12/14/2020

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## Cabochon

Please see my two (separated) posts below on the issue of saturated and polyunsaturated fats and oils and the dangers of industrial processing of w6 seed oils. The most important point to note is that the human body evolved to require both w3 and w6 fats (in the correct proportions, of course). The fact that industrial processing of w6 fats produces a toxic product injurious to health does not negate this fact, which is not brought out well in the article. No matter how many studies are cited and how many referenced posts extolling the benefits of various aspects of essential fats in the human diet, this point remains very important.

Posted On 12/14/2020

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## Guillermou

Thanks k31069, Cabuchon and Katguy. Our health is the result of interactions between our genes and numerous environmental factors such as our nutrition. While our genes have not changed much in the last 40,000 years, our physical activity has dropped a lot and in the last 70 years our diet has changed dramatically: 1). Our diet is hypercaloric. 2) We eat too much processed fatty acids and trans fatty acids. 3) The consumption of Omega-3 fatty acids has decreased and Omega-6 increased. 4) We eat less fruits, vegetables and antioxidants. 5) The balance between Omega-6 / Omega-3 fatty acids in our diet, which has always been 1: 1 throughout our evolution, has reached a strong imbalance of 15 to 20: 1.

Omega 3 and omega 6 fatty acids are essential because the body cannot produce them, they are very important for our life and health because our body converts an important part of them into PGE-1 prostaglandins. Without the PGE-1 we could not live. But if we offer too much Omega-6 and little Omega-3 to our body, the excess of Omega-6 is converted into the prostaglandins PGE-2, which inhibit the protective actions of PGE-1 and therefore represent a great problem for our health.

It is also a good way to obtain vegetable oils in healthy foods and with antioxidant power, but taking care that we do not take too much omega 6, as this article by Dr. Mercola reports. Avocado has a leading role reserved due to its nutritional virtues, as it does not lack anything: vitamins A, C, D, E, K

and the B complex, as well as potassium. Olive oil is rich in omega 9 and with contributions of omega 3 and 6. Green vegetables, Brussels sprouts and cauliflower have just been found a good source of omega 3. Omega 3 and omega 6 fatty acids are also present in the vegetables in good proportions. Chia and flax seeds stand out for their high content of omega 3 oils and antioxidant vitamin E. Walnuts in adequate amounts are a great complement. All with fish oil and quality supplements.

Posted On 12/14/2020

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## Cabochon

Hello Katguy, as explained in my original post, both omega 3 and omega 6 - in the correct ratio and not subject to industrial processing - are required for health. I think perhaps the headline writer misunderstood the premise of the article and came to the conclusion that omega 6 is in itself bad with the headline: "Avoiding Omega-6 Fats Is Key for Good Health", which of course is inaccurate information. The exact w6:w3 ratio is somewhat controversial but some researchers have put it at 4:1 in favour of omega 6. Today's dietary habits are likely to result in a ratio nearer 20:1, which is a recipe for increased inflammation. A previous mercola.com article on this topic put an acceptable ratio at 3:1 in favour of w6. The confusion probably lies when all omega 6 oils are equated with industrially processed seed oils which are indeed a health disaster. But there are healthy omega 6 fats such as borage, blackcurrant and evening primrose oil which are sources of GLA (gamma linoleic acid) and which contribute to healthy skin and hormone balance. These oils are extracted by cold pressing the seeds as their fatty acids are damaged by heat.

Posted On 12/15/2020

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## katguy

Thanks Guillermou!. I would hate to give up my olive oil or nuts. I get the best I can find and soak the nuts. I agree it's the industrial seed oils we need to avoid and educate about. I am sure there is not a restaurant in my area not swimming in fake oils

Posted On 12/28/2020

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## Guillermou

Thanks Katguy, the well balanced Mediterranean Diet has many benefits. A study, conducted by a team of researchers from the National Institute on Aging (NIA) and the National Institute on Alcohol Abuse and Alcoholism (NIAAA), which are part of the National Institutes of Health of the United States, and the University of North Carolina (UNC), which was done on 182 adults with frequent migraines expanded on the team's previous work on the impact of linoleic acid and chronic pain.

Linoleic acid is a polyunsaturated fatty acid commonly found in the American diet from corn, soybeans, and other similar oils, as well as some nuts and seeds. In a 16-week dietary intervention, participants were randomly assigned to one of three healthy diet plans. All participants received food packages that included fish, vegetables, hummus, salads, and breakfast items. One group received meals that had high levels of fatty fish or fatty fish oils and reduced linoleic acid. A second group received meals that had high levels of fatty fish and higher linoleic acid. The third group received meals with high levels of linoleic acid and lower levels of fatty fish to mimic the average US intake.

During the intervention period, participants controlled the number of migraine days, their duration and intensity, as well as how their headaches affected their ability to function at work, school, and social life. When the study began, the participants had a mean of more than 16 headache days per month, more than five hours of migraine pain per headache day, and had baseline scores that showed a serious impact on headache. quality of life despite using multiple headache medications.

Posted On 07/03/2021

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## Guillermou

The diet lowest in vegetable oil and highest in fatty fish produced between 30% and 40% reduction in total headache hours per day, severe headache hours per day, and headache days per day. head overall per month compared to the control group. Blood samples from this group of participants also had lower levels of pain-related lipids.

Migraine, a neurological disease, is among the most common causes of chronic pain, loss of time from work, and decreased quality of life. More than 4 million people worldwide suffer from chronic migraine (at least 15 migraine days per month) and more than 90% of those who suffer from it are unable to work or function normally during an attack, which can last between four hours and three days.

Women between the ages of 18 and 44 are especially prone to migraines, with an estimated 18% of American women suffering from them. Current migraine medications often offer only partial relief and can have negative side effects, such as sedation and the possibility of dependence or addiction.

Posted On 07/03/2021

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## Guillermou

"This research has found interesting evidence that dietary changes can improve a very debilitating chronic pain like migraine, without the inconvenience of often prescribed medications," said Dr. Luigi Ferrucci, Scientific Director of the NIA. The NIH team was led by Chris Ramsden, clinical investigator for the intramural research programs of the NIA and NIAAA, and a member of the UNC adjunct faculty. Ramsden and his team specialize in the study of lipids (fatty acid compounds found in many natural oils) and their role in aging, especially chronic pain and neurodegenerative diseases.

