Strategies to Optimize Mitochondrial Health in Long COVID

Analysis by Dr. Joseph Mercola Fact Checked

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STORY AT-A-GLANCE

- Mitochondrial dysfunction is at the root of most all chronic diseases, and it also plays a crucial role in conditions such as long COVID, which is becoming quite common. It's also a root factor that must be addressed in COVID jab injuries, regardless of symptoms or severity
- One of the most foundational lifestyle components that can make or break your mitochondrial health is electromagnetic field (EMF) exposure. To allow your body to heal, you'll want to minimize EMF exposure as much as possible
- The cristae of the inner membrane of the mitochondria contains a fat called cardiolipin, the function of which is dependent on the type of fat you get from your diet. Cardiolipin is important because, if cardiolipin is damaged, mitochondrial energy production will be impaired. The most damaging fat is omega-6 linoleic acid, found in seed oils
- Another major culprit that destroys mitochondrial function is excess iron, and almost everyone has too much iron. Copper is also important for energy metabolism, detoxification and mitochondrial function, and copper deficiency is common. Copper is also required for proper iron recycling, and low ferritin is typically a sign of copper insufficiency
- Other strategies reviewed include sun exposure and near-infrared light therapy, time-restricted eating, NAD+ optimizers and methylene blue, which can be a valuable rescue remedy

The video above features a recent lecture I gave to the American College for Advancement in Medicine (ACAM) on how to optimize your mitochondrial health and function.

Mitochondrial dysfunction is at the root of most all chronic diseases, and it also plays a crucial role in conditions such as long COVID, which is becoming quite common. It's also a root factor that must be addressed in COVID jab injuries, regardless of symptoms or severity.

Features of the post-jab injuries we see point to severe mitochondrial dysfunction, which in turn causes energy failure. The same goes for long COVID in people who struggle with unrelenting fatigue and other symptoms for months after they've recovered from COVID-19 infection.

If you can improve your mitochondrial function and restore energy supply to your cells, you're going to massively increase your odds of reversing the problems caused by the jab or the virus.

US Life Expectancy Falls in Historic Decline

Allopathic medicine has been a leading cause of death in the U.S. for over two decades. In 1998, researchers concluded that properly prescribed and correctly taken pharmaceutical drugs were the fourth leading cause of death in the U.S.

Two years later, in 2000, Dr. Barbara Starfield published her groundbreaking paper, "Is US Health Really the Best in the World?"[1] in which she provided data showing that medical errors by doctors were the third leading cause of death. Little has changed since then.

In 2016, Johns Hopkins patient safety experts calculated that more than 250,000 patients died each year from medical errors, again pegging it as the third leading cause of death.[2]

In July 2022, the National Institutes of Health concluded the annual death toll from medical errors could be as high as 440,000 — and possibly even more because of lack of reporting — making it, still, the third leading cause of death.[3]

In future years, I believe the medical intervention sold as "COVID vaccines" will prove to be the No. 1 killer of Americans, and we're already seeing that trend. Something extraordinarily odd happened in 2020 and 2021, something that shaved nearly three years off the life expectancy in the U.S.[4]

Even a tenth or two-tenths of a year mean decline in life expectancy on a population level is a big deal, as it means a lot more people are dying prematurely than they really should be. A three-year drop is simply unheard of.

While media blame this drop on COVID-19 infection, that makes no sense because the average age of those who died from COVID was about 85, well over the life expectancy in 2019. No, this massive drop in life expectancy is due to younger people dying decades earlier than they should, and the only factor that can account for that is the mass injection of people with an experimental bioweapon.

Limit Your EMF Exposure

One of the most foundational lifestyle components that can make or break your mitochondrial health is electromagnetic field (EMF) exposure. To allow your body to heal, you'll want to minimize EMF exposure as much as possible. The World Health Organization classified cell phone radiation as a 2B carcinogen in May 2011.

However, as I detail in my 2020 book, "EMF*D," it's actually a Class 2A carcinogen. To minimize your EMF exposure, which includes electric fields, magnetic fields and radiofrequencies:

- Keep your cell phone in airplane mode whenever you're not actively using it
- Do not sleep with it near your bed
- At night, be sure to turn off your Wi-Fi
- Turn the breakers off to your bedroom, as the electrical wiring in most homes also emit dirty electricity
- Alternatively, sleep in an EMF-shielding tent, which is what I use whenever I travel and have no control over the EMF exposure in my room

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Dietary Fat Choices Influence Energy Production

You have about 40 quadrillion to 100 quadrillion mitochondria throughout the cells of your body. In my lecture, I show a picture of the structure of your mitochondria. The cristae of the inner membrane of the mitochondria contains a fat called cardiolipin,[5] the function of which is dependent on the type of fat you get from your diet.

Cardiolipin is important, because it influences the structure of the cristae inside your mitochondria, which is the area where energy production occurs. If cardiolipin is damaged, then the complexes will not be close enough together to form supercomplexes and thus the mitochondrial energy production will be impaired.

Cardiolipin also works like a cellular alarm system that triggers apoptosis (cell death) by signaling caspase-3 when something goes wrong with the cell. If the cardiolipin is damaged from oxidative stress due to having too much LA, it cannot signal caspase-3, and hence apoptosis does not occur. As a result, dysfunctional cells are allowed to continue to grow, which can turn into a cancerous cell.

The type of dietary fat that promotes healthy cardiolipin is omega-3 fat, and the type that destroys it is omega-6, especially linoleic acid (LA), which is highly susceptible to oxidation. So, to optimize your mitochondrial function, you want to avoid LA as much as possible, and increase your intake of omega-3s.

Primary sources of LA include seed oils used in cooking, processed foods and restaurant foods made with seed oils, condiments, seeds and nuts, most olive oils and avocado oils (due to the high prevalence of adulteration with cheaper seed oils), and animal foods raised on grains such as conventional chicken and pork.

Ideally, consider cutting LA down to below 7 grams per day, which is close to what our ancestors used to get. If you're not sure how much you're eating, enter your food intake into Cronometer — a free online nutrition tracker — and it will provide you with your total LA intake.

Cronometer will tell you how much omega-6 you're getting from your food down to the tenth of a gram, and you can assume 90% of that is LA. Anything over 10 grams of LA is likely to cause problems. Healthy fat replacements include tallow, butter or ghee, all of which are excellent for cooking.

Address Iron Excess and Copper Insufficiency

Another major culprit that destroys mitochondrial function is excess iron, and almost everyone, with the exception of menstruating women and those with large blood losses, have too much iron. On the other side of this coin is copper, which most people are deficient in.

Iron and copper are highly interdependent and need to be considered together. Low ferritin is rarely indicative of low iron. In most cases, it's a sign that copper insufficiency is preventing proper iron recycling. Copper is also crucial for energy metabolism, detoxification and mitochondrial function.[6] You can learn more about this in "The Poorly-Understood Role of Copper in Anemia."

To increase your copper level, you can either take 4 to 10 milligrams of copper bisglycinate per day, or eat more copper-rich foods, such as bee pollen, grass fed beef liver and acerola cherry. (Acerola cherry is very high in vitamin C, which contains the copper-rich tyrosinase enzyme.)

The other side of the equation is to lower your iron, which is easily done through regular blood donations. One way is to simply donate blood two to four times a year. If losing 10% of your blood in one sitting is problematic, then you can remove blood in smaller amounts once a month on the schedule I have listed below. If you have congestive heart failure or severe COPD, you should discuss this with your doctor, but otherwise this is a fairly appropriate recommendation for most.

Men
150 ml
Postmenopausal Women
100 ml
Premenopausal Women
50 ml

The Importance of Sun Exposure

A third leading contributor to mitochondrial dysfunction is lack of sun exposure. Getting regular sun exposure is crucial for several different reasons:

1. UVB triggers vitamin D production in your skin — In addition to playing an important role in infections, vitamin D is also necessary for mitochondrial function and cell health in general.[7,8] The ideal source of vitamin D is sun exposure, so if you live in an area with plenty of year-round sunshine, aim to expose as much bare skin as possible for about an hour during solar noon.

   If you live in an area that doesn't get enough sunshine during parts of the year, you'll want to take a vitamin D3 supplement, along with magnesium and vitamin K2.

   You need 244% more oral vitamin D if you're not also taking magnesium and vitamin K2,[9] so taking them together means you need far less vitamin D in order to achieve a healthy vitamin D level, which is between 60 ng/mL and 80 ng/mL (150 nmol/L to 200 nmol/L).

2. Near-infrared rays in sunlight shining on your bare skin trigger melatonin production in your mitochondria[10] — The vast majority of the melatonin your body produces (95%) is made inside your mitochondria in response to near-infrared radiation from the sun. Only 5% of melatonin is produced in your pineal gland.

   Melatonin is a master hormone,[11] a potent antioxidant[12] and antioxidant recycler,[13] a master regulator of inflammation and cell death,[14] and an important anticancer molecule.[15]

   Melatonin has also been shown to be an important part of COVID treatment, reducing incidence of thrombosis and sepsis[16] and lowering mortality,[17,18] and is a known cytoprotector with neuroprotective properties that can potentially reduce the neurological sequelae documented in patients infected with COVID-19.[19]

   When your mitochondria produce ATP (the energy currency of your cells), reactive oxygen species (ROS) are created as a byproduct. ROS are responsible for oxidative stress, and excessive amounts of ROS will damage your mitochondria, contributing to suboptimal health, inflammation and thrombosis (blood clots).

