MERCOLA
Take Control of Your Health

## Guillermou

As Dr. Mercola has reported, the methionine/glycine ratio is essential. Inflammation is a common factor in cancer, cardiovascular, metabolic and neurodegenerative diseases, as well as other inflammatory diseases. Glycine administration modulates dietary amino acid levels especially methionine, which may increase healthy lifespan and provide a basis for further investigation of the effects of diet on aging and diseases of old age. Glycine can send a "slow down" signal to the brain, likely contributing to major depression, anxiety and other mood disorders in some people, scientists at the UF Scripps Wertheim Institute for Biomedical Innovation and Technology found.

Glycine acts as a precursor to several key metabolites such as creatine, glutathione, heme, purines and porphyrins. Dietary supplementation of adequate doses of glycine is effective in the treatment of metabolic disorders in patients with cardiovascular, metabolic, neurodegenerative and inflammatory diseases and cancer. Glycine also has the property of improving sleep quality and neurological functions. Plasma levels of glycine in human populations, although may be adequate for the biochemical functions of glycine, including protein synthesis, may not be sufficient for the cellular physiological function of glycine in membrane voltage stabilization, cell activation .

Glycine comprises one-third of the molar fraction of collagen, and it is postulated that such chronic diseases have been on the rise because the consumption of glycine-rich bones and connective tissues has decreased in recent decades. Observational studies, a clinical trial in Mexico City a decade ago reported the reversal of type 2 diabetes with the consumption of 15 g/day of supplemental glycine for 90 days. Glycine decreases proinflammatory cytokines and increases interferon- in patients with type 2 diabetes.

Posted On 03/24/2024

## Guillermou

Type 2 diabetes (T2D) and Alzheimer's disease (AD) are two global epidemics that share several metabolic defects, such as insulin resistance, altered glucose metabolism, and mitochondrial defects. Importantly, strong evidence demonstrates that type 2 diabetes significantly increases the risk of cognitive decline and dementia, particularly AD. The accumulation of damaged mitochondria in diabetes is responsible for increased levels of oxidative stress and inadequate energy production, resulting in decreased neurotransmission and ultimately cognitive impairment.

Glycine has previously unrecognized neurotherapeutic effects. In this study, we examined the mechanism underlying the neuroprotective effect of glycine (gly) against neuroapoptosis, neuroinflammation, synaptic dysfunction, and memory impairment resulting from elevation of reactive oxygen species. A study reports that Gly is a safe and promising neurotherapeutic candidate that could be used for age-related neurodegenerative diseases. Another study reports that DHA significantly reduced A deposition in the brain and inhibited nerve fiber production and glycine levels, inhibiting cognitive decline in Alzheimer's.

www.hindawi.com/.../1716701 (2017) onlinelibrary.wiley.com/.../acel.12953 (2019) www.healthline.com/.../glycine.----- neurosciencenews.com/major-depression-glycine-22905 (2023) www.sciencedirect.com/.../S2213231722000854 (2022).-- www.mdpi.com/.../154 (2022) scholar.google.es/scholar?as_ylo=2023&q=Glycine+and+diabetes&h.. (2023) link.springer.com/.../s12974-020-01989-w (2020).--- www.frontiersin.org/.../full (2022).--- www.sciencedirect.com/.../S0959438823000193 (2023) link.springer.com/.../s40618-021-01720-3 (2022).---

Posted On 03/24/2024

### juststeve

Hey Gui, to make a long story short, as a personal note, if a walk is not achieved one way or another for at least a half hour then it is a low battery situation all day long. Get the walk in and then the so many things Doc, Staff and posters offer here work the very best. Outdoors, daylight, fresh air, interaction and observing the many types and kinds of life stirs up the intuition and their many connections. On a personal level it is a foundation for what Doc is describing as Joy. Without a joyous life, who cares if one were to be a mind trapped to live in a bio-mechanical Robot body indefinitely.

Posted On 03/24/2024

---

### stoneharbor

Yes, Gui, glycine is a fantastic supplement. I make bone broth which usually turns out to consist of about 25-30% Glycine, but I also take about a tablespoon full of Glycine as a supplement daily and have since early 2020. Though Glycine is wonderful in many ways, there are other ways that we can vastly remove inoperative mitochondria to reduce our oxidative stress. As you said: "The accumulation of damaged mitochondria in diabetes is responsible for increased levels of oxidative stress and inadequate energy production, resulting in decreased neurotransmission and ultimately cognitive impairment." I have found research that proves that eating a healthy diet can do a lot more for our health if we just allow the body to rest significantly between meals.