"Diet changes may offer some relief to the millions of Americans who suffer from migraine pain," says Ramsden. "It is further proof that the food we eat can influence pain pathways." The researchers noted that these results serve to validate that diet-based interventions that increase omega-3 fats and reduce sources of linoleic acid hold more promise in helping people with migraines reduce the number and impact of days headache than fish oil supplements, while reducing the need for pain medication. They hope to continue expanding this work to study the effects of diet on other chronic conditions. [www.thehealthsite.com/diseases-conditions/migraine/frequent-migraine-h..](http://www.thehealthsite.com/diseases-conditions/migraine/frequent-migraine-h..) (2021)

Posted On 07/03/2021

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## Guillermou

Previous studies have reported that reducing LA in the diet from 7% to 2% of energy combined with a diet high in EPA and DHA (~ 1.5 g per day) for 12 weeks, reduced the frequency of migraines and improved quality of life in patients with drug-resistant migraines. Reducing LA in the diet without changing EPA and DHA did not significantly alter the frequency of migraines or improve quality of life.

One study reported that a high percentage composition of LA from human breast milk (> 9.7% fatty acids) was associated with reduced motor and cognitive scores in infants aged 2 to 3 years. In the same cohort, the percentage composition of LA in human breast milk was associated with a reduced verbal IQ between 5 and 6 years of age. <sup>44</sup> In fact, children breastfed with the highest levels of LA had cognitive scores comparable to those of children who were never breastfed.

Lassek and Gaulin found an inverse correlation between the percentage composition of LA of breast milk and cognitive scores in 15-year-old children, suggesting a lasting impact of maternal LA on the cognitive abilities of the offspring. Steenweg-de Graaff et al. also reported a significant positive

association between maternal plasma LA composition measured mid-pregnancy and the risk of autistic traits in children at the age of 6 years. 46 A more recent study found that prenatal intake of diets high in the ratio of LA to ALA, was associated with a 2-fold increase in the risk of delayed psychomotor and mental development in 6-month-old infants. [www.nature.com/.../s41538-019-0061-9](https://www.nature.com/.../s41538-019-0061-9) (2020)

Posted On 07/03/2021

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## jamNjim

Everyone is figuring this out. Many "ordinary" people have read testimonies like Tucker Goodrich's, researched it, and tried it out with great success. The food isles at the grocery stores even show there's a dietary shift from ultra processed (omega-6 laden) foods to whole foods like real meats and produce. I see the meat and produce isles growing while the bread and cereal isles are shrinking. Unfortunately, the junk food and alcohol isles are bigger than ever! These isles are expanding with snack/junk foods being falsely promoted as "healthy" because they are low/no fat or they are sweetened with artificial sweeteners. People are consuming more alcohol for many reasons (self medicating!).

So why is our Unhealthcare System still promoting foods like pasta, bread, cereals, and low-fat-anything as health food? Why are starchy foods like grains and potatoes promoted as being healthier for you than beef or fish? Then you have to ask yourself why a proven Covid-19 therapeutic drug like Hydroxychloriquine (HCQ) doesn't get approved in the USA for use. Instead, we approve a less effective and WAY more expensive drug called Remdesivir. S. Korea has used HCQ since day one for treating Covid-19 patients with tremendous success! Their Covid-19 treatment success is so well documented that to ignore their science/protocol for Covid-19 treatment and not give it a thorough review is nothing short of CRIMINAL NEGLIGENCE! So why does it seem as if our medical system lagging behind the rest of the world at the moment in EVERYTHING health related?? Because, they only make money if you are sick. Just walk away from the Medical System and stop watching the Fake News!

Posted On 12/13/2020

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## rrealrose

JamNjim - Just for you! [www.youtube.com/watch](https://www.youtube.com/watch) - This is Dr Paul Marik discussing his iMASK protocol. And there's a second one discussing treatments depending on phases of viral infection - also on Dr Been's youtube channel, if you are interested!

Posted On 12/13/2020

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## **exerciseu1\_203**

America's Frontline Doctors, led by Dr Simone Gold, MD,JD, are the group of physicians who have banded together to promote their success with HCQ rx'd to their patients. They now have a petition to Prevent Covid mandates and vaccine Policymaking on their website.

As an RN for 45 years it is refreshing to see more doctors questioning the interference of the government to prevent freedoms of personal health.

Posted On 12/28/2020

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## **Gwyncann**

For more than 3 decades, I have been making ghee from organic unsalted (grass fed) butter and about a decade ago I started making beef tallow (organic, grass fed). I occasionally use organic, cold pressed olive oil from Spain for low heat cooking and on salads. I have never eaten low-fat anything and have never bought a seed oil. (Olive oil is actually from the fruit of the tree). I am in excellent health at 65 and do not have any age spots, illnesses or take any pharmaceuticals. I haven't been assaulted with a vaccine since the age of 11. One of the first questions I ask regarding food is "Would my great-grandparents have eaten this?"

Posted On 12/13/2020

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## **mirandola**

Considering the Mediterranean diet, which is heavy on the olive oil as well as colors of the rainbow, nuts and seeds, well then I wonder about this. The Mediterranean diet is known for yielding some of the lowest heart disease and cancer, inflammation states world wide. I suspect it's because of the high oleic acid content in olive oil counter balancing the Linoleic Acid, and that the nuts/seeds have a lot of fiber which also is nature's counter balance. Fiber absorbs a fair amount of unwanted material in foods (like sugar, fats et al ) and helps to sweep some of It out of the digestive tract. So eating nuts and seeds, is not the same as consuming their oil, which is isolated from the fiber and is by definition, concentrated.

Posted On 12/13/2020

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## mourningwarbler

Two "drummers" (salesmen) talking: "Now as to this article," said Cincinnati, slashing into the ostensible butter and holding forward a slab of it on his knife-blade, 'it's from our house; look at it—smell of it—taste it. Put any test on it you want to. Take your own time—no hurry—make it thorough. There now—what do you say? butter, ain't it. Not by a thundering sight—it's oleomargarine! Yes, sir, that's what it is—oleomargarine. You can't tell it from butter; by George, an expert can't. It's from our house.