   Melatonin production in your mitochondria is your body's built-in mechanism to counteract this damage, but in order for this invaluable system to work, you must expose your body to near-infrared light. While you can raise your vitamin D level using a supplement, this cannot be done with melatonin.

   Oral melatonin supplements do not wind up in your mitochondria where they are needed most to quench the damage from oxidative stress produced in the electron transport chain. An alternative to sun exposure would be to use a near-infrared sauna, described in "Near-Infrared Sauna Therapy — A Key Biohack for Health."

3. Near-infrared light also:

   a. Increases mitochondrial ATP production
   b. Increases autophagy
   c. Increases heat shock proteins, which help proteins maintain their three-dimensional structure and refold misfolded proteins
   d. Reduces inflammation
   e. Triggers the conversion of retinol (vitamin A) to retinoids, which are crucial for immune function
   f. Structures the water in your body — Structured water acts like a storage battery that stores energy in your body in your blood, and helps push blood cells through your capillaries

Restore Metabolic Function With Time-Restricted Eating

The vast majority of people eat across 12 hours or more, which is a recipe for metabolic disaster. Health statistics bear this out. In July 2022, the Journal of the American College of Cardiology[20] posted an update on the metabolic fitness or flexibility of the American population.

Metabolic fitness includes things like blood glucose and blood sugar, blood pressure and weight, and metabolic flexibility refers to your body's ability to seamlessly transition between burning fat and carbohydrates as your primary fuel.

> **“TRE is one of the easiest yet most powerful interventions for restoring metabolic flexibility and optimizing your mitochondrial function, which is key for recovery from any illness or disease.”**

In 2016, 12.2% of Americans were considered metabolically fit.[21] Two years later, in 2018, only 6.8% of U.S. adults had optimal cardiometabolic health.[22] That was four years ago so, today, that ratio is probably even lower, especially if you consider the number of people who are now struggling with mitochondrial dysfunction as a result of the COVID jab.

TRE is one of the easiest yet most powerful interventions for restoring metabolic flexibility and optimizing your mitochondrial function, which is key for recovery from any illness or disease.

As a general rule, I recommend compressing your eating window to between six and eight hours, and fasting for the remaining 14 to 16 hours each day. The timing of that eating window is important though.

You want to avoid eating first thing in the morning (wait at least two or three hours) and you want to avoid eating right before bed. Ideally, have your last meal at least three hours or more before bedtime. So, to give you an example, you could eat all your meals between 10 a.m. and 6 p.m., or 11 a.m. and 5 p.m.

Optimize NAD+

Boosting nicotinamide adenine dinucleotide (NAD+) is, I believe, another crucial component when treating COVID jab injuries and long COVID. NAD+ is a crucial signaling molecule believed to play an important role in mitochondrial function and longevity.

NAD is used up by DNA repair enzymes and enzymes involved in inflammation and immunity, such that chronic inflammation or acute illness can rapidly result in depletion. To learn more about the role of NAD+ in health, see my interview with Nichola Conlon, Ph.D., a molecular biologist, featured in "The Crucial Role of NAD+ in Optimal Health." There are a number of ways to boost NAD+ without resorting to expensive supplements, including:

- Circadian rhythm optimization
- TRE and other forms of intermittent fasting
- Low-dose niacinamide (not niacin), taken at a dose of 50 mg three times a day. More is not better as it will impair the function of your longevity proteins (sirtuins)
- Intense exercise in a fasted state

Mitochondrial Rescuer: Methylene Blue

Methylene blue can be particularly useful for addressing the fatigue and neurological problems that are common in long COVID and COVID jab injuries, as it works as an electron cycler. It basically acts like a battery, but unlike other compounds that do the same thing, it doesn't cause damaging oxidation in the process.

If anything interferes with oxygenation or cellular respiration, methylene blue is able to bypass that point of interference through electron cycling, thus allowing mitochondrial respiration, oxygen consumption and energy production to function as it normally would.

Methylene blue can also be helpful in instances where you have impaired blood flow that prevents the delivery of oxygenated hemoglobin to the tissues. In this case, methylene blue helps counteract the reduced blood flow by optimizing the efficiency of mitochondrial respiration.

Methylene blue also activates the Nrf2 pathway. Nrf2 is a transcription factor that, when activated, goes into the cell's nucleus and binds to the antioxidant response element (AREs) in the DNA. It then induces the transcription of further cytoprotective enzymes such as glutathione, superoxide dismutase catalase, glutathione peroxidase, phase II enzymes, heme-1 oxygenase and many others.

Methylene blue's action on mitochondrial respiration is also coupled with biochemical upregulation of your oxygen consumption machinery in general. This upregulation remains even after the methylene blue is expelled from your system, and over time, it can actually increase the number of mitochondria.

For neurological conditions, consider using methylene blue in combination with near-infrared sauna therapy. A 2020 paper[23] in Translational Neurodegeneration reviews the benefits of this combination, specifically as it refers to neuroprotection.

Methylene Blue Dosages and Quality Considerations

Methylene blue is a hormetic, so low dosages have the opposite effect of high dosages. While every possible dose response has not been tested, as a general guideline, the benefits mentioned

here are based on lower dosages, ranging from 0.5 mg per kilogram of bodyweight to 4 mg per kg at most. For brain health and nootropic effects, a dosage between 0.5 mg to 1 mg per kg per day is recommended.

Selecting the correct product is of crucial importance. There are three basic types of methylene blue: industrial, chemical and pharmaceutical-grade. The only version you'll want to use medicinally is pharmaceutical-grade, which is 99%+ pure. Lower grades will contain varying levels of heavy metals and other contaminants.

Pharmaceutical grade will be marked USP, which stands for United States Pharmacopeia. Taking it with some ascorbic acid (vitamin C) facilitates absorption. To learn more, see "The Surprising Health Benefits of Methylene Blue," in which I interview Francisco Gonzalez-Lima, Ph.D., who has spent many years studying this drug.

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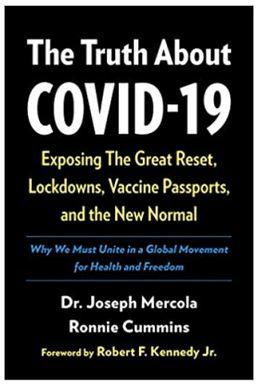
My latest book, "The Truth About COVID-19," is an instant best-seller. After thousands of reviews it has a nearly perfect 5-star rating, so grab your copy today before it's too late!



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Gratitude to Dr. Mercola for his excellent advice to help people who are suffering from prolonged Covid. Mitochondria are especially abundant in the organs and tissues of the body with higher energy requirements. Supplements and lifestyle changes can improve mitochondrial health by increasing the availability of proteins needed for ATP production (activation of AMPK, PCG-1a, NAD+, SIRT1. They also act as antioxidants, helping mitochondria to reduce oxidative stress and other important functions, including: signaling, differentiation, programmed cell death and control of cell growth. Related to Dr. Mercola's reports additional support for mitochondrial function includes acetyl-L-carnitine, Q10, pyrroloquinoline quinone, vitamin C, choline, NADH, -lipoic acid, -ketoglutaric acid, resveratrol, N-acetylcysteine, magnesium and a quality multivitamin and mineral complex.

In the following link more references: 33 NATURAL WAYS TO IMPROVE MITOCHONDRIAL FUNCTION.--- selfhacked.com/blog/natural-ways-to-improve-mitochondrial-function/ (2022). Regarding Q10. The most common metabolic and mitochondrial diseases (MMDs) are cardiovascular diseases, cancer, respiratory diseases, diabetes and chronic kidney diseases are a great epidemic.

Prevention of the development of mitochondrial EMM by coenzyme Q 10 is one of the basic forms of protection of human health. www.sciencedirect.com/.../B9780128198155000495 (2022).--- Targeted mitochondrial therapy with CoQ10 supplementation and rehabilitation may improve mitochondrial health and speed recovery for patients after COVID-19. pubmed.ncbi.nlm.nih.gov/34967652 (2022).--- Putting two things together: A ketogenic diet combined with exercise can improve mitochondrial function and metabolic health. journals.physiology.org/.../ajpendo.00305.2020 (2020).---

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Prolonged COVID and mitochondrial dysregulation. Some relevant aspects: SARS-CoV-2 hijacks mitochondria and uses them for protection and viral replication, diverting resources away from supporting normal cell function to now serve as a viral factory. Viral influence on mitochondrial activities leads to suboptimal energy production. The binding of this receptor by the SARS-CoV-2 virus decreases the production of ACE2, which has a regulatory effect on mitochondrial function. The aging process results in fewer mitochondria and lower ATP production with a decrease in mitochondria autophagy, contributing to chronic inflammation.

The overall effect reduces mitochondrial capacity by approximately 50%, leading to fatigue and muscle weakness. www.zrtlab.com/blog/archive/long-covid-and-mitochondrial-dysregulation.. Long-term disturbance of the peripheral immune system months after SARS-CoV-2 infection link.springer.com/.../s12916-021-02228-6 (2022) Mitochondria also induce immune responses. During an infection, they release mitochondrial hazard associated molecules (DAMPs). Said DAMPs, mitochondria guide the immune response towards an inflammatory response against pathogens. Mitochondrial DAMPs can also have a negative impact. If damaged cells release mitochondrial DAMPs, without the presence of infection, such as after trauma, mitochondrial DAMPs can induce an unwanted inflammatory response, resulting in tissue damage and organ dysfunction.