This allows Mitochondrial Uncoupling, which turns the mitochondria into "housekeepers" and "multipliers" instead of just "ATP energy producers". As the saying goes, "all work and no play makes Jack a dull boy" or something like that. Uncoupled Mitochondria can clean up the whole energy generation process, overnight!

The next morning, oxidative stress is reduced and there are more mitochondria than ever to take glucose and turn it into energy, making an easier job for each mitochondrion individually, as the more of them now share the labor. "For example, upon fasting SIRT1 deacetylates PGC-1 to induce mitochondrial gene-expression and biogenesis in skeletal muscles.7 In addition, SIRT1 activity stimulates autophagy, whereas SIRT1 deficiency causes accumulation of aberrant mitochondria." The quote is from: www.nature.com/.../cdd201586 More on Time Restricted Eating (a form of short fasting): academic.oup.com/.../6371193

Posted On 03/24/2024

---

## Guillermou

A great target Just, “Without a joyous life, who cares if one were to be a mind trapped to live in a bio-mechanical Robot body indefinitely.” The effects of happiness on the body are multiple: mood improves, the functions of the immune system are enhanced, tranquility increases and anxiety and stress decrease, pain is reduced, heart rate drops, and aging is even delayed. and helps prevent diseases such as Parkinson's. That is, happiness is key to both physical and emotional health. “The physical, mental and emotional dimensions of a person are three realities that can be distinguished, but cannot be separated”, given that “our health, well-being and happiness depend to a large extent on the care we take of our body, our mind and of our soul.” This was explained by the doctor and popularizer Mario Alonso Puig, in a talk about the importance of emotional health, Dopamine is known worldwide for being one of the molecules of happiness.

It is one of the tools that Cupid uses to fall in love. It also provides pleasure and relaxation. It intervenes in memory and learning processes because it regulates the duration of memories.

That is, it decides whether certain information can be stored for a while or deleted immediately. Learning that contains an emotional charge lasts longer, because learning causes pleasure and the information is retained for longer. So that "the letter enters with blood" is of no use. This is what happens with people with a predilection for "strong emotions." Certain regions of their brain have a greater amount of dopamine, so they are more "unconscious" in their actions. On the contrary, low levels of dopamine have been linked to social phobia.

Posted On 03/24/2024

## Guillermou

Low dopamine production causes anhedonia, one of the most characteristic symptoms of depression. On the contrary, high levels of dopamine in the prefrontal cortex make people more motivated to meet more demanding goals. Dopamine is also linked to many psychiatric and neurological diseases. When we have an excess of dopamine, disorders such as schizophrenia or bipolar disorder can appear. If the amount of dopamine decreases, major depressive disorder, attention deficit hyperactivity disorder, Huntington's disease, and neurodegeneration appear. pubmed.ncbi.nlm.nih.gov/19344298 (2009).— www.tandfonline.com/.../ern.09.1 (2014).-- www.scielo.br/.../gXFk9Mqv9Wf8HvwwC4QVSNw (2015).-- nitherapy.com/h-is-for-happiness-and-brain-health (2023).— link.springer.com/.../978-981-99-3493-5_9 (2023).--- www.mdpi.com/.../2469 (2023).-- link.springer.com/.../978-3-031-36712-0_5 (2023).--

Posted On 03/24/2024

## Guillermou

Very true stoneharbor. Mitochondrial dysfunction is related to the origin of many chronic and degenerative diseases and its treatment is the basis for avoiding insulin resistance. In addition to energy production, mitochondria perform multiple essential functions that influence gene expression within the cell nucleus and physiological regulation throughout the organism. In particular, mitochondria are the main producers of reactive oxygen species (ROS) within the cell, which perform signaling and other life-sustaining functions at low levels, but can cause oxidative stress when they overcome defense mechanisms.

antioxidants, play a key role in neurodegenerative processes and in the pathophysiology of stress. Stress and aging, namely cellular metabolic activity, DNA damage, telomere length, cellular senescence and inflammatory response patterns. A decrease in systemic NAD+ levels is a crucial factor in the deterioration of the organism in aging. This is further supported by the overall therapeutic effect of NAD+ boosts in several animal models of common age-related conditions, ranging from diabetes and obesity, nonalcoholic fatty liver disease, kidney injury, impaired renal muscle function.

and sarcopenia, glaucoma, ischemia-reperfusion injury, vascular dysfunction, cognitive impairment www.annualreviews.org/doi/abs/10.1146/annurev-publhealth-040119-094239 (2020).---- www.scie.ncedirect.com/.../S1568163721002543 (2022).--- karger.com/.../835327 (2022).-- www.sciencedirect.com/.../S0889159122001477 (2022) www.nature.com/.../s43587-022-00191-2 (2022).--- www.sciencedirect.com/.../S0959438822001696 (2023)