We supply most of the boats in the West; there's hardly a pound of butter on one of them. We are crawling right along—jumping right along is the word. We are going to have that entire trade. Yes, and the hotel trade, too. You are going to see the day, pretty soon, when you can't find an ounce of butter to bless yourself with, in any hotel in the Mississippi and Ohio Valleys, outside of the biggest cities. Why, we are turning out oleomargarine now by the thousands of tons. And we can sell it so dirt-cheap that the whole country has got to take it—can't get around it you see. Butter don't stand any show—there ain't any chance for competition. Butter's had its day—and from this out, butter goes to the wall.

There's more money in oleo-margarine than—why, you can't imagine the business we do. I've stopped in every town from Cincinnati to Natchez; and I've sent home big orders from every one of them.' -- And so-forth and so-on, for ten minutes longer, in the same fervid strain. Then New Orleans piped up and said— Yes, it's a first-rate imitation, that's a certainty; but it ain't the only one around that's first-rate. For instance, they make olive-oil out of cotton-seed oil, nowadays, so that you can't tell them apart.' -- They go on to talk about olive oil. Nothing new under the sun. see Mark Twain LIFE ON THE MISSISSIPPI [www.gutenberg.org/.../245-h.htm](http://www.gutenberg.org/.../245-h.htm)

Posted On 12/14/2020

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## cralef

The example of cyanide is slightly misleading. Cyanide is essential in the body. It naturally occurs in the synapse. Without it, the nerve cells cannot communicate. Almonds contain micro doses of cyanide. Apricot pits have more. I have seen information showing that such micro doses can help to cure cancer. Like omega 6s, too much is 'not good'. The difference is how much is too much.

Posted On 12/13/2020

## **Alldogsgotoheaven**

Several years ago I started having so much pain. It started in my shoulders and before it was over every joint in my body hurt especially at night. My joints would throb and I was walking with a noticeable limp. I started reading about the Omega 6/Omega 3 balance. I cut out all processed food (except rare occasions) and added a high quality Omega 3 to my diet. I cut out high glycemic foods. The pain went away and the limp went away almost immediately. I do use olive oil but not often.

Posted On 12/13/2020

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## **colinbannon**

Two other points, There are real disadvantages also to animals eating intensive grass systems of monoculture ryegrass etc. However an improvement it may be on savage, environment destroying feedlot farming, it still fails to restore grasslands and can not be as good for the animal as eating multiple grass species along with herbs, fungi and so on found in natural pasture. The other point is that natural pasture sinks phenomenal amounts of carbon at a time we need this for our short terms (generation or two) survival. Restorative farming is the name of the game; that 3% of US meat is grass fed shows how much work there is to be done. This is the real challenge for anyone who sees the climate emergency looming ominously - restore our grasslands, restore our health.

Posted On 12/13/2020

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## **As.I.see.it**

Diversity will normally provide a healthier diet for most animals. Rye is actually considered toxic for some, such as chickens. And while organically grass-fed cows will do very well, it is not there normal diet, which would otherwise include tree foliage. There is also consideration of re-classifying the cow, which doesn't eat like an omnivore, but nonetheless gets a major part of its nourishment from animal source. It is of course superficially a vegetarian. A word of warning about grass-fed animal products. Please do not buy or purchase unless organic or you know the source. Caveat emptor, grass-fed can produce a VERY good product or a VERY bad product.

Posted On 12/13/2020

## BillieBob

As.I.see.it: You make an interesting statement: "...the cow, which doesn't eat like an omnivore, but nonetheless gets a major part of its nourishment from animal source." Are you referring to the activity of the bacteria in the animal's rumen? I know the bacteria break down the fiber in the grass the animal has eaten into various nutrients the animal can use for energy, such as short-chain fatty acids. But, in my mind, I cannot make that fit your statement. Will you elaborate, please?

Posted On 01/01/2021

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## ASD quotexpert momquot

Colinbannon, good points. You're probably familiar with the work of Allan Savory -- Holistic Resource Management. For people unfamiliar with restorative farming, I recommend Allan Savory's TED talk and other lectures on youtube as excellent places to start learning.

Posted On 02/24/2021

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## belizebeth

Hi all: Topic: Palm oils replacing butterfat in canned milks. About a decade ago, it was seen that most condensed milks extracted the butter fat and added the cheaper palm oils. During this scandemic, in the late spring, like many, I decided to stock up on some basic canned items; this included evaporated milk. After purchasing, I noted that both the brands in my kitchen had also extracted the butter fat and it was replaced with palm oils... This is almost criminal... who reads (who can read that tiny tiny script intentionally put so tiny).. to remove the healthy fat and insert another, without clear note of it. Looks like my son's dog will eventually get that adulterated evap... They just can't help themselves, the big ag group. Thanks Dr. M for all the great articles... looking fwd to the new one on oils. Sending tidings of comfort and joy to all, Beth

Posted On 12/13/2020

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## Sheltie Lover

Please don't give that to a dog. ... It would be as toxic to them as to you.

Posted On 12/13/2020

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### **steelj**

I second Sheltie Lover. Dogs need healthy food too. So much so it's gotten near impossible to find healthy commercial dog food, or I should probably say impossible to verify what's ok and what will harm your dog. We've had to switch to preparing our doxie's food ourselves, and she is clearly happier, healthier and more energetic. In researching how to do this properly, we've been blown away by how many other dog lovers have discovered the same thing.

Posted On 12/14/2020

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### **BillieBob**

belizebeth, What's wrong with returning that "milk" to the store where you bought it? If they get enough returns, they'll go back to selling an honest product.

Posted On 01/01/2021

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### **CaddyB**

This is all very interesting, but once again I'm wondering if eating the actual seeds is as harmful as the seed oils. I regularly make seed crackers with a recipe found in The Ketogenic Kitchen, a cookbook mentioned by Dr. Mercola a few years ago. I have AMD and am wondering if I'm doing more harm than good by eating these seed crackers. Are whole seeds healthy?

Posted On 12/13/2020

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### **Guillermou**

Hi CaddyB. Nutrition must be considered as a whole. Whole foods have greater antioxidant power than their oils. For example, olives have a higher antioxidant power than olive oil. In addition to phytochemicals, fiber, minerals and vitamins. 100 gr. of flax seeds have 5911mg of omega 6 (linoleic acid), and 22813 of omega 3, ratio 1: 3.9 and of chia have 5787/17552 chia seeds, ratio 1: 3. In general the seeds have more omega 6 than omega 3. Being important the omega 3 / omega 6 ratio close to unity, it must be considered that very little linolenic acid is transformed into EPA / DHA, which is very beneficial for eye, brain and cardiovascular health. In addition, the excess of omega 6 reduces said conversion.