The focus should not only be on the mitochondria themselves, but also on the mTOR pathway and other pathways that affect mitochondrial function and that could be inhibited or activated to stimulate or inhibit certain immune cells. In the present narrative review, the current view of mitochondria in the regulation of immune responses and the pathophysiology of autoimmune disease is described. www.sciencedirect.com/.../S0925443920301927 (2020)

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NRPT is a combination of nicotinamide riboside and (NAD+), found in milk, and pterostilbene, a polyphenol found in blueberries, was administered to a population of 120 healthy adults between the ages of 60 and 80. The study consisted of three treatment groups: placebo, a recommended dose, and another double-dose group. The concentration of NAD + increased by approximately 40% in the group and approximately 90% in the double administration group, after 4 weeks. www.nature.com/.../s41514-017-0016-9 (2017).--- Pyrroloquinoline quinone (PQQ) is a large component of mitochondrial stimulation. PQQ not only protects mitochondria from oxidative stress, but also promotes the spontaneous generation of new mitochondria within cells in the aging process, a process known as mitochondrial biogenesis.

PQQ is also a powerful antioxidant capable of carrying out 20,000 catalytic conversions. PQQ is a compound found in trace amounts in plant-based foods. PQQ provides considerable benefits in conditions revolving around low mitochondrial function including aging, many brain and neurological diseases (for example, and many other chronic diseases). degenerative diseases.) PQQ combined with coenzyme Q10 has shown better results.

Pyrroloquinoline-quinone is more than an antioxidant, it is important in health and disease prevention michaelrucker.com/.../pqq-foods (2020).--- www.mdpi.com/.../1441 (2021).-- www.ncbi.nlm.nih.gov/.../PMC8829629 (2022).--- www.nature.com/.../s41514-022-00083-0 (2022) selfhacked.com/.../pqq-review (2022).--- Glycine and N-acetylcysteine (GlyNAC) supplementation in older adults improves glutathione deficiency, oxidative stress, mitochondrial dysfunction, insulin resistance, inflammation, physical function, and hallmarks of aging. academic.oup.com/biomedgerontology/article/78/1/75/6668639?login=false (2022) www.mdpi.com/.../154 (2022)

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In the recovery phase, physical training not only induces multiple mitochondrial adaptations, it also enhances the effect of N -acetylcysteine on ionic changes during exercise. www.mdpi.com/.../53 (2022) Fasting, exercise and nutrition are basic pillars for longevity. To consider also certain genes. Klotho, a natural human protein, has great potential to delay these diseases of aging. Exercise is related to the Klotho gene for longevity. Membrane Klotho acts through (FGF)-23, and regulates nitric oxide produced in the endothelium. Inactivity accelerates aging and its consequences, it is suggested as one of the main reasons for the increase in disease and mortality.

The circulating s-klotho response has been shown to depend on the level of aerobic fitness: s-Klotho values were significantly higher in trained compared to untrained individuals. The present review suggests that aerobic exercise delays the aging process by increasing Klotho gene expression, which, in turn, reduces ROS damage to the cell. pdfs.semanticscholar.org/3499/02f79e6cef77bd5b6785cc392a5455438f0d.pdf (2015).--- www.ingentaconnect.com/contentone/ben/cas/2018/00000011/00000002/art00.. (2018).--- shapeamerica.tandfonline.com/doi/abs/10.1080/02640414.2019.1626048#.Xj.. (2019).---- www.nature.com/.../s41598-022-22123-1 (2022).--- www.frontiersin.org/.../full (2022)

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Loss of cognition, kidney failure, diabetes, and cancer are things thought to be associated with the body's production of this Klotho protein. Klotho deficiency exhibit an aging phenotype. www.nature.com/.../tp201581 (2015).----- www.ncbi.nlm.nih.gov/.../PMC4176932 (2015).---- www.ncbi.nlm.nih.gov/.../PMC5592833 (2017).--- www.mdpi.com/.../705 (2022) .--- www.mdpi.com/.../239 (2023).---- Klotho has been linked to the prevention of muscle atrophy, osteopenia, and cardiovascular disease. Similar anti-aging effects have also been attributed to exercise and physical activity, helping to regenerate muscle www.ncbi.nlm.nih.gov/.../PMC4060456 (2014).---

Low serum Klotho associated with all-cause mortality among a nationally representative sample of US adults and as an effective biomarker to characterize inflammatory states academic.oup.com/biomedgerontology/article/77/3/452/6386302?login=fals.. (2022).--- www.tandfonline.com/.../07853890.2022.2077428 (2022).--- Dietary antioxidants were positively correlated with plasma S-Klotho levels after controlling for covariates. www.hindawi.com/.../3524611 (2023).---- Current experimental evidence suggests that the ketogenic diet may positively impact mitochondrial bioenergetics, mitochondrial ROS/redox metabolism, and mitochondrial dynamics. www.sciencedirect.com/.../S1357272521001308 (2021)

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Each year, more than 70% of disease-related deaths worldwide are due to chronic noncommunicable diseases; the deadliest is cardiometabolic syndrome. Cardiometabolic diseases, including atherosclerosis , hypertension, obesity, type 2 diabetes mellitus , metabolic syndrome, metabolic-cognitive syndrome, and cerebrovascular dementia , are associated with age and have in common dysregulated mitochondrial function and levels nutrient atypicals, immune, neurotrophic and metabotrophic. Berberine increased Klotho expression and protected against cardiac senescence. Berberine partially activated the Klotho/SIRT1 signaling pathway to protect against cardiac senescence.

Ferulic acid and berberine, via Sirt1 and AMPK, may act as cellular cleansing promoters of healthy longevity www.sciencedirect.com/.../S0006295221004251 (2021) www.sciencedirect.com/.../S0753332222004863 (2022) openheart.bmj.com/.../e001801.abstract (2022) D-ribose is essential for energy metabolism and forms the backbone of the vital ATP molecule that cells use to transfer energy. Cellular damage from oxidants, inflammation, and ischemia/reperfusion damage cause loss of ATP and increased vulnerability to disease.

Research has shown that taking ribose has a positive effect on ATP production in all types of muscle fibers, especially the heart. Ribose supplementation increases de novo ATP production via oxidative phosphorylation by more than 300 percent. Ribose also activates the salvage pathway, causing nucleotides to revitalize in ATP manufacturing by more than 500 percent. www.ncbi.nlm.nih.gov/.../PMC5959283 (2018) .--- www.spandidos-publications.com/.../etm.2021.9927 (2021) .--- www.ncbi.nlm.nih.gov/.../PMC8573443 (2021) .---

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Sleep pathology may be an underreported complication of primary mitochondrial diseases. The likely underlying mechanism is cellular power failure causing both central neurological and peripheral neuromuscular degenerative changes that commonly present as central sleep apnea and impaired ventilatory response to hypercapnia. In turn, sleep disturbances in affected patients contribute to a vicious cycle of progressive daytime fatigue and exercise intolerance. www.ncbi.nlm.nih.gov/.../PMC4224726 (2014) The findings of this study support the role of sleep disorders in increasing the accumulation of mitochondrial damage, increasing cellular senescence, shortening of telomere length, altering the expression of telomerase activity and the acceleration of epigenetic aging.

Specific pathways, including mitochondrial metabolism, account for DNA damage and repair, altered by sleep deprivation www.sciencedirect.com/.../S2451965021000466 (2021) Mitochondrial calcium retention in the heart during sleep dissipates membrane potential, slows respiratory activities, and increases ROS levels, which may contribute to increased vulnerability to cardiac stress during the sleep-wake transition. These pronounced daily oscillations in mitochondrial functions related to vulnerability to stress may explain, at least in part, the daytime prevalence of cardiac pathologies.

www.sciencedirect.com/.../S2090123221000138 (2021) A five-night period of sleep restriction leads to reductions in mitochondrial respiratory function, glucose tolerance with concomitant reductions in mitochondrial function and sarcoplasmic protein synthesis and the amplitude of the diurnal rhythms of skin temperature. The data provide evidence supporting the use of exercise as an intervention to mitigate the detrimental physiological effects of sleep loss. www.sciencedirect.com/.../S2212877820301848 (2021)

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In these reviews some of the potential effects of curcumin are reported, such as inhibiting virus entry into the cell, inhibiting virus encapsulation and viral protease, as well as modulating various cell signaling pathways. Curcumin's ability to modulate a wide range of molecular targets makes it a suitable candidate for managing coronavirus infection and mitigating the effects of prolonged Covid. Curcumin may have beneficial effects against COVID-19 infection through its ability to modulate the various molecular targets that contribute to the binding and internalization of SARS-CoV-2 in many organs, including the liver, cardiovascular system, and blood vessels.

kidneys. Curcumin might also modulate cell signaling pathways, such as inflammation, apoptosis, and RNA replication. Curcumin may also suppress pulmonary edema and fibrosis-associated pathways in COVID-19 infection. Curcumin is known to have strong inhibitory effects on NF-B and several proinflammatory cytokines, and may be particularly useful as an adjuvant in reversing the fatal cytokine storm that occurs in severe cases and its subsequent complications.