Posted On 03/24/2024

---

## Guillermou

Additional support for mitochondrial function includes acetyl-L-carnitine, nicotinamide, Q10, pyrroloquinoline quinone, vitamin C, choline, NADH, -lipoic acid, -ketoglutaric acid, resveratrol, N-acetylcysteine, magnesium, and a multivitamin and quality mineral. In the following link more references: 33 NATURAL WAYS TO IMPROVE MITOCHONDRIAL FUNCTION selfhacked.com/blog/natural-ways-to-improve-mitochondrial-function/ (2022). .---

Posted On 03/24/2024

---

### LongTallTexan

and speaking of brainwashing there is none greater than the climate change scam - to get a real perspective on this topic lease watch the recently released movie - Climate the Movie www.climatethemovie.net/home - you will be glad you did and no longer live in the state of anxiety the climate alarmists want us in

Posted On 03/24/2024

---

### davidwalden

Dear Dr. Mercola, This is one of the very best articles, interviews you have ever produced. THANK YOU SO MUCH! May I encourage you to slow down your delivery on some of those complicated medical terms? I'd like to hear them clearly and intelligibly the first time. Of course the pdf is the place to go when I miss things. Much appreciated. Keep up the good and very much needed and appreciated excellent work!

Posted On 03/24/2024

---

### Swilliam

Yes. Either enunciate the medical terms clearly or don't use them at all.

Posted On 03/29/2024

---

## Almond

I lost my vision due to prolonged exposure to intense fluorescent lighting in close proximity to my energy field. It would take too much time to share the details of my recovery which took about 6 months. Fortunately, the damage was not so extensive that it could not yet be reversed. I was fortunate to have the support of some of the most brilliant people who ever lived--not all were physicians. (Just because "the experts" don't know doesn't mean no one knows.) At times, like this, I will withdraw and find a quiet place so I can hear myself think and listen to my intuition which has never failed me.

My eyes were so painful and, with the loss of vision, my other forms of sensory perception also became disordered, making it difficult to do simple things. I saw a specialist. All she did was give me dark glasses to make me more comfortable. I found this to be very uncomfortable and annoying. I returned the glasses to her, demanded and actually got a refund. I told her that if that was all she had to offer, I did not need it.

I recall how much light hurt my eyes due to inflammation of the optic nerve due to resonance with the frequency of the fluorescent lighting. Yet, at the same time, I understood light was as important as supplements. I began my road to recovery by first sitting in the shade under a tree for 20-30 minutes at a time and gradually increasing my exposure. I worked with the dean of a medical school and also a retired military officer who had trained fighter pilots in WWII, many who had wanted to fight, but would have been limited by poor vision.

I still had some of my visual physical therapy toys and exercises from previous years when I was diagnosed with many visual problems. I was more fortunate than most. Some persons who lost their vision due to fluorescent lighting tried to resume their employment under FL after they made some progress at recovery, but, then became completely blind due to continued exposure. Natural light is essential for life/health

Posted On 03/24/2024

## Guillermou

Congratulations Almond for restoring visual function damaged by prolonged exposure to intense fluorescent lighting. There is increasing evidence that amyloid beta protein (A) and tau-related lesions in the retina are associated with Alzheimer's disease (AD). Deposits of hyperphosphorylated A and (p)-tau have been described in the retina and were associated with small amyloid spots visualized by in vivo imaging techniques, as well as with retinal degeneration. Kendra Farrow, research and training associate at Mississippi State University's National Research and Training Center (NRTC), discussed visual deficits in an AFA webinar, "Understanding Vision Impairments and How to Help." “Many people with Alzheimer's disease may have a critical visual impairment in which there may be nothing physically wrong with their eyes, but the brain does not fully process visual information.

The brain can't interpret what it sees,” said Farrow, who is also legally blind. Here are visual impairments that caregivers should be aware of: -----1.- PERIPHERAL FIELD LOSS: “It's like looking through a tube.” This deficit can also contribute to the inability to detect movement.

-----2.- LOSS OF CONTRAST SENSITIVITY: People may experience difficulty seeing objects of the same color (for example, a completely white bathroom or a black print on a red background). -------3.- DIFFICULTY WITH DEPTH PERCEPTION: People will find it more difficult to judge how far away an object is, understand changes in elevations, and differentiate between three-dimensional and flat objects, so the person may feel and look unbalanced.