We must also take into consideration that, for example, in flax oil it oxidizes easily and if flax seeds are taken, it is better to crush them when ingesting them. Neither is a fresh fish the same compared to a poorly preserved fish where EPA and DHA have been oxidized. The same is true of a poor quality, poorly encapsulated fish oil supplement. Consider that in total the amount of omega 6 is less than 10g (ideal 2-3g) according to today's report by Dr. Mercola. At the end of my comment it has the omega 3 and omega 6 content of seeds and other foods.

Posted On 12/13/2020

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## CaddyB

Thank you, Gui. I guess, as with everything, moderation is key. I'll still enjoy my seed crackers occasionally.

Posted On 12/13/2020

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## mirandola

CaddyB, making no reference to any health condition that you mention, but merely to the foods alone: When extracting the oily constituent from the seeds, you get just that: A concentrated oily constituent. This is very different from the whole food, where fiber, watery constituents, and other things are intact, working together as a whole. Nature is very wise, and knows that we need the balance of elements. So the whole works very differently from the extract (The same is also true of alcohol extracts from plants, essential oils, etc). There could be a certain toxin in an oily constituent (not the same as an essential oil) which is not present in the watery constituent, or the essential oil or the fiber, or vice versa for any of them. So you could drink the watery constituent which has no such toxin, yet find it in the oil, or vice versa, depending on each plant and on each constituent in question.

If a plant has a certain amount of toxins in the oily constituent, it will digest very differently if eaten as a whole food than if consumed as an oil, which concentrates those constituents and isolates them from the fibers, which help to absorb and sweep some of them out of the digestive tract. Needless to say, if the toxins are of high content, don't eat that food, even as a whole food. It all depends on the amount present. With that said, about seeds generically, the best thing is to sprout and cook them, not eat them raw. The same goes for nuts and grains if eating them. This reduces the lectin content, a substance that binds microbes infecting the plants, acting as a natural defense. However, the lectins are also gut lining irritants and contribute to inflammation. Sprouting reduces lectin content, as does cooking (second to sprouting). About your mentioned health condition, ask your naturopathic or integrative physician. The above is merely nutritional information, not medical advice. I do believe caution is wise, but ask your naturopath.

Posted On 12/13/2020

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## mirandola

CaddyB, Paul Pitchford's book, *Healing with Whole Foods*, has an excellent chapter about fats and oils. I highly recommend reading it.

Posted On 12/13/2020

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## stanleybecker

FRIED FOOD ~ an old no-no in the dietary discourse that still remains immensely popular ~ deep fat frying and cheap oils that provide the calorific bulk to Junk Fake Food ~ these are all ideas that have been around for decades ~ Dr Fred Kummerer spent a lifetime in science exposing the dangers of excessive processed seed oils ~ Junk Fake Food has two main elements ~ 1. SUGAR (or even worse HFCS) and 2. cheap laboratory type fat either hydrogenated or as a hexane engineered processed seed oil ~ this is the propaganda induced eating habits of the Modern Zombie as encouraged by the Zombie Slave Owners that pay for the advertising LIES that make the Modern Zombie believe that Junk Fake Food is what a "GOOD" Zombie needs to eat every morning noon and night ~ these Modern Zombies then become the feeder input for the Junk Fake Food feeding system that has become as universal as the belief that there is a test called the PCR Test that establishes whether you have a genetic sequence that every human being has many times over in their chromosomes ~ our metaphorical Pied Pipers are leading the Modern Zombie down a pathway to the TRAP of Modern Managed Medical Treatment which is the goal of the Corporate Advertising campaign that promotes Junk Food and Junk Oils as "what to eat" to comply with Mass

**Control ~ is this you?? ~ is this what you want to happen to you?? ~ carry on eating the Junk Oils and you will BECOME A Medically CAPTIVE PATIENT with all the bills and BAD OUTCOMES ~ save yourself from this NIGHTMARE by changing your diet and dismissing the PROPAGANDA ~ you won't be sorry**

Posted On 12/13/2020

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### **cat6071**

Good morning Stan! My friend keeps telling me that vegetable oil is good for you! It's made from vegetables! It's hard to eat at her house when she has me over. I don't know how to help change their diets. She's in great health though!

Posted On 12/13/2020

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### **sue2613**

What do you think of air fryers that cook food at high heat? I have read high heat cooking is dangerous even if there is little oil.

Posted On 12/13/2020

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### **stanleybecker**

hi cat ~ this is a difficult one ~ what you don't mention is what the food tastes like and what are its nutritional values ~ what you could do is cook for her yourself and use a non linoleic based oil ~ there are plenty of alternatives like butter/ lard/ coconut oil/ small amounts of olive oil ~ avoid packaged foods like salad dressings ` make your own salad dressings ~ don't be lazy about how to prepare food ~ convenience and TV dinners are counterproductive as they contain health adversaries ~ I suppose that "education" is something that would be helpful but dietary fads are hard to keep up with for those who are not focussed on their health ~ you didn't mention how old your girlfriend is and whether she overeats and exercises ~ these are factors ~ all the best and remember that "love will; conquer all the minor problems"

Posted On 12/13/2020

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## mirandola

heh heh heh (not!) I recall and can't shake it out of my memory, when I worked at a deli where we used a fryer, how filthy black that oil was. Used and reused again and again, with charred bits broken off from the food, burnt and lingering in the oil, collecting as dust at the bottom as well as food bits. The oil had been reheated so many times before being changed, it was truly and honestly black. Disgusting. This is as carcinogenic a brew as anything I have ever heard of, and very potently so. Don't eat commercial fried foods, end of story. (I am surprised that the deli was allowed to reuse and reheat the oil that many times, by law).