Curcumin supplementation led to a significant decrease in common symptoms, length of hospitalization, and deaths. Curcumin exerts its beneficial effects through at least partial restoration of the pro-inflammatory/anti-inflammatory balance. Curcumin could be a safe and natural therapeutic option to prevent Post-Covid thromboembolic events. livinoe.com/wp-content/uploads/2020/08/efectos-beneficos-de-la-CURCUMI.. (2020).----- www.frontiersin.org/articles/10.3389/fphar.2021.669362/full?crsi=66249.. (2021).----- www.mdpi.com/.../256 (2022).----- shd-pub.org.rs/.../12081 (2023)

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Studies have reported all post-COVID-19 neuropsychiatric symptoms in 20% to 70% of patients lasting longer periods even after respiratory symptoms resolved, suggesting brain involvement. Infection with COVID-19 can have an adverse impact on mental health well-being in both the short and long term. Interestingly, studies have reported that patients with severe COVID-19 infection experience elevated serum levels of proinflammatory cytokines, thereby affecting its permeability that allows TNF- to directly cross the BBB, leading to activation. microglia and astrocytes. These activated microglia secrete inflammatory mediators, including glutamate, quinolinic acid, complement proteins, IL, and TNF-.

Importantly, an increase in quinolinic acid results in higher glutamate levels and upregulation of NMDA (glutamate and ion channel receptor protein) receptors, possibly inducing memory and impaired neuroplasticity. Neuroinflammation can contribute to reducing the activity of neurotransmitters and increasing excitotoxicity. This review reports on the management of mental health by nutraceuticals and, in general, the ways of acting against COVID. onlinelibrary.wiley.com/.../jfbc.14445 (2022).---- COVID-19 causes severe respiratory problems, but also a long-lasting syndrome associated mainly with cognitive dysfunction and fatigue.

Symptoms of prolonged COVID syndrome, especially brain fog, The pathogenesis of brain fog in these diseases is currently unknown, but may involve neuroinflammation via mast cells stimulated by pathogenic and stress stimuli to release mediators that activate microglia and lead to inflammation in the hypothalamus. These processes could be mitigated by the phytosomal formulation of the natural flavonoid luteolin. www.ncbi.nlm.nih.gov/.../PMC8250989 (2021)

Mark as Spam | Posted On 2/26/2023 4:01:33 AM

Like Dislike

juststeve

Joined On 1/5/2012 11:13:54 AM

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Gui, your wealth of shared knowledge and information highlight why in the States, the System itself is a contender for the leading cause of death. So much of one structure, (mitochondria,) in the layers of our being pretty much ignored by the Rockefeller/Gates model. Yet we pay the most to get the worst results of the developed countries. With or without health insurance we go bankrupt, with or without many medicines or treatments we continue to be sick or die. With or without their advice for healthy eating or living most are stuck with food or conditions that eat our health. We are pretty much on our own for way too many things, yet we pay top dollar for much of nothing and left little to nothing to finance things we may have found would actually work.

Mark as Spam | Posted On 2/26/2023 4:56:19 AM

Like Dislike

Guillermou

Joined On 4/7/2015 8:47:48 AM

Add as Friend | Send Message

Thank you Just, you always provide a great reality with very significant details. Yes, above all a good diet, healthy habits and a lot of motivation and perseverance wrapped in wisdom and love. What motivates you makes you feel good because it is the feeling of fulfilling your life purpose, your goals. Motivation is an attitude that connects us to the depths of our being but is also related to our brain structure and our physical state, our tendency of thought, therefore, taking care of our health and that of others increases our motivation. Setting goals and focusing to persist in motivation despite external circumstances increases our perseverance and therefore resilience, as Dr. Mercola has very well described.

Social life stimulates motivation because it helps to learn to know ourselves, understand human behavior and empathize with it, it gives us tools to begin to know how to motivate ourselves, how to motivate others and persevere over time... learn and continue. Authentic happiness and triumph in life is the result of that wise perseverance that builds virtues and gives everything for what you love, for what you dream of and yearn to achieve. There are thousands of people who carry their sacrifices and personal efforts in silence, a true talent. The current corruption situation well deserves this fight for the good of humanity.

Mark as Spam | Posted On 2/26/2023 9:02:33 AM

Like Dislike

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otis101

Joined On 7/10/2010 6:30:32 PM

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Gui, could you edit and condense? Thanks.

Mark as Spam | Posted On 2/26/2023 6:34:22 PM

Like Dislike

Guillermou

Joined On 4/7/2015 8:47:48 AM

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OTIS is simplified but there are more than 40 links. I always add a little explanation so there is no need to read the whole link.

Mark as Spam | Posted On 2/27/2023 1:55:10 AM

Mark as Spam | Posted On 2/27/2023 1:55:19 AM

Like Dislike

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otis101

Joined On 7/10/2010 6:30:32 PM

Add as Friend | Send Message

OK. Got it.

Mark as Spam | Posted On 2/27/2023 10:06:07 AM

Like Dislike

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phoenix999

Joined On 5/5/2016 5:32:03 PM

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You are Right that mitochondria are highly concentrated in crucial organs and tissues! E.g., the eyes and brain. Mitochondrial therapies are being tested for macular degeneration: www.retina-specialist.com/article/the-promise-of-targeting-mitochondri.. . . . . and also for Autism. Dr. Richard Naviaux of UCSD's Mitochondrial and Metabolic Disease Center found that a century-old drug suramin attenuated autism symptoms in a small human trial (the drug's fate is unknown, however, as the research is now out of his hands). Suramin is . . . wait for it . . . an antiparasitic drug! Many antiparasitics are potent anti-inflammatory agents that have been tested and used off-label for viruses (chloroquine, ivermectin) and cancer (fenbendazole)- sometimes in combination. Much interesting info on the website of the Naviaux lab. More and more universities are establishing mitochondrial research centers.

Mark as Spam | Posted On 2/27/2023 2:05:50 PM

Like Dislike

TonyRyan

Joined On 2/7/2010 10:51:00 PM

Add as Friend | Send Message

I am of the view that all those self-rightous pious twits that 'fied us with shame' because we were unclean and unworthy, deserve the PEG-induced immune system destruction that is coming their way. I see this from a vastly distant perspective, that of human evolution eliminating an unfortunate digression from where we are headed with more noble motives* (and I worked this out too*, but more on that in a decade or so). Anyway, with spike proteins peppering their endothelial regions for within 28 days of each jab, what I want to know is how to expedite this process.

Ergo... How can I make them die earlier? Seriously. Come now, God smites his enemies and every American is complicit in the murdering of the citizens of all 60 sovereign nations invaded and occupied by the US military since 1946, so let's ditch the horror and crossed fingers that I want to hurry up the demise of some nasty cheating dudes who steal from the poor and helpless. Worse, they are jabbing innocent indigenous here who have no comprehension of what is going down and Christian missionaries are pushing them daily into jab oblivion.

I am taking pure genocide here. The missionaries are just plain ignorant and I will leave their payoff to God, but I want to target the doctors and nurses who, despite being shown the evidence provided by Yeadon, Mallone, Bakdhi, Mercola, and Cory, choose to ignore it and jab until "everybody is jabbed". I am quoting these psychopaths. So come on folks... psssst... how do I hurry this up? What nice little nutrient rejuvenates spikeproteins

Reply | Mark as Spam | Posted On 2/26/2023 3:55:57 AM

Like Dislike

Sue6876

Joined On 9/27/2020 3:07:16 PM

Add as Friend | Send Message

28 days was the time length studied- in that study. It could very well be so much longer if actually studied.

Mark as Spam | Posted On 2/26/2023 6:25:36 AM

Like Dislike

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brianallen1

Joined On 8/7/2021 10:12:38 AM

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Doctors and nurses tend to be among the sickest people. They are killing themselves off without needing much outside assistance.

Mark as Spam | Posted On 2/26/2023 6:42:59 AM

Like Dislike

Martix

Joined On 10/19/2007 4:48:18 AM

Add as Friend | Send Message

Do not forget Gandhi, He was against "all" kind of Vaxxxx !!!!!

Mark as Spam | Posted On 2/26/2023 12:36:00 PM

Like Dislike

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markuzick

Joined On 3/16/2013 5:05:59 AM

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Most of the elderly who died of covid before the introduction of the vax had been immune compromised by the annual flu shot; and my guess is that the younger survivors who developed long haul covid were initially also taking the flu shot. Now it's the mRNA jabbed who become long haulers.

Reply | Mark as Spam | Posted On 2/26/2023 10:06:30 AM

Like Dislike

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jhy7142

Joined On 3/10/2016 7:13:35 AM

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Yes mark whatever was put in the Flu shot of 2020 gave my Dad GB symdrome and gave him enough scare from Kidney problems and everything else that goes along with the toxic shots they call Flu shots that he was put in the hospital and all else is history . Its called murder and if I was caught injecting that *** into a person I would be arrested for murder or attempted murder. When our govt. does it they call it health care. Lost my best friend with no legal recourse .

Mark as Spam | Posted On 2/26/2023 4:26:30 PM

Like Dislike

gaylezpc
Joined On 7/31/2009 10:47:11 AM
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I think some or many of the elderly (and younger) may have had a panic attack (same symptoms?), gone to the hospital, and been put on a ventilator that harmed them. I asked the CHATGPT about it... "Yes, it is possible that some people experiencing a panic attack may mistake their symptoms for COVID-19, particularly if they are experiencing shortness of breath or chest tightness, which are common symptoms of both panic attacks and COVID-19. During the COVID-19 pandemic, many people have become hypersensitive to any physical symptoms that may indicate they have contracted the virus. This heightened anxiety and fear of contracting COVID-19 can exacerbate symptoms of anxiety and panic disorders, leading some people to seek medical attention or go to the hospital believing they have contracted the virus.