Posted On 03/24/2024

### Guillermou

Many people with dementia will also live with hearing loss. It is common for people to develop gradual hearing loss as they age. People with hearing loss are also more likely to develop dementia, although we currently do not know why. Living with both conditions can present challenges, but there are many things that can help people live well with both hearing loss and dementia. alz-journals.onlinelibrary.wiley.com/.../alz.13529 (2023).----- www.nia.nih.gov/news/vision-impairment-associated-many-100000-u-s-deme.. (2022).--- www.aao.org/eye-health/news/common-conditions-increase-chance-of-alzhe.. ,.... www.aao.org/eye-health/diseases/alzheimers-disease-dementia-eye .---- alzfdn.org/dont-overlook-alzheimers-affect-on-eyesight ,.... www.alzheimers.org.uk/about-dementia/symptoms-and-diagnosis/sight-hear.. ,... alz-journals.onlinelibrary.wiley.com/.../15525279 ,...

Posted On 03/24/2024

---

### juststeve

Fluorescent lighting makes my eyes itch, burn and want to tear them out of my head. Reading is near impossible, blurred, fuzzy. It is also fatigue feeding. Take fine print outdoors and in the full sun no problems reading.

Posted On 03/24/2024

---

### MarKe

Something similar happened to my father, many years ago, in the post office. He damaged his vision he said from the glare of the light hitting the cellophane on envelopes. He wore dark glasses for the rest of his life.

Posted On 03/24/2024

---

### ash3743

I have heard that LED is even worse for the eyes. I refrain from driving at night because of all the horrific LED headlights and also keep incandescents in our home, but they are getting harder and harder to find.

Posted On 03/24/2024

---

### Almond

Ash and all... Incandescent light bulbs were outlawed. I think stores can still sell any they hold in inventory until they are gone? I got crazy and bought quite a few, so hope they have a good shelf life. If you can no longer get incandescent bulbs, go to a lighting or hardware store and ask for "rough use" lightbulbs. These are incandescents that have thicker glass. They are more expensive, but last much longer. These are still allowed because some kinds of equipment (esp. military) will not work with fluorescent bulbs. (That is a fine situation, huh? Needing to order our light bulbs from China!) The rough use light bulbs should fit the socket, but the bulb may be a bit longer, so you will need to choose your light fixture accordingly. Also, if you are building a new house, consider your wiring. Many lighting and energy developments are not about the health and well-being of the individual, but about $profit$ and managing people who must conform.

Posted On 03/24/2024

---

**stoneharbor**

This is a fantastic interview in which Dr. Mercola is allowed to talk on at least a dozen aspects of health that focus on how humans get energy, from the sun, from food, and, in detail, from our mitochondria as they produce energy from molecules such as glucose, fatty acids, and ketones. As I listened to the ways we maintain our health from both UV and infra-red wavelengths of sunlight, I realized that a third wavelength of sunlight, the visible spectrum is vitally important to our health, as it is the driver of the circadian rhythm that we all recognize as important to our ability to sleep and rebuild our entire energy system every 24 hours. What we may not realize is that visible light is more than what we see with our rods and cones tied to visual areas in the brain.

Discovered only in about 2003, visible light also affect entirely different receptors in the eye: the retinal ganglion cell. "The dendritic networks of these photosensitive retinal ganglion cells cover large areas of retina with peak densities in the parafoveal retina....These photosensitive retinal ganglion cells are directly connected to (1) the suprachiasmatic nucleus for circadian photoentrainment, (2) the lateral geniculate body possibly contributing to conscious visual perception,23 and (3) the olivary pretectal nucleus to drive the pupillary light reflex." www.nature.com/.../6702597 Here's the neuroanatomy: "...the components of circadian melatonin rhythm production are distributed in three different areas, all in the diencephalon: the photoreceptors are in the retina, the endogenous oscillator (the internal clock' which sets the cycle length) in the suprachiasmatic nucleus [SCN] of the hypothalamus, and the neuroendocrine effector in the pineal gland which produces melatonin in a rhythmic pattern." It's important that, if you want your pineal gland to start the melatonin release in the evening, it's Morning Sunlight that sets the time, not evening darkness

Posted On 03/24/2024

**stoneharbor**

continued: Yes, seemingly in the evening, "With the onset of darkness, these sympathetic fibers release noradrenalin to initiate the intracellular release of stored serotonin and NAT" which then produces melatonin in a rhythmic pattern. However, it isn't darkness that does this, The 24 hour cycle begins always with exposure of the eye to bright light, as is always possible, outside, when sunlight bathes the Earth. If you don't wake, rise, and get some bright light into your eyes, you won't get this circadian release of Melatonin until about 12 hours later, even that happens to be midnight, or 3 AM.

So circulating Melatonin is not at the hands of darkness, only at the hands of each of us as to when we start our day, and ideally get some exposure to bright sunlight, and not just for a moment or two, but for an extended period of light, simulating these special receptors, the retinal ganglion cells, that communicate directly to the SCN to start the process. Russeel Reiter, who has researched Melatonin most of his life focuses on this in his book "Melatonin".