Posted On 12/13/2020

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## stanleybecker

sue - here's a quote and a link ~" Foods deep-fried at proper temperatures typically absorb "no more than a couple of tablespoons per 2 1/2 cups of oil" used. This oil absorption rate is around the same as occurs with shallow frying, such as in a pan." ~ [en.wikipedia.org/.../Deep\\_frying](https://en.wikipedia.org/.../Deep_frying) hi mirandola ~ here is a quote and link ~ " Reheating oil generates these free radicals, which could cause complications as serious as cancer, and atherosclerosis, a condition where plaque is filled in the arteries causing blockage and an increase in bad cholesterol." ~ [timesofindia.indiatimes.com/life-style/food-news/heres-why-you-should-..](https://timesofindia.indiatimes.com/life-style/food-news/heres-why-you-should-..)

Posted On 12/13/2020

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## mirandola

HI Stanley, exactly. That is why I said such a carcinogenic brew....whew! When those oxidized oils are reheated and oxidize anew, again and again ,the terrible chemistry is just something else. Very very toxic and highly carcinogenic. This really should be illegal. Think of people subsisting on McDonald's, plus add the GMO feed saturated with glyphyosate, and animal over crowding and more....oh god.

Posted On 12/13/2020

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## Cabochon

Good point Stan, regarding the method of processing seed oils - sunflower,safflower rapeseed, soy, cottonseed, all predominantly omega 6 oils are neither healthy nor safe when subjected to industrial processing. There is however a safe method of cold pressing which is used also for pure olive oil and which protects from light. These oils should not be exposed to heat and light, to prevent oxidation and destruction of their natural anti-oxidant vitamin E content. Industrial processing involves solvents (hexane) as you have mentioned, but also deodorising, five or six separate high heat applications creating aldehydes and free radicals and the seeds themselves retain residues of whatever toxic chemicals were used to grow them. The clear plastic bottles they are sold in further increase exposure to light and leaching of toxic components from the interaction of fats with plastics.

Repeated reheating of these oils in the fast food industry increases oxidation and damage. If you want a recipe for ill health, buy processed oils, processed food using these oils, and eat fast food as a regular part if your diet. And we have not even mentioned margarine, which was, if memory serves, an industrial concoction for war time use, when butter was in short supply.

Posted On 12/15/2020

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## dog1678

I would love to read all of your opinions on the Hell-worthy crime of American dog food manufacturers producing the most vial, dead, and dangerous "food" for our precious companions. The information I have read is truly horrific, truly nightmare material. One recent report said that one of the biggest brands buys surplus, outdated meat from supermarkets/purveyors. The meat/poultry is packaged in styrofoam and cling wrap. They dump the whole packages, plastics and all, into giant ovens, and then through some demonic process extrude a dry pellet. No wonder the cancer rate in dogs is just astounding!! I feed my precious baby Dr. Mercola's freeze dried, grass-fed raw beef, and he adores broccolini, cabbage, brussel sprouts (tells me he needs "K"). The number one dog food company represented in veterinarian's offices is the biggest criminal, having had so many recalls on their products that they should be behind bars. It looks like Americans are beginning to wake up to this horrendous crime, because more people are going the "raw" route, or at least buying human grade prepared meals for these sacred animals.

Posted On 12/13/2020

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## tra7551

god bless Dr Mercola

Posted On 12/13/2020

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## cah1248

They've proven through animal lab testing that high doses of seed oils causes a plethora of chronic disease and they then encourage us to eat it? This smells of Big Pharm keeping us dependent on their pharmaceuticals.

Posted On 12/13/2020

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## 1Peace

When you research the ingredients in fake meats they are developing and starting to sell, the vegetable oils used in all is maddening. They intend to stop all live animal meat sales, and will have artificial beef, pork, chicken, eggs milk only. Total control of what we will be able to eat, or even access. Of course , as in Orwell's 'Animal Farm', they say everyone is equal...but some are more equal.. Bill Gates is financially backing this (as well as the vaccines and Global aerial sky spraying). Think he will serve this on his new 600 million yacht, or his last latest 460 million home? No, he is one of those who are 'more equal'. He never vaccinated his kids when they were young (on record). Think he will have them vaccinated against the covid ?? I think not.

Posted On 12/13/2020

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## Kithara

I've visited an organic farm in Tuscany on several occasions. The energetic owner (in her late eighties) has won awards for her olive oil. The olive oil has a green tint and exquisite herbaceous and pungent flavor. I don't think I can limit myself to a mere 0.35274 ounces (10 grams) per day as recommended in the article.

Posted On 12/14/2020

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## Willitine

This is good to know. I've had one too many spoonfuls of LA-rich oils lately. Thanks, Dr. Mercola.

Posted On 12/13/2020

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## nan6449

Very simple!! This should be broadcast news on mainstream media.

Posted On 12/13/2020

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## paula-penny\_203

If we are to keep LA under 10g, how much olive oil a day can we have? I use California Olive Ranch Extra Virgin Olive Oil which I think is supposed to be a good brand that doesn't use corrupted olive oil. I use olive oil, a couple tablespoons, for all my salads plus a capful on toast. What would be a better alternative than for salads and toast? Avocado Oil?

Posted On 12/27/2020

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## lee8884

7.5 Tbsp EEVO has 9.9 g omega 6.

Posted On 12/27/2020

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## proteinpowder

This is another great article from Dr. Mercola. I live reading his stuff. I think people should think twice before buying supermarket olive oil. It's not real olive oil. It's cut with all of the junk oils that are mentioned in the article. If you want to buy a good olive oil look for one that's in a dark glass bottle that also has the

date that the olives we're pressed. That's a good quality oil. I hope that Dr. Mercola gives some people including myself a better example of the right amount of omega 3 to 6 ratio in a meal. Example would a piece of wild salmon or a grass fed beef or any animal product with a nice side portion of cruciferous veggies topped with grass fed butter be a good example . I cook with tallow or coconut oil or grass fed butter. I'm just curious do you need to weight your food for the right amount of omegas. Does anyone have any examples of what that may look like on a plate. What I'm doing right now Is I'm basically eating some type of animal protein cooked either with tallow or butter and pairing with leafy greens vegetables or cruciferous vegetables topped with either a high quality olive oil . The real stuff or butter. I also have raw macadamia nuts that I make into a butter that I just like to have off of a spoon as a treat. Is this correct?? And some berries. Anyone??