It is essential to note that while panic attacks can mimic symptoms of COVID-19, they are not contagious or caused by an infection, but instead a result of the body's response to stress and anxiety. If someone is experiencing symptoms of anxiety or panic attacks, it is crucial to seek appropriate medical or mental health treatment to manage and address their condition."

Mark as Spam | Posted On 2/26/2023 9:29:40 PM

Like Dislike

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forbiddenhealing
Joined On 2/21/2011 9:51:43 AM
Add as Friend | Send Message

How bout large doses of Vitamin C, NAC, bicarbonate, magnesium...enhanced O2/H2 inhalation....or Wim Hof/yogic/Qui-Gong breathing exercises...extreme hyperventillation followed by breath hold as in snorkel diving. You want to avoid acidic hypoxia>>>HIF1 activation>>>anaerobic metabolism>>>poor ATP electron output...cancers/all disease.

Reply | Mark as Spam | Posted On 2/26/2023 7:01:16 AM

Like Dislike

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jhy7142
Joined On 3/10/2016 7:13:35 AM
Add as Friend | Send Message

Forbidden how much bicarbonate. what time period are we talking . Bedtime two hours before meals or two hours after meals . It must interfere with stomach acid and digestion . Where do you get your supplements from for a trust purpose . Most everything has been taken over by now.These times its hard to trust any food or supplements coming out of sold out companies .

Mark as Spam | Posted On 2/26/2023 7:49:29 AM

Like Dislike

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forbiddenhealing
Joined On 2/21/2011 9:51:43 AM
Add as Friend | Send Message

JHY....I use Arm&Hammer usually in xcess of what it takes to neutralize pure C/ascorbic acid usually before bed...for me about 7-8Grams C to about 5 Grams baking soda, eyeballed on a spoon, fizzed in half cup water..or therapeutically 4-5Xs/day..Otherwise a half-Tsp baking soda alone several Xs/day...both on empty stomach, half an hour before eating. Mercola does clean supplements, I also use NOW, Life Extension and purebulk....Some are sourced fr China or ? and legit companies have a tech guy you can call and ask about their lab testing and purity. Details on dosages, absorbability and personal results are yours to ferret-out...I prefer real foods in vast variety, supplements are supplemental and sometimes simply -mental!....Trust nothing you can't verify.

Mark as Spam | Posted On 2/26/2023 8:20:20 AM

Like Dislike

Mimiof

Joined On 2/4/2023 6:49:07 AM

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I recently watched Mr. Wim Hofs breathing video. It reminded me of Systema classes. I needed that reminder. I also needed the soda reminder. You were helpful today. Thanks, Del

Mark as Spam | Posted On 2/26/2023 8:38:16 AM

Like Dislike

Guillermou

Joined On 4/7/2015 8:47:48 AM

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Good advice, Randall. Oxygen is life. Cell survival and operations are dependent on oxygen. When the body becomes hypoxic, it affects organs, tissues, and cells and can cause irreversible damage. The body's internal environment has also become hypoxic due to some diseases (such as cancer, some lung diseases, etc.), including COVID-19). In addition to the disease itself, this hypoxia can also lead to changes in the intestinal microbiota. Clinical treatment of hypoxia focuses on improving the anoxic condition and increasing blood oxygen saturation. Under hypoxia, cells produce a transcriptional activator known as hypoxia-inducible factor 1 (HIF-1).

Expression of HIF can help maintain the internal environment of cells and tissues stable under hypoxic conditions, to adapt to the state of hypoxia. hypoxia When the human body suffers, the intestinal barrier is the first affected. Some conditional pathogens have the opportunity to grow rapidly. These anaerobic bacteria destroy the intestinal microecological barrier, alter the intestinal microbiota and ultimately lead to systemic inflammation. Evidence shows that gut microecology plays an important role when the human body becomes hypoxic.

The intestinal microbial ecosystem can affect vascular physiology and even determine the degree of myocardial infarction. Imbalances in the gut microbiota reduce immune defenses in the respiratory tract, making it easier for respiratory viruses to invade the body. And patients with intestinal diseases are considered to be at high risk of SARS-CoV-2 infection. Dysbiosis causes inflammation and gut barrier, as well as damage to the blood-brain barrier. Dysbiotic gut neuromodulators may affect the central nervous system or peripheral carotid body chemoreceptors causing silent hypoxia.

Mark as Spam | Posted On 2/26/2023 8:56:32 AM

Like Dislike

Guillermou

Joined On 4/7/2015 8:47:48 AM

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In most lung diseases, oxygen saturation in the blood decreases as the lung disease worsens. In severe cases of COVID-19, people have difficulty breathing, their lungs are damaged, and blood oxygen saturation falls between 70-80% and below 50% in some cases. The lungs are severely damaged, and the lack of oxygen can damage other organs, such as the heart, kidneys, intestines, and brain, and then rapidly develop into respiratory failure. Blood oxygen saturation in the body is decreased, the hypoxic phenotype is evident, and patients with new coronary disease experience respiratory distress. The intestinal microbial ecosystems of critically ill patients with COVID-19 are disordered and prone to secondary infections.

Studies have shown that respiratory viral infections may be related to changes in the gut microbiota, making patients prone to secondary bacterial infections. Patients often die from secondary bacterial infections rather than viral infection. In the treatment of patients with COVID-19, the intestinal microecological balance should be considered and the intestinal bacteria should be adjusted to maintain homeostasis. The intestinal microbiota is vital in the defenses of the lungs against respiratory infections. These strategies could include the use of SCFA-producing probiotics and prebiotics, such as high-fiber diets.

These procedures could reinforce the gut microbiota's ability to preemptively arm the immune system and also protect the microbiota against disturbances associated with viral infections. The alteration of the intestinal microbiota not only participates in intestinal disorders but also favors systemic damage and bacterial superinfections www.frontiersin.org/.../full (2021) .----www.sciencedirect.com/.../S246886732100081X (2021) .-----link.springer.com/.../s00415-020-10067-3 (2021) .----www.nature.com/.../s41385-020-00361-8 (2021).----

Mark as Spam | Posted On 2/26/2023 8:57:15 AM

Like Dislike

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sherryt

Joined On 8/2/2008 9:15:43 PM

Add as Friend | Send Message

Dear Dr. Mercola and Gui, please continue to post your VERY informative insights, be they in layman's terms or more in-depth. I'm not a health care professional, nor a rocket scientist, but I very much appreciate the in-depth explanations and cited sources you provide. Although I may not fully comprehend everything, I am learning, and each new nugget of information you provide helps me to become better informed. Knowledge is power! If there are readers that don't appreciate the scientific explanations and don't want to learn, there's this beautiful thing you can do called keep scrolling. ~Sending wishes for good health and peace to you all!

Reply | Mark as Spam | Posted On 2/26/2023 11:22:50 AM

Like Dislike

Maritt

Joined On 12/14/2010 8:19:52 AM

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Great article and great recommendations. However the underlying cause for mitochondrial dysfunction is thiamine (vitamin B1) deficiency - Derrick Lonsdale & Chandler Marrs: Thiamine Deficiency Disease, Dysautonomia, and High Calorie Malnutrition. Dr Lonsdale refers to mitochondrial dysfunction as a lack of energy production. "Thiamine is not selective. It merely stimulates energy metabolism" -www.hormonesmatter.com/thiamine-deficiency-causes-problems in addition, vaccine injury causes thiamine deficiency.

Reply | Mark as Spam | Posted On 2/26/2023 6:47:02 AM

Like Dislike

Guillermou

Joined On 4/7/2015 8:47:48 AM

Add as Friend | Send Message

Thanks Maritt. And in general the entire B complex is necessary for proper mitochondrial and cellular function, and constitutes a complex network of interrelated processes that support mitochondrial function and energy metabolism and prevent toxicity. Thiamine (B1) is essential for the oxidative decarboxylation of the branched-chain ketoacid dehydrogenase multienzyme complexes of the citric acid cycle. Riboflavin (B2) is required for flavoenzymes in the respiratory chain, while NADH is synthesized from niacin (B3) and is required to supply protons for oxidative phosphorylation. Pantothenic acid (B5) is required for the formation of coenzyme A and is also essential for the -ketoglutaramate and pyruvate dehydrogenase complexes, as well as for the oxidation of fatty acids.

Biotin(B7) is the coenzyme of decarboxylases necessary for gluconeogenesis and fatty acid oxidation. Folic acid and vitamin B 12 alone or in combination may provide significant protection against alterations in oxidative stress and apoptotic marker parameters and subsequent changes in mitochondria, namely prooxidative defense (NO, TBARS, OH -) and antioxidant (SOD , CAT, GSH), iNOS protein expression, mitochondrial inflammation, cytochrome c oxidase and Ca 2+ -ATPase activity, Ca 2+ content, caspase-3 activity. www.sciencedirect.com/science/article/abs/pii/S0009279706000998 (2012) .------onlinelibrary.wiley.com/.../tox.20648 (2012).------ www.mdpi.com/.../30 (2022).----- www.sciencedirect.com/.../B9780323902564000011 (2023)

Mark as Spam | Posted On 2/26/2023 7:33:17 AM

Like Dislike

Mimiof

Joined On 2/4/2023 6:49:07 AM

Add as Friend | Send Message

Isnt B1 a biotin? I take 3 B1 and 3 B6 because of hair loss. It worked.

Mark as Spam | Posted On 2/26/2023 8:40:23 AM

Like Dislike

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otis101

Joined On 7/10/2010 6:30:32 PM

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Maritt, thanks for simplicity.