The cells of the SCN transmit neural messages to the Pineal gland on a regular basis, "12 hours off, 12 hours on." The cycle is always initiated by the presence of continual, strong light. The SCN is the clock, and Metatonin, released via the Pineal gland functions as the hands of the clock that can reach throughout the body via circulation. If you want your parasympathetic nervous system to do proper repairs and encourage other sleep processes, you absolutely must attend to when each day you receive your first dose of continual light.

And this is also why you want to avoid re-exposure to bright light, especially blue light, in your evenings or during the night. Though many focus on Melatonin produced in this way, it's important to realize that Melatonin is far more prevalent in your body's cells, and there acts as an antioxidant produced locally and has little intermixture with circulating, circadian Melatonin

Posted On 03/24/2024

### Guillermou

Interesting aspects, stoneharbor. There are anatomical, physiological and embryological similarities between the retina and the brain, in terms of cell types, vasculature and immune responses. The retina of the eye is synaptically connected to the visual cortex, establishing physiological connections between the eye and the brain. The retina has been considered a unique window to altered brain structure/function and brain disorders, such as Alzheimer's disease, Parkinson's disease, stroke, cerebral small vessel disease, schizophrenia, cognitive decline, and many others. . For example, it has been widely studied that retinal neurodegeneration can be used as an easily accessible biomarker to identify individuals at high risk of developing Alzheimer's disease or those with preclinical Alzheimer's disease.

This study presents a systematic analysis of the inter-organ genetic architecture of eye-brain connections using retinal and brain imaging endophenotypes. Novel phenotypic and genetic links were identified between retinal imaging biomarkers and multimodal magnetic resonance imaging (MRI)-derived measures of brain structure and function, many of which were involved in visual pathways, including the visual cortex. primary. In 65 genomic regions, retinal imaging biomarkers shared genetic influences with brain diseases and complex traits, showing more genetic overlap with brain MRI traits.

Mendelian randomization suggests that retinal structures have bidirectional genetic causal links to neurological and neuropsychiatric disorders, such as Alzheimer's disease. Overall, cross-organ imaging genetics reveals a genetic basis for eye-brain connections, suggesting that retinal imaging may elucidate genetic risk factors for brain disorders and disease-related changes in intracranial structure and function. . www.ncbi.nlm.nih.gov/.../PMC9949187 (2023).--

Posted On 03/24/2024

---

### ambala7

Thank you Dr Mercola and Dr Axe- LOVED this so much, so inspiring!

Posted On 03/24/2024

---

### forbiddenhealing

Metals like mercury, cadmium, aluminum, lead , etc. reduce mental function, can be tested for via hair analysis and can be detoxed using Megadose Vit C/baking soda and chlorella/charcoal/clay. Sun/sauna/sulfates speed sluggish circulation to supply more O2 and remove toxins. Bacterial/fungal toxins generated in gut or dental infections should be addressed.....Connective tissues/60% of body; skin, bones, vessels, joints, fascia require ample doses of Vit C along with collagen derived from bone/cartilage. Pig feet/tail/neck bones are rich sources.

Posted On 03/24/2024

---

### Guillermou

Good references Randall. The studies discussed in this review largely support the view that essential micronutrients could at least help slow the progression of AD through various mechanisms. Many studies suggest that certain vitamins and minerals with high antioxidant and anti-inflammatory properties, such as vitamin C, E, B12 and selenium, can improve cognitive performance by effectively reducing the generation of ROS and pro-inflammatory mediators such as the NLRP3-inflammasome complex and its subsequent signaling in the brain, thus preserving neuronal health. Other micronutrients such as vitamins A, K, and magnesium, which have the ability to directly affect APP cleavage, A synthesis and degradation, and transport A peptides or their fibrillar forms by modulating BBB permeability, could help.

alleviate cognitive impairment during disease progression, while vitamins such as niacin (vitamin B3) and pyridoxine (vitamin B6) may contribute to neuroprotection against various insults by maintaining axonal stability, promoting DNA repair and improving the synthesis/release of neurotransmitters. Thiamine deficiency aggravated amyloid plaque pathology located in the cortex, hippocampus, and thalamus of these mice. TD also led to elevated levels of A42, C-terminal fragment cleaved by -secretase (-CTF99) and -site APP cleavage enzyme 1 protein (BACE1 or -secretase 1), which was associated with altered oxidative metabolism and enhanced oxidation. www.mdpi.com/.../415 (2023).---

Posted On 03/24/2024

---

### stoneharbor

Yes, thanks for homing in on the Vitamin C / collagen relationship in detoxification, forbidden! in fact, I am a near-chronic user of bone broth, but still, the only supplements I take in megadoses (lie a spoon full each) daily are Sodium Ascorbate and Glycine, a primary component of collagen from bones and connective tissue. I certainly don't want to run low on either of these molecules. I don't eat meat for a primary source of protein, however, for those who do, and especially if they eat mostly muscle meat, they should be aware that a continual diet of enough muscle meat to provide all protein needs will always give a dangerous, toxic load of the essential amino acid Methionine.