Posted On 12/27/2020

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## jlo6080

I've followed the emerged/emerging science on PUFAs and quite frankly, it's terrifying. I've cut my PUFA consumption to <4% daily and it is TOUGH. Those pesky seed oils are in EVERYTHING. After 1 week, my sleep is better and my energy is improved. Placebo? Regardless, I'm not going back and will patiently wait for my 4 year anniversary to eliminate them from my body.. In addition to nixing diet PUFAs, I raided my beauty supplies. OMG. PUFA everything! I threw out a garbage bag full of high priced "organic" skin creams, potions and lotions. Sigh. How bad is this stuff on your skin - lotions or cosmetics? What about shampoo and conditioners (yes, pufas in there too)

Posted On 12/22/2020

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## Liz Smith

Twenty years ago at college for alternative therapy, a nutrition course contained all the modern information just in the syllabus. Seemed a bit odd as it said - Do not heat oils as most went toxic! One oil not to even touch was Canola oil. I only ever used Olive since then. I had a strange reaction in my body, to add just a few. I started to have migraines, was allergic to wheat and even further Wheat germ oil and many other things. Watching your video I see how I compare with the guy. I hate oils, only thing I can cope with is Olive or coconut. Im not vegetarian but I prefer not to eat much meat, coping with fish to some extent. Another thing I found was that I use a pendulum, I trust it absolutely. So took out my two bottles of oil and tested them. The famous bottle suggested it was not suitable to drink but the other bottle a German company said their olive oil was suitable. My son eats lots of food cooked in oil and his

migraines are horrendous, He and I have suffered with TIAs. Have got to sort our lives out. It takes me back to when they invented Margarine and that's was when heart problems came into being in 1920's. Like now when D3 is true, I've never had chest infections since I took it in 2004. I do have a problem sorting my life out and now I take blue green algae I do not burn. Phew, got a brain problem here but will sort it!

Posted On 12/14/2020

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## slight826

Another pendulum user! I use it for everything and trust it implicitly. But when I offer to teach friends they turn up their noses. Thank you for making me feel less of an oddball.

Posted On 12/27/2020

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## bul51293

CAN SOMEONE PLEASE LIST ALL SEED OILS? They kept mentioning avoiding seed oils - but NEVER in the video or article mentioned which those encompass? I heard soybean oil but what other oils are 'seed oils'? I also wanted to know so the best oils based on this would be Coconut oil or the use of butter or tallow, correct? I know the olive oil discussion - was questionable because of companies cutting it with other oils (so I will just avoid olive oil all together). Based on this report - would you say it would be ok/healthy to eat beef then 7 days a week (if you are going to avoid chicken/pork) etc? Thanks

Posted On 12/13/2020

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## shangrila114

Rapeseed (Canola), Grapeseed, Rice Bran, Soya Bean, Corn, Safflower, Sunflower etc.; in short, any oil compressed out of seed kernels as these are too high in the harmful, readily oxidized Omega 6 fats. Though not as high in LA as the others, Canola is yet chemically treated (as are the others) in the manufacturing process besides it also being a GM product. Some brands of Canola are hydrogenated as well to make the oil more stable, as are the other seed oils. Other classes of oils viz. palm oils and fruit oils are not chemically treated/altered or hydrogenated. Palm oils are coconut oil and palm (kernel) oil. Fruit oils are olive oil and avocado. I use coconut, olive and grass-fed butter for cooking

as these are the healthiest fats. (Careful with olive, of course - I use a heirloom product). Trust this answers your query.

Posted On 12/13/2020

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## epa1375

From the article above: "Just adding the omega-6 fats to the diet caused the mice to become diabetic. They became insulin resistant, leptin resistant, obese, and the differences are pretty stark between the fat mice and the skinny mice on the high carbohydrate rat diet ..."

"The high-PUFA diet caused a breakdown in the cardiolipin content in the mitochondria in their hearts. So just adding seed oils caused heart damage through a change in the cardiolipin composition."....."Atherosclerotic plaque is basically dead macrophages and other types of cells loaded with cholesterol and fat. This is why heart disease is blamed on dietary cholesterol." On the Article yesterday about Vitamin C....I had a discussion with Gui on a post here: epa1375 post's...The Cure for Heart Disease: [www.timescolonist.com/life/health/the-doctor-game-vitamin-c-lysine-can..](http://www.timescolonist.com/life/health/the-doctor-game-vitamin-c-lysine-can..) — Pauling filmed a video lecture in which he recommended that heart patients take between 2,000 and 6,000 mg of lysine daily with their vitamin C (more if serum Lp(a) is elevated). Neither vitamin C nor lysine have any known lethal dose.

Posted On 12/13/2020

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## epa1375

(continued) I opened one of Gui's link and added Dr. Pauling's protocol..... Gui's post: THE CURE FOR HEART DISEASE: CONDENSED --Here.. "LINUS PAULING PROTOCOL [asociacionaibb.com/linus-pauling-protocol](http://asociacionaibb.com/linus-pauling-protocol) ... Dr. Paulings' dosage recommendations are: Vitamin C as ascorbic acid—not other forms such as buffered vitamin C or Ester C®: 3-10 grams (gm; 3,000-10,000 mg) daily in divided doses for prevention; 10-18 gm daily for therapeutic treatment, to bowel tolerance. If diarrhea occurs, decrease the dosage slightly. Lysine: 2-3 gm daily for prevention; 5-6 gm for therapeutic treatment, and Proline: 250-500 mg daily for prevention; 2 gm daily for therapeutic treatment. The protocol is faster-acting when sugar (sucrose, fructose, etc.) is eliminated from the diet and omega-3 fatty acids are included."

Posted On 12/13/2020

## Guillermou

Thanks EPA. Very good advice,. Also. Cardiolipin, a phospholipid located at the level of the inner mitochondrial membrane, is known to be intimately involved in various mitochondrial bioenergetic processes, as well as in mitochondrial dependent apoptosis steps. Alterations to the structure of cardiolipin, the content and composition of the acyl chain have been associated with mitochondrial dysfunction in multiple tissues in various pathophysiological situations and aging. Rea melatonin to protect mitochondria from oxidative damage by preventing cardiolipin oxidation and this may explain, at least in part, the beneficial effect of this molecule on mitochondrial pathophysiology. In this review, the role of melatonin in preventing mitochondrial dysfunction and disease is discussed.