Mark as Spam | Posted On 2/26/2023 6:37:00 PM

Like Dislike

AaronF

Joined On 11/27/2007 11:13:05 AM

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Thank you, Dr. Mercola, for your wonderful daily gifts of such organized essential information! Your advice about protecting against EMF is very timely for me, since just recently, I was trying to find inexpensive options for that. I discovered that I could buy a pack of 12 mylar film thermal blankets (having material composed of aluminum) for under $10 (on Amazon)! I am planning on sealing these together to form a continuous shield covering, say, for a popup tent (about $100) that could be fitted on top of my bed or on the floor. I know it wouldn't be a perfect shield, because that sneaky EMF would be able to find a way through my homemade design; but I am hoping, regardless, that it could cut the EMF by at least by half, maybe more.

Only experiment, including measurements with an EMF meter inside and outside my makeshift tent would tell for sure. Of course, I know there is already available your very well designed commercial tent, but it is super expensive ($500), and besides, it does not seem adaptable to my special requirement for an entry port for a hose from my CPAP (to my face mask) that I need to compensate for my sleep apnea. My setup would allow a port for my CPAP hose. I am estimating that any modification I would make to your commercial EMF tent would substantially reduce the protection it was designed to provide. Any advice you or your readers could offer for my EMF-objective would be greatly appreciated!

Reply | Mark as Spam | Posted On 2/26/2023 2:45:46 AM

Like Dislike

MarkPitt
Joined On 4/1/2009 6:17:42 AM
Add as Friend | Send Message

I'm going to mention this again because so many people found it helpful the last time... I've been taking methylene blue (MB) since mid 2021 and didn't like the taste, or staining that goes along with putting drops into liquid and while grousing about the hassle one day, I remembered that some people used to put MMS (chlorine dioxide that I've been using since 2006) into gel caps. I've been capping up herbs for many decades so I had capsules handy and tried squirting MB into one and bingo, all hassles GONE! I played with dosing a lot early on and settled on a full standard dropper and that amount fits very comfortably into the big half of a 00 sized cap. I've already dosed this morning so I can't count the drops, but I think it's about a dozen. I should also mention that Dr Joe says that MB is more absorbable with something on the acid side, so I take my AM dose with my morning coffee and a gram of Vit-C and my evening dose with a beer :)

Reply | Mark as Spam | Posted On 2/26/2023 8:41:09 AM

Like Dislike

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nab7013
Joined On 8/5/2021 6:16:15 AM
Add as Friend | Send Message

Where do you get it?

Mark as Spam | Posted On 2/26/2023 10:03:19 AM

Like Dislike

Jhaden
Joined On 12/27/2022 9:46:10 AM
Add as Friend | Send Message

I looked this drug up. Well, it's a dye. I don't see how anyone is comfortable taking it. Nothing natural about it and I'm surprised Dr. Mercola recommends it.

Mark as Spam | Posted On 2/27/2023 4:37:02 PM

Like Dislike

MarkPitt
Joined On 4/1/2009 6:17:42 AM
Add as Friend | Send Message

Jhaden... Interesting logic. MANY things have multiple functions. DMSO is a solvent made from wood pulp, but it's almost miraculous for aches, pains and wounds. The base molecule of methylene blue was the foundation of hydroxychloroquine, so I guess you wouldn't take that either, eh?

Mark as Spam | Posted On 2/27/2023 5:41:08 PM

Like Dislike

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pipblanc
Joined On 3/17/2012 2:20:27 AM
Add as Friend | Send Message

Interesting about NAD+ only three days ago I started taking this for another reason other than Long Covid and suddenly felt better than I have done in years since I had Covid November 2019 onwards. Walking without a stick and substantially more stamina, and depression lifting. Please look at the work of Dr. Abram Hoffer "The Vitamin Cure for Alcoholism ", Roger J. Williams and Andrew Saul - fascinating stuff. Thank you Dr Mercola.

Reply | Mark as Spam | Posted On 2/26/2023 3:51:50 AM

Like Dislike

Guillermou

Joined On 4/7/2015 8:47:48 AM

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Good medicine, pipblanc. Aging and previous pathologies are the cause of severe Covid. NAD+ levels decline with age and oxidative stress over time. Also, during aging, decreased function of genes that control the circadian rhythm can reduce NAD+ levels. In the mitochondria of the young, NADH can easily donate its electrons to generate NAD+. During the aging process, increased DNA damage reduces NAD+, causing mitochondrial dysfunction. www.ncbi.nlm.nih.gov/.../PMC4112140 (2014) .pubmed.ncbi.nlm.nih.gov/22848760 (2012) Sirtuins NAD+ activation activates genes that improve metabolism, help lose weight, and lower LDL cholesterol. Additionally, niacin and other NAD+ precursors are being tested as treatments for cardiovascular disease.

Nicotinamide riboside supplementation protected against diet-induced obesity. These animals may also burn fat better, burn more calories, and become more sensitive to insulin. Sirtuins improve glucose levels and glucose homeostasis www.ncbi.nlm.nih.gov/.../PMC3963134 (2014) www.ncbi.nlm.nih.gov/.../PMC4814520 (2016) SIRT1/NAD+ is important for the immune system to eliminate pathogens in part through activation of MHC II. Hypoxia or low oxygen prevents MHC II from being activated by decreasing SIRT1 activity (oxidized LDL also decreases SIRT1 in macrophages). academic.oup.com/.../2409095 (2011)

Mark as Spam | Posted On 2/26/2023 8:49:51 AM

Like Dislike

Guillermou

Joined On 4/7/2015 8:47:48 AM

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As Dr. Mercola has reported, CD38 is an enzyme found on the surface of many immune cells, it also consumes about 100 NAD molecules in each cycle of its reaction. CD38 is a cell signaling enzyme involved in sending calcium signals through the cell to activate parts of your immune system. The global spread of the SARS-CoV-2 virus revealed specific susceptibilities to the virus among the elderly and people with age-related syndromes characterized by acute refractory lung disease accompanied by multi-organ failure. These observations underscore the interplay between the virus, the biology of aging, and the outcomes seen in the most severe cases of SARS-CoV-2 infection.

Evidence to support the hypothesis that CD38 plays a central role in altered immunometabolism as a result of COVID-19 infection. The authors discuss a critical but underappreciated trifecta of CD38-mediated NAD, aging, and the COVID-19 immune response and speculate that the CD38/NAD 1 axis is a promising therapeutic target for this disease. europepmc.org/.../34494892 (2021) NAD acts as a cofactor in several oxidation-reduction (redox) reactions and is a substrate for several non-redox enzymes. NAD is critical to a variety of cellular processes, including energy metabolism, cell signaling, and epigenetics.

NAD homeostasis appears to be of paramount importance for health and longevity, and its dysregulation is associated with multiple diseases. NAD metabolism is dynamic and is maintained by synthesis and degradation. Dysregulation of CD38 causes changes in NAD homeostasis and contributes to the pathophysiology of multiple conditions. In fact, in animal models, the development of infectious diseases, autoimmune disorders, fibrosis, metabolic diseases, and age-associated diseases, including cancer, heart disease, and neurodegeneration, are associated with altered CD38 enzymatic activity. pubmed.ncbi.nlm.nih.gov/35138178 (2022)

Mark as Spam | Posted On 2/26/2023 8:51:40 AM

Like Dislike

Guillermou

Joined On 4/7/2015 8:47:48 AM

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This study aimed to assess critical metabolic pathways altered with disease severity in hospitalized patients with COVID-19. The results show that obesity, respiratory rate, blood pressure, and oxygen saturation, as well as some laboratory parameters and radiological findings, were associated with the severity of the disease. Furthermore, ceramide metabolism, tryptophan degradation, and reductions in several metabolic reactions involving nicotinamide adenine nucleotide (NAD) at the time of inclusion were significantly associated with respiratory severity and correlated with inflammation. www.mdpi.com/.../htm (2021) Individual metabolic processes to produce NAD may be different based on age, disease, and genetics. As Dr. Mercola reports, the "raw materials" or "building blocks" (metabolic precursors) the body needs to produce (synthesise) NAD+: 1.- Nicotinamide Riboside (NR) 2.- Tryptophan (L-Trp) 3.- Nicotinic acid (NA; also commonly known as vitamin B3) 4.- Nicotinamide (NAM, also called “niacin without rinsing”) 5.- Nicotinamide mononucleotide (NMN) Supplementation with NAD+ precursors involved in "recovery pathways" (such as nicotinamide riboside and NMN) is relatively more effective in increasing cellular NAD+ levels compared to those involved in the "de novo" pathway.

This is because the NAMPT enzyme can act as a major limiting factor in NAD+ production. www.ncbi.nlm.nih.gov/.../PMC4112140 (2014) pubmed.ncbi.nlm.nih.gov/19286518 (2009)

Mark as Spam | Posted On 2/26/2023 8:53:09 AM

Like Dislike

AaronF

Joined On 11/27/2007 11:13:05 AM

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Since an overlap between long covid and vaccine injury was indicated, for example by their both being affected by mitochondrial health, it might be useful to review the relationship between long covid and vaccine injury as it is described on the FLCCC Alliance's website, covid19criticalcare.com/treatment-protocols/i-recover-long-covid-treat.. . Very good review, plus methods for treating both syndromes (long covid and vaccine injury).

Reply | Mark as Spam | Posted On 2/26/2023 12:08:22 PM

Like Dislike

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louisstark

Joined On 7/23/2019 8:50:37 AM

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Those of us who have had Lyme disease are usually excluded from blood donation places in my experience. Can chewing on barberries be as effective as taking berberine pills?