Yes, it's essential, but will be toxic if you are always eating meat from muscle tissue. And the remedy is, guess what? Either bone broth, or other sources of collagen as in broth made from connective tissue. Or even just Glycine is a solution, as it is the one amino acid which, of it's many functions, can eliminate toxic levels of Methionine from your body. Glycine itself is never toxic, so it's safe to ingest in large quantities. 180degreehealth.com/glycine-methionine-balance-revisited-matter-timing.. And also, this is interesting on Glycine: www.theguthealthprotocol.com/wp/glycine-the-most-important-inflammatio..

Posted On 03/24/2024

---

### Martix

Dear Capt, Have been using Emeramide or NBMI for heavy metal, an awesome product...Just saying

Posted On 03/24/2024

---

### forbiddenhealing

Martix, New idea, sounds interesting/not cheap...Vit C $11./lb/Baking soda .89C/lb..worked for me..proven by hair analysis.

Posted On 03/24/2024

---

### cjagen009

Thanks Dr Mercola and Dr Axe for this uplifting and inspirational article. A positive message is what most people are craving today, especially since we are being fed a daily diet of division, hatred and political nonsense. Peace, serenity and connectedness with a higher power are essential.

Posted On 03/24/2024

---

### tabbies_partyOf5

The links were fixed for those Download Interview Transcript articles!

Posted On 03/25/2024

---

### DumberFarmer

A couple more points I would like to add if you do not want Alzheimer's disease stay away from statins and eat a lot of eggs if cancer is your concern simply get dewormed and see for yourself with the root cause of cancer is Then of course, work to get your body more alkaline and stay away the best you can from processed foods not rocket science

Posted On 03/24/2024

---

## DumberFarmer

This article has much good information. Would like to add that to get vitamin D from the sun. It is converted in your skin through cholesterol sulfate so maintaining good cholesterol levels as in not low cholesterol levels not only is healthy for your brain, but will also help you capitalize on all the benefits From the sun Also to maintain a healthy gut micro biome. The most foundational supplement to provide an environment for beneficial biology is Humic and Fulvic acids In addition to collagen other supplements that will enhance your brain health not to mention your heart health and your overall bodily function Are whole food Vitamin C, iodine, tumeric, silica, boron, and coconut oil.

I cannot stress how important and essential each of these are for your overall health, but especially your brain health Let's not forget that the key to energy production from your mitochondria is starts with bio available copper to get your iron and oxygen in the right form and retinal vitamin A, which is sourced from animal products to carry the key enzymes from the liver to the mitochondria To get more thorough explanation of that process search root cause protocol

Posted On 03/24/2024

---

## Fisher153

Dr. Mercola has stressed the importance of minimizing fluoride in diet for years, and minimizing fluoride is critical to maintaining the "body's ability to create cellular energy". I am very surprised it did not make the list, but think it deserves mention. ALL fluoride binds preferentially to calcium and systemically interferes in cellular energy (disrupts Na-K-ATPase, an enzyme essential to energy production). PFAS, a highly fluorinated molecule used in many household products has been a recent headline, but its impact on the body pales in comparison to the much more significant toxic effects from the intentional, immoral, greatly harmful, and technically illegal (per FDCA) practice of public water fluoridation. Like most public crimes, industry-capture of our federal agencies has allowed a hazardous waste from the fertilizer industry to be re-marketed as a "health" additive to the drinking water we spent money and energy to purify. Govt fraud, waste, and abuse.

Posted On 03/26/2024

---

### zumbacjg

I am indebted to Dr. Mercola for making me aware of the importance of Vit. D3 & for making me run from seed oils (rancid lineolic acid). During the dark days of COVID, Dr. Mercola emphasized the importance of having high levels of Vit. D in one's serum. It turned out the sickest people with COVID-19 in hospitals had low levels of Vit. D. If the FDA or CDC comes chasing after you (as it did for Dr. Mercola) for spreading misinformation, such as the importance of Vit. D or being metabolically flexible, you know you've hit the pharmaceutical industry in the gut & exposed important health facts, not misinformation.