[onlinelibrary.wiley.com/doi/full/10.1111/j.1600-079X.2010.00759.x](https://onlinelibrary.wiley.com/doi/full/10.1111/j.1600-079X.2010.00759.x) (2010)

Cardiolipin (CL) interacts and is required for optimal activity of various proteins including enzyme complexes of the electron transport chain and ATP production and for its organization into supercomplexes. Furthermore, CL plays an important role in mitochondrial membrane morphology, stability and dynamics, in mitochondrial biogenesis and protein import, in mitophagy, and in different mitochondrial stages of the apoptotic process. It is conceivable that abnormalities in CL content, composition, and level of oxidation may adversely affect mitochondrial function and dynamics, with important implications in a variety of pathophysiological conditions and diseases.

Posted On 12/13/2020

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## epa1375

Yeah Gui...seems like it dovetails nicely with todays' topic. I was going to add Dr. Paulings' recipe/protocol to yesterdays' link but why not add it to this one?

Posted On 12/13/2020

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## Guillermou

Perfect!. peroxidation is considered an important event in mitochondrial dysfunction in cellular pathophysiology and also an early step in apoptotic cell death. Abnormalities in cardiolipin content, fatty acyl chain composition, and remodeling appear to be, at least in part, responsible for mitochondrial dysfunction associated with various pathophysiological conditions, including states of

hypohyperthyroidism, cardiac ischemia / reperfusion, insufficiency heart disease, diabetes, Barth's syndrome, as well as aging and age-related cardiovascular and neurodegenerative disorders.

[www.sciencedirect.com/.../S000527281300176X](http://www.sciencedirect.com/.../S000527281300176X) (2014) [www.mdpi.com/.../728](http://www.mdpi.com/.../728) (2019)

In this review, we summarize the emerging pro-apoptotic, pro, and anti-inflammatory functions of LC exposed to the cytosolic and how they are regulated by saturation and oxidation of the LC chain. We highlight how the unique structure of dimeric phospholipids confers unique properties to CL in regulating cell death and immune system proteins. such as the nucleotide-binding domain and the pyrin 3 protein containing leucine-rich repeats (NLRP3), caspases (Casp), and Toll-like receptor 4 (TLR4). [www.sciencedirect.com/.../S0962892420301732](http://www.sciencedirect.com/.../S0962892420301732) (2020)

Posted On 12/13/2020

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## Luvvy

Hi epa and Gui, very interesting posts. As you mention, 'The high-PUFA diet .. just adding seed oils caused heart damage through a change in the cardiolipin composition.' This change in composition in turn can have deleterious effects on your overall health. From a study done at University of Copenhagen, it was learned that large amounts of cardiolipin produced in the fat cells' mitochondria result in stronger calorie-burning, while low amounts of the molecule are related to obesity and type 2 diabetes. Cardiolipin functions almost like an 'on-off switch' for the activity of brown fat, the unique type of fat tissue that burns calories rather than stores them.

The research has "revealed for the first time that a single fat molecule in the powerhouse of fat cells can have a profound influence on the health of the whole body. The researchers now hope to uncover ways to boost cardiolipin in fat cells to increase insulin sensitivity and combat metabolic disease." ... Makes sense that avoiding a high-PUFA diet would be one likely way to boost the levels of this important molecule. 'Lack of cardiolipin linked to obesity and type 2 diabetes': [www.seco.org/Lack-of-cardiolipin-linked-to-obesity-and-type-2-diabetes..](http://www.seco.org/Lack-of-cardiolipin-linked-to-obesity-and-type-2-diabetes..)

Posted On 12/13/2020

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## epa1375

Luvvy.... Good Link. "This work has revealed for the first time that a single fat molecule (Cardiolipin) in the powerhouse of fat cells can have a profound influence on the health of the whole body. The

researchers now hope to uncover ways to boost cardioplipin in fat cells to increase insulin sensitivity and combat metabolic disease."

Posted On 12/13/2020

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### **sch4290**

A million thanks for clarifying the difference between LA and CLA.I had been trying to get info on that unsuccessfully for months.I had stopped using CLA after reading an article on the ills of LA.Now I can start again as it seems to dramatically reduce "belly fat".My waistline thanks you for the information.Great article.

Posted On 12/13/2020

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### **mirandola**

I highly recommend reading Paul Pitchford's book, Healing with Whole Foods, which has a really good chapter on fats and oils.

Posted On 12/13/2020

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### **ongust**

Thank you for this informative text. I would like to ask what you think about the animal products which are fed with omega 6 rich feed which are directly harmful trans fats.

Posted On 12/13/2020

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### **Vladimira**

In a previous article Dr. Mercola wrote that the animals that have more than one stomach like beef are not so dangerous, while animals with only one stomach like pork and chicken are very dangerous. This is if they are conventionally raised. If the animals are raised healthfully then it does not matter.

Posted On 12/13/2020

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### **mirandola**

At the butcher's shop you can see the difference in color between grass fed and grain fed meats. The difference is quite notable. This tells the whole story, right there.

Posted On 12/13/2020

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### **anamcara**

So is there a problem supplementing with Evening Primrose Oil, a GLA if I recall?

Posted On 11/13/2021

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### **egl3084**

Dr. Mercola....I have been a faithful reader of you for a while, but the Terms and Initials of things you use are very confusing to me.

Please think about this, I as well as lots of your readers are not educated as you are in all these terms, Initials, etc..because after I read...I don;t understand what I have read....Like today.....I read every word, and still do not know exactly what I should and should not eat....YOU speak of LA..but don't explain what is, in our terminology.. and don't tell us what diet we should use... Hope you understand what I am saying...Thank you,....

Posted On 05/16/2021

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### **deb9289**

This video is the single best video I have ever watched. It's absolutely mind-blowing information presented here. I listened four or five times and sent it to all my friends and loved ones. As soon as I heard the name Ancel Keyes, I just knew I'd connect him to the Rockefeller Foundation, and sure enough. They funded him. Keyes is also very connected to the Human Betterment Society, a eugenics

organization. Those bits took me all of five minutes to find. After awhile you just know that the Great Tax Exempt Foundations will be behind all nefarious Twentieth Century American sabotage. The information was always something I assumed but never had the evidence to back-up. Now I have it. I never ever ate these oils and avoided junk food solely because of these and the GM Roundup-Ready, BT HFCS, which I imagine is the second most harmful thing after the seed oils.