Reply | Mark as Spam | Posted On 2/26/2023 11:21:09 AM

Like Dislike

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tbirdcat

Joined On 5/3/2013 4:42:17 PM

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Thanks for this info. I’ve been wondering if changes in my blood tests have been related to COVID infection. For instance, why would TMAO levels increase over 3x in the last 2 years, in a vegetarian? Does menopause affect this and Hcy, etc (Cleveland heart panel results). How would you treat—I’ve read that Reishi can help? What other results would you look at? Thanks for any help.

Reply | Mark as Spam | Posted On 2/26/2023 9:33:31 AM

Like Dislike

rrealrose

Joined On 11/10/2011 8:59:01 AM

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An exciting discussion? overwhelming? Hosted by Steve Kirsch last Thursday, Dr. Ryan Cole dives deep into elementary then esoteric blood tests, depending on your concerns. Seems you will want to chose wisely as Dr. Cole gives a laundry list of tests, its a bit over-the-top, Steve stops and backs it down several times so you can get an overview and follow along. Found this long discussion today: Full Episode #67: Spike Injury Diagnosis and Recovery with Dr. Ryan Cole - - rumble.com/v2aq1iw-full-episode-67-spike-injury-diagnosis-and-recovery.. . - - myriad questions are at the end. Hope this helps.

Mark as Spam | Posted On 2/26/2023 2:22:11 PM

Like Dislike

Alicep1

Joined On 6/22/2021 4:48:53 PM

Add as Friend | Send Message

Does anyone know if near and near infared light therapy panels provide the same benefits as a sauna as Dr. Mercola descrbes?

Reply | Mark as Spam | Posted On 2/26/2023 9:02:05 AM

Like Dislike

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evedawn

Joined On 7/13/2011 6:31:03 AM

Add as Friend | Send Message

Covid 19 = detox from EMF exposure. Long Covid = chronic EMF exposure.

Reply | Mark as Spam | Posted On 2/26/2023 6:37:42 AM

Like Dislike

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brianallen1

Joined On 8/7/2021 10:12:38 AM

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Add RF exposure to that.

Mark as Spam | Posted On 2/26/2023 7:40:50 AM

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Guillermou

Joined On 4/7/2015 8:47:48 AM

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Yes, evedawn, a weakened immune system generates long-term and chronic diseases and vice versa. There are known lifestyle-related risk factors for colds and other viruses, the flu, and pneumonia. These include antibiotics, vaccinations, environmental toxins, smoking, excessive alcohol consumption, obesity, a weakened immune system, chronic illness, lack of sleep, and chronic stress. Conversely, people who lead a healthy lifestyle are less prone to both infections and chronic diseases. Lifestyle behaviors that contribute to a healthy immune system include regular exercise, a healthy diet, seven or more hours of sleep, avoiding smoking, limiting alcohol intake, and learning stress management techniques.

We are seeing how all the environmental toxins, those that enter the diet, as well as the manipulations of biology, such as vaccines and prions, in humans and animals are an attack on health and biodiversity. Glyphosate and other toxins accumulate in the body, creating immunosuppressed people where the Covid-19 virus or with any virus can mutate, and we are seeing, based on the reports of Dr. Mercola sharing analysis with scientists, that they are not subject to the manipulations of corrupt elites, defending true science, like vaccines favor this process.

When a virus enters an immunocompromised body, due to the buildup of glyphosate and other contaminants, energy-producing cells called mitochondria are unable to produce their main energy ingredient called ATP. ATP helps remove the virus from our cells. Glyphosate interferes with the ATP energy process of our body's cells. If the cells cannot make ATP, the immune system has a hard time clearing the virus.

Mark as Spam | Posted On 2/26/2023 7:54:11 AM

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Guillermou

Joined On 4/7/2015 8:47:48 AM

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Electromagnetic exposure could affect the number and function of immune cells to some extent, including cell ratio, cell cycle, apoptosis, lethal activity, cytokine content, etc. The research objects basically covered all types of immune cells, mainly on PBMC, T lymphocytes, B lymphocytes, NK cells and macrophages. Meanwhile, there are also negative reports of electromagnetic fields on immune cells. www.tandfonline.com/.../15368378.2021.2001651 (2021) 5G also employs new technologies, such as active antennas that pose unique challenges for measuring exposures. Consider that millimeter waves are mainly absorbed within a few millimeters of human skin and in the superficial layers of the cornea. Short-term exposure may have adverse physiological effects on the peripheral nervous system, immune system, and cardiovascular system, eye diseases, melanoma, sterility, etc. blogs.scientificamerican.com/observations/we-have-no-reason-to-believe..

Mark as Spam | Posted On 2/26/2023 7:54:44 AM

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phoenix999

Joined On 5/5/2016 5:32:03 PM

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One EMF expert stated that Calcium Channel Blockers can protect our cells . . . and one natural CCB is MAGNESIUM!

Mark as Spam | Posted On 2/27/2023 2:59:55 PM

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catsanddogslady

Joined On 2/19/2012 6:00:11 PM

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cannot find food grade methylene blue in Canada....it is all lab stuff... any chance you might start offering this?

Reply | Mark as Spam | Posted On 2/27/2023 11:49:34 PM

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phoenix999

Joined On 5/5/2016 5:32:03 PM

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DR. MERCOLA: Please mention that Methylene Blue is highly toxic to those with G6PD deficiency! These individuals can experience severe hemolysis/ hemolytic anemia which can be life-threatening. G6PD deficiency is not tested at birth (I think it should be) but it confers hypersensitivity to some common drugs, including Aspirin, Chloroquine and Hydroxychloroquine. These individuals also have a severe reaction to fava beans, which is why G6PD deficiency is sometimes called "Favism". THANKS for the great info on Near Infrared! I love Dr. Roger Seheult's YT videos on this fascinating area of research.

Reply | Mark as Spam | Posted On 2/27/2023 2:20:59 PM

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airsurfer

Joined On 3/31/2014 8:39:38 PM

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today you are either healthy or have covID. There are no other ilnesses amongst collaborators, have you been vaxed yet sir? Seriously what a psyop to call general dis-ease 'long cov' like you need our long dictatorial rules or you'll never get rid of it. Most people here know better, but I get it, to get people off the bandwagon of MSM lies you need to speak their language, even if it's all doubtful at best. I really appreciate those who take lots of time to share information but I only believe in my own universal cure untill proven otherwise (open mind is part of the cure).

There is NOT one single element (nutrient, vitamin, supplement) that is THE answer. It is (in my humble analysis) all about homeostasis and listening to your body while having access to natural food. The contents of food change, the environment changes, your body (and senses) is adaptive and if todays orange has 50 times less of a needed 'thing', then your body will tell you keep eating oranges or frantically keep stuffing yourself (the way kids and babies learn) untill you have found a food with the needed 'thing'.

Since most modern food isn't great, most likely this stuffing results in illness. Got to go out to the woods and dare smell and taste everything (in small prudent quantities), you can spit it out if bad. Yes worst case scenario it is risky (molds etc) but you'll learn quickly. Dressed monkey wasn't created to become a biochemist wizard, he has senses who do all the work for him without a sweat, why throw that all away.

Isn't that the same path big harma walks with their reductionism telling you the orange is good because it has vit C without aknowledging that the orange is in full sync with its environment (talking about a tree near you) and that everything in the orange makes it work, not just 1 component (reductionism) which they have mastered. Same goes with expression, today you might need another dance and song than yesterday. Don't block your expression, don't block your body.

Reply | Mark as Spam | Posted On 2/27/2023 1:35:45 PM

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airsurfer

Joined On 3/31/2014 8:39:38 PM

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don't read anything into the 'orange', I just had to pick an easy example. The individual cannot be healthy if the terrain is laden with poisons. Depending on which poison another healing action is needed. Individual differences lead to individual symptomatology, but we're all poisoned by the same unnatural influences imposed on us with bogus reasons. I'm sorry I'm not

sounding very positive, it's just that I'm getting upset at the all continuing evil plan, whether they distract us or not with boogeymen, they put those bloody antennas and cameras in kindergarten with metal enclosures looking like internment camps which would never have been accepted before as too little escape routes (scared kids can trapple themselves too, not only drunken football fans).

Just following orders. Just blaming my own evil on something that doesn't even live. I'm tired of world turning into hell because of stupidity, lazyness or whatever. People naively believe atrocities from the past won't happen again thanks to all those laws, while the only difference is that hell will be called a good law abiding society. Yes it will self destruct but not during this lifetime and the kids will pay the bill... We have drifted away so far from natural laws (stupidity doesn't survive) that we've fooled ourselves they don't apply anymore.

Mark as Spam | Posted On 2/27/2023 2:27:37 PM

Like Dislike

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chrisattaway

Joined On 4/11/2020 11:53:28 AM

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Allopathic medicine is THE leading cause of death. Period. Hands down. There is no 2nd place. Why do I say that? Over 70% of all medical expenses are unnecessary. Allopaths are taught to treat symptoms and not find root causes. Just about everything they know about diet and nutrition is wrong. They tend to almost never give dietary advice and when they do, they advise something like the DASH diet for high blood pressure; a diet that has never been tested. They have no clue that salt does not cause high blood pressure. They have no clue how to solve the metabolic health issue and this is THE issue.