I watched a great video with Udo Erasmus. He talked about how the process of manufacturing vegetable/seed oils with extreme heat, exposure to light & oxygen damages the oil, making it unfit to digest. I'll be watching Dr. Mercola's site for more information on how to measure mitochondria health & activity. I was very glad to learn through this interview that hanging from a bar helps increase grip strength. I have no idea how I injured my left shoulder over a year ago.

It must have been related to lifting weights. I decided not to go to a doctor. I don't want x-rays or replacement parts. I read a book by Dr. John Kirsch about how hanging from a bar can improve shoulder injuries. I have been hanging for up to a minute at a time for over a year. I'm about 98% to where I was before the injury and I still work out with free weights. Moreover, I thought about how our primate cousins the monkeys and chimpanzees haven't stopped swinging from trees. They have tremendous upper body strength.

Posted On 03/24/2024

---

### kchagnard

I was so impressed with your interview with Dr. Axe. Thank you sir!! Can't wait for more!

Posted On 03/24/2024

---

### rrealrose

OMGoodness, started taking extra Phosophatidylcholine this year as it supports liver cells, found out later this supports all cells in the body. With increased egg consumption, makes a big difference! Cooked a knuckle bone 3 years ago, it was huge, did not fit my largest pot, had to keep rotating it in the water. The resulting broth was great!

Posted On 03/24/2024

---

### Guillermou

Great Rose! ,Also. Neuroinflammation is considered a double-edged sword, with protective and detrimental effects on the nervous system, especially during repair and recovery. In response to different types of lesions that cause the death of neurons and oligodendrocytes, activated astrocytes and resident immune-type glial cells, microglia, proliferate and generate proinflammatory cytokines (such as IL-1, IL-6, IFN- and TNF-), chemokines, prostaglandins and oxygen free radicals, which often lead to the development of brain damage and promote macrophage infiltration.

Phosphatidylcholine improves neuronal differentiation even under inflammatory stress by modifying the commitment of postmitotic cells. The proneurogenic effect of phosphatidylcholine increases the population of normal healthy neurons. This phospholipid improves neuronal damage and, consequently, modulates neuronal plasticity. These results contribute to our understanding of the behavior of neural stem cells under inflammatory conditions, opening new avenues to improve neurogenic capacity in the brain. www.nature.com/.../s41598-021-02361-5 (2021).---

Posted On 03/24/2024

---

### Zoltannovax

Kudos for a stunningly brilliant interview. The only other things that might be worth thinking about in terms of where we go with this deep understanding of glycine, and especially as it is affected by Metabolic Flexibility, are the six CO2 fixation pathways used by photoautotrophic and chemoautotrophic microorganisms to enable the extraordinary chemolithoautotrophic growth of sulphate-reducing bacteria like Desulfovibrio desulfuricans strain G1. What we should all be aware of is how this bacteria assimilates CO2 via a reductive glycine pathway, which is really the missing link in the never discussed seventh CO2 fixation pathway. Why this is critical to our understanding is that the bacterium then uses this pathway, first to reduce CO2 to formate, and then to reduce and condense it with a second CO2 to generate glycine.

But what the corrupt establishment won't share is the detailed process by which that glycine is further reduced in D. desulfuricans in two steps to Acetyl-CoA, which is even further condensed to form pyruvate, with the entire thing being totally regulated by ammonia, If only we could switch our own mitochondrial oxidative phosphorylation and production of ATP to an organic pyruvate-driven process like this (which we could if this data wasn't being actively suppressed!!), then we could counter the effects of those bacteria in our gut and likely cure a number of movement disorders.

Posted On 03/24/2024

---

### Dr. Mercola

The speculation about replicating similar metabolic processes in human mitochondria to counteract certain bacteria or cure movement disorders is fascinating. However, human metabolism is vastly different from that of bacteria like D. desulfuricans which does not appear to be a typical human commensal although it is an obligate anaerobe. What is your speculation on how this could be applied to human biology?

Posted On 03/24/2024

---

### butlerbv

Relative ti getting to the root of it; years ago I met a great man who had survived a very strenuous time during WWII. His intense advice: you must HELICOPTER! He was referring to the importance of getting perspective which is one of the basics in gaining understanding and wisdom. Know where you came from and know where you are going. (His strong Dutch accent also helped me remember to helicopter!!)

Posted On 03/24/2024

---

### kco5855

For beef bone broth It is not uncommon for cows to be grass feed But grain finished. Any thoughts on the risks of using the bones from grain finished but not from CAFO. From article above - "Organic grass fed beef bones are the best. Using bones from CAFO (concentrated animal feeding operation) beef can be problematic due to potential heavy metal contamination."