Posted On 05/06/2021

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### **dauidmshore**

Somewhere Mercola had posted how to remove excess linoleic acid from olive oil but now I can't find it. Anyone have a link? I think it involved refrigeration or freezing. Thanks.

Posted On 01/30/2021

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### **LLP**

Can anyone explain why GLA from evening primrose or borage is so highly recommended (including by Mercola as an addition to one of us supplements) as these are close to 70% linoleic acid.

Posted On 01/13/2021

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### **Dr. Mercola**

It is the dose. GLA is helpful but it is only a few hundred mg. LA is fine and needed but must not exceed 2% of total daily calories as detailed in the article. Typically a few hundred mgs of GLA will not raise LA content about the 2% level if other food choices are low in LA.

Posted On 01/13/2021

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### **cwc0000**

Where is there a chart or something to tell us the levels of LA in nuts, olive oil, etc? We are supposed to stop eating nuts and olive oil if taking the GLA? This is a little ridiculous or nuts... we were told to eat olive oil in however much wanted, now to basically almost remove it .

Posted On 05/30/2021

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## Aeon777

Some of the information in this article is very important, but it is difficult to find common sense advice ~ if a person is not shopping at a local farm or organic grocery regularly ~ what regular cooking oils are healthy? Nuts are healthy, (whole), but the oils are not healthy as extracted, from what I understand.

How does CBD oil stack up then? It is helpful for many ailments, some say, but according to this logic, it might not be healthy overall, though it is purported to fight many inflammatory conditions. Ghee is very obscure and expensive. A varied diet seems to be the best idea, but still, in terms of cooking vegetables and meats or fish ~ what is recommended? The EPA-DHA supplements also become rancid over time ~ and they are not palatable for many. Just curious, from a practical standpoint, what oils should one regularly cook with? Is regular butter okay? Thanks.

Posted On 01/03/2021

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## Ringer2

Regarding my post on 12/27/2020 at 6:44:11 AM, please know that I used the omega-6 to omega-3 ratio which is the opposite of the omega-3 to omega-6 ratio. We need to prevent confusion between the two ratios. Wild salmon and other oily seafood usually have a low omega-6 to omega-3 ratio, meaning that there's lower quantities of omega-6 as compared to omega-3. We can look forward to Dr. Mercola's next book which is co-authored with Dr. Chris A. Knobbe, M.D., who wrote Ancestral Dietary Strategy to Prevent and Treat Macular Degeneration, an excellent book.

Posted On 12/27/2020

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## Lenoni

And where does coconut oil fit into the healthy fats equation

Posted On 12/27/2020

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**lee8884**

Can LA get oxidized inside our body after eating?

Posted On 12/27/2020

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**lee8884**

Are LA in all commercial roasted nuts oxidized?

Posted On 12/27/2020

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**lee8884**

Is there any way to detox LA?

Water Fasting? How many hours?

Low EMF sauna? What degree? How long?

Exercise?

Supplements with antioxidants and polyphenometals?

Posted On 12/27/2020

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**lee8884**

It is extremely helpful if we are also informed under what conditions LA is oxidized.

High temperature? What degree?

Sun exposure? How long?

Long self life? How many months?

Combination with other minerals? Iron?

Posted On 12/27/2020

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## AS555555

So would consuming a few tablespoons of freshly ground flaxseed every day be harmful based on linoleic acid in flax?

Posted On 12/27/2020

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## Ringer2

Regarding the omega-6 to omega-3 ratio in plant foods, be careful that you don't end up in green-smoothie hell. Please visit, learn to use, and bookmark [lowoxalate.info](http://lowoxalate.info). I get severe pain from consumption of any high oxalate food, such as spinach or chard. Please read *The Carnivore Code* for many explanations of the harms which can come to susceptible people who eat most plant foods. I need some low-sugar low-oxalate berries or lemons or pollen to prevent nosebleeds. Small quantities are enough to prevent capillary fragility while staying in ketosis or when keto cycling. Like many people, I was a vegetarian, even vegan, but failing health with increasing pains prompted recognition of the value of meat and marrow bones from animals, especially ruminants, which have eaten only their natural diet, providing therefore beneficial nutrients to me without pain-provoking plant substances of many types. Some people say eat seafood, but there's a heavy burden of pollution, and the omega-6 to omega-3 ratio in wild salmon is so low it gives me nosebleeds. How about microplastics? LOL!!!

Posted On 12/27/2020

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## proteinpowder

Wild salmon is not that low in omega 3 . That's actually good to have a few times a week. Unless someone actually has the latest facts. I love Swiss chard and spinach . I can't eat to much of that neither

Posted On 12/27/2020

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### **snburdicksbcglobal.net**

Hi, Great article!! I have struggle with very high inflammation in my body. Doctors tried to help me with steroids and other meds nothing helped. It started in my 30's and now I am 50. A few years ago I started the Paleo Diet and had good improvement. But what a huge improvement when I stop the Paleo snacks with seed oils. My question is would lecithin supplements from sunflower oil, or even phospholipids from Liposomal supplements be something to be concerned about. Thank you, Nancy

Posted On 12/15/2020

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### **Kevin131**

Boom, awesome! You sirs, are correct.

Posted On 12/14/2020

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### **AnnAnn**

Many comments here about benefits of beef, bcs it comes from a ruminant animal, but no mention of bison-elk-venison, etc., also from ruminant animals. Wonder why not? It used to be that bison/elk/venison was not widely available, but I now find it frozen in all health or natural food stores.

Posted On 12/13/2020

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### **busygalincal**

Be careful. Stores are only allowed to sell farm raised bison, venison and elk. Only hunters get true "wild" animals. Most of those farm animals are fed the same diet as commercially raised beef.....corn, soy, herbicide and pesticide sprayed hay. Know the farm it came from.

Posted On 12/28/2020

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## ASD quotexpert momquot

Blackwing Meats sells bison that is grass-fed and alfalfa-finished -- highly superior to a ranch's bison meat (local in my area of CA). Blackwing is on the web -- good website -- look them up. Also sell elk, venison, ostrich, beef -- a wide variety of fine meats and I'm impressed with their consistent quality. I've been their customer for about 18 years now...have the frozen meats shipped by air cargo and the quality is worth the cost.

Posted On 02/24/2021

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