Posted On 03/24/2024

---

### CatLightfoot

What are your thoughts about home grown, home pressed sunflower seed oil? Is this type of seed oil still dangerous to our health or is it solely the big producers of processed foods? We are striving for self-sustainability and sunflower seed oil is one of our fats (we also have lard and will have hazelnuts soon). Thank you for weighing in! Much love

Posted On 03/24/2024

---

### cinrobin

Love you Dr Mercola:) Been following you for 20 years. Thank you for your contributions to humanity.

Posted On 03/24/2024

---

**stoneharbor**

It is a critical part of Dr. Mercola's presentation to focus on "Metabolic Flexibility" and the measurement of Insulin levels in circulation. As he claims, possibly 95% of a population may have Metabolic Inflexibility, and circulating Insulin is the primary "biometric indicator" of a person's Metabolic Flexibility. While most of this interview focused on ways that Polyunsaturated Fats (PUFA) are detrimental, and glucose metabolism is important, I still think Metabolic Flexibility is very worth while discussing.

Dr. Mercola mentions his most recent Fasting Insulin measurement was "unmeasureable" via a Labcorp test. This show the most extreme case of Metabolic Flexibility, as without circulating Insulin, it means he is totally dependent on either glycogen stores within the cells (which usually can only last a few hours), or has already converted to the "fatty-acid" substrate of the Randle Cycle, and is using only Fatty Acids and Ketones to fuel his mitochondria.

This is actually what we all should aim for (with a low fasting Insulin test result confirming it) if we wish to gain the advantages of Metabolic Flexibility. Dr. Mercola has demonstrated with his own blood test that he is maintaining a very healthy state of flexibility as to what fuels his body can exist on, and he otherwise is a remarkable example of a healthy human being who has spent his life optimizing his health via diet, exercise, mental perspective, and very many other healthy pursuits.

So what are the signs (and advantages )of Metabolic Flexibility (MF)? The sign most significantly indicating MF is the ability to have a low Fasting Insulin test in the morning when you have fasted for at least 8 hours. Having this low level of Insulin on the test is impossible for people who chronically overeat, even if they have fasted for 8, or even 12 or more hours. Their insulin will not drop overnight as their cells are refusing to use it to absorb more glucose. So both glucose and insulin remain in the plasma.

Posted On 03/24/2024

**stoneharbor**

Cells, and their mitochondria will refuse to absorb more glucose when they are chronically chock full of glycogen, the storage form of glucose. The primary gross indicator of insulin resistance has always been obesity, as it goes 100% with Insulin Resistance and no fasting Insulin test is really needed to prove this. However, people can still be Metabolically Inflexible even if they are slim, just from eating a diet high in Linoleic Acid. I am thinking that a simple way to test one's MF is to go at least 12 hours overnight without eating a meal, and see if you have symptoms of either low blood glucose (hypoglycemia) or hunger.

A metabolically flexible individual will feel neither hypoglycemic nor hunger in the morning because their body will always pass to the "fatty" side of the Randle Cycle and allow most of the cell types to absorb and utilize fatty acids and ketones for both energy, and for repair and regeneration of mitochondria. This is what happens automatically when insulin levels become low in circulation. Once that happens, fatty acids can be released from fat cells, and these can be immediately absorbed and utilized by cells and their mitochondria.

Only red blood cells don't have mitochondria. I'm sure that Dr. Mercola feels no lack of energy when his Insulin tests very low after fasting. He is, by definition, Metabolically Flexible and functioning quite well on energy from fatty acids and ketones. There's no reason to test this. His vitality is the proof that he can survive on Forms of fat instead of on glucose. No glucose can be absorbed without Insulin. So adapting to being able to fast is key to Metabolic Flexibility. Here's how to do that:
www.nutrisense.io/.../intermittent-fasting-glucose-levels

Posted On 03/24/2024

**stoneharbor**

If you want to have healthy mitochondria, you need a diet and eating plan that allows mitochondria to multiply. If you only eat constantly (lots of snacking) and never give your gut some rest, never even give your pancreas a rest from producing insulin, you are going to have very few, and very incapacitated mitochondria. But if you stay off foods for 12 hours or more nightly, you will allow mitochondrial production and rejuvenation once you stop burning glucose (known as Motochondrial Uncoupling), and then the next day when you again start eating, your rested pancreas will be able to produce plenty of Insulin, and your cells will be hungry for it and the glucose that it can help pass into the cells.

This is when the Randle cycle again switches off fat metabolism and turns on glucose metabolism. For a more complete story on how Uncoupling helps you recover strength overnight, and how diet is linked to Mitochondria health, here's more on that: gundrymd.com/mitochondrial-uncoupling "Your diet is inextricably linked to your mitochondrial health. What, when, and how long you eat can all affect mitochondrial health."

Posted On 03/24/2024