Reply | Mark as Spam | Posted On 2/27/2023 5:45:47 AM

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versatile

Joined On 10/16/2007 4:23:09 PM

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Someone should be asking, "is long COVID a disease?" Unfortunately, our medical systems have no clear, much less any scientific definition of a disease. Long COVID, to my eyes, appears to be a shadowy form, one that can be attributed to anything, can consist of anything - in other words, a powerful marketing and propaganda tool.

Reply | Mark as Spam | Posted On 2/27/2023 5:42:51 AM

Like Dislike

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phoenix999

Joined On 5/5/2016 5:32:03 PM

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Malaria and dengue patients continue to have symptoms long after the microbe has stopped replicating, because their immune systems don't know how to shut off and stop releasing inflammatory cytokines. We do know that viruses and bacteria can live dormant in our bodies for decades (Lyme, EBV etc.) and shed highly inflammatory molecules such as LPS; so how much more this phenomenon must exist for a genetically engineered virus with gain-of-function features. There is an "Infection Theory" of chronic inflammatory diseases, that most non-infectious chronic inflammatory diseases have an infectious component. Interestingly, this article blames excess iron in part for awakening dormant microbesi: www.ncbi.nlm.nih.gov/.../PMC6055827

Mark as Spam | Posted On 2/27/2023 2:52:23 PM

Like Dislike

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airsurfer

Joined On 3/31/2014 8:39:38 PM

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in other words, the way to distract the fools and keep them busy. How powerful would it be if from day one, people would have understood there is no virus? And that it was the usual program of create problem to justify the 'solution'. Unfortunately, many, many livelyhoods depend on collaborating with a system of lies, and exposing the lies implies admitting that our degrees or part of it, are just useless nonsense and fearpropaganda. The 'too big to fail' approach to calling the poison the cure. You got covID -cough radiation illness cough- why don't you get a smartphone to track -cough irradiate cough- those others who (don't) have it (yet)?

We'll inject you with disease, so that you don't catch any disease. Huh..? And to make sure you get the disease we'll bypass all natural defenses by injecting it, together with known poisons which your body can't get rid of because they don't even exist in nature. Wow, this sounds so crazy it must be true! As seen on tv, advertisement paid by criminal company and and... (letters getting smaller and smaller and talks faster) I think to avoid persecution, that it is best to embrace being called names and in the end form big assemblies of dissenters that simply cannot be denied anymore.

Mark as Spam | Posted On 2/27/2023 2:55:57 PM

Like Dislike

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airsurfer

Joined On 3/31/2014 8:39:38 PM

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phoenix I appreciate your input but look at it another way just for fun: -isn't it convenient to say those boogeyman virusses are there to get you, and that they patiently wait untill you slip to get you? -their -stupid- immune system (not written but implied) doesn't know how to shut off.... No mention of this (the appearance of symptoms as your body signaling you there is something wrong and the sustaining of the dis-ease) being the result of not having adressed the root cause and staying there, right in the middle of poisonous terrain... The world is full of known poisonous terrains/zones, yet I don't see medical protocols recommending relocating, even just as a differential diagnosis test.

Doesn't that correspond better to the apparent infectious component, many people in the same dirty zone suffering similar diseases? The vax snakesmen want it to be called infectious so they can sell you their 'solution' against 'transmission'. Human history and nature is full of examples of organisms in the same zone suffering the same diseases. The snakesmen took notice of it. I'd say there's no lack (also in old scientific publications) of dissappearance of disease by relocating.

They blame invisible life instead of the known beyond doubt toxins. How come 'wild' tribes are so healthy and strong compared to the modern city man? If contagion of 1 individual of a species would suffice to transmit disease, risking the whole species existence, would there still be any species alive? As it's not a once in a lifetime occurence, it's daily. It makes zero statistical sense. We are not an empty human carrying microlife. We are an assembly of microlife that gives similar macro-assemblies called human. Any disturbance, excess, has an effect, an expression.

Mark as Spam | Posted On 2/27/2023 3:35:19 PM

Like Dislike

Heather Marsh

Joined On 5/17/2008 6:58:11 AM

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One thing I find encouraging is the use of LDN in trials for the treatment of long covid - even in Australia!

Reply | Mark as Spam | Posted On 2/26/2023 6:08:43 PM

Like Dislike

HoffKen
Joined On 7/18/2021 12:36:11 AM
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Dr. your graph on vegetable oils, sugar, diabetes needs to include carbohydrate consumption since the carbs eventually become sugars. I suspect that has increased a lot over the years as the typical American diet is ~ 60% carbs.

Reply | Mark as Spam | Posted On 2/26/2023 2:26:42 PM

Like Dislike

Astridgb36
Joined On 10/29/2011 8:03:03 PM
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The statement (about falling US life expectancy) "While media blame this drop on COVID-19 infection, that makes no sense because the average age of those who died from COVID was about 85, well over the life expectancy in 2019." is incorrect. In fact, 60-year-olds expect to live to be 85, at which time they will expect to reach 92. If you kill off all the 85-year-olds, you will effectively reduce the life expectancy of all 60-year-old by 7 years. This will certainly reduce the average life expectancy of all Americans.

Reply | Mark as Spam | Posted On 2/26/2023 1:42:28 PM

Like Dislike

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jhy7142
Joined On 3/10/2016 7:13:35 AM
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Astridgb36 Nic Tesla always said anyone can use numbers but they dont always tell the truth not a quote but he was referring to Einstein and all of his bogus equations that proof nothing .Just like doing life expectancy after WW1 or 2 .

Mark as Spam | Posted On 2/26/2023 4:37:29 PM

Like Dislike

Alfurs
Joined On 8/27/2020 3:44:44 AM
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Mercola, you say to turn off WiFi at night. Does this mean radiation somehow becomes harmless during daylight hours?

Reply | Mark as Spam | Posted On 2/26/2023 1:39:51 PM

Like Dislike

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brianallen1
Joined On 8/7/2021 10:12:38 AM
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Sarcasm will get you nowhere. He is addressing people such as yourself without the sense to eliminate EMFs/ RF's when they are not necessary or not in use.

Mark as Spam | Posted On 2/26/2023 3:50:39 PM

Like Dislike

Whitney_Springer
Joined On 6/20/2006 1:37:58 AM
Add as Friend | Send Message

Thank you Dr. Mercola for being a true hero as defined by Joseph Campbell. You have built a vibrant community of truth seekers and fighters for justice. We are all blessed to have you in our lives!

Reply | Mark as Spam | Posted On 2/26/2023 1:15:39 PM

Like Dislike

Segstar
Joined On 7/3/2012 3:30:42 PM
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Absolutely, positively by far the best source of the most purest and potent Blue ever.. Start slow and proceed cautiously, goes well with your close squeeze and pairs excellent with a good glass.. https://youtu.be/Va1WwlUcGp4

Reply | Mark as Spam | Posted On 2/26/2023 12:40:51 PM

Like Dislike

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epi-cure
Joined On 5/12/2012 7:02:04 PM
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twitter.com/JoeBell/status/1629851931613986816?s=20&utm_source=sub.. and for those who still possess a longer attention span: www.youtube.com/watch

Reply | Mark as Spam | Posted On 2/26/2023 9:58:26 AM

Like Dislike

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rrealrose
Joined On 11/10/2011 8:59:01 AM
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Did you see this one too? down the page from Woody's comments: "#1 NATO expansion since 1986: Who is the aggressor?" - - twitter.com/.../1629596543178407936 - - makes ya wonder why US is poking the Russian bear. - - - - - Not off topic, this Sunday evening, 7:30pm eastern time, Epoch Times is featuring attorney Aaron Siri, part 1, where he discusses how it happened and why vaxx makers are protected and at every turn, his firm has had to FOIA request and then crowbar key public information out of govt agencies. Here's a link, (not sure it will work, you may need to set up a trial subscription): www.theepochtimes.com/aaron-siri-part-1-why-are-vaccine-manufacturers-..

Mark as Spam | Posted On 2/26/2023 11:19:55 AM

Like Dislike

Grob10yahoo.com
Joined On 2/26/2023 9:37:26 AM
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I cook everything in olive oil, you suggest replacing this with butter?

Reply | Mark as Spam | Posted On 2/26/2023 9:45:41 AM

Like Dislike

LongTallTexan

Joined On 2/26/2023 8:17:07 AM

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No mention of EVs and EMF - saw something that the EMFs from riding in an EV was off the charts - hope someone has specific info

Reply | Mark as Spam | Posted On 2/26/2023 8:19:05 AM

Like Dislike

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medrakemdgmail.com

Joined On 3/10/2021 10:35:16 AM

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The virus was designed by Fauci and Collins, manufactured by Moderna and weaponized and released by the Chicoms in order to start the plandemic and bring about economic, social and political collapse. The mRNAlien jabs were developed by IGPfizer for the second and long-term stage of the two-pronged biological warfare attack, to create a chronically-ill population, shorn of freedom and broken in spirit, that is easy to mop up and replace with imported Third World slaves.

Reply | Mark as Spam | Posted On 2/26/2023 6:17:44 AM

Like Dislike

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brodiebrock12

Joined On 9/18/2008 1:31:51 PM

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and yet NO ONE including these perps who orchestrated ALL of it are remotely concerned of being held to account. Well into planning the next plandemic. ZERO accountability anywhere to be seen

Mark as Spam | Posted On 2/26/2023 12:04:56 PM

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airsurfer

Joined On 3/31/2014 8:39:38 PM

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The cover story lies are multi layered. The initial death rate was not due to some dangerous virus, as people mostly died in hospitals, not at home (=death by hospital protocol, not by true healthcare). It was just a scare story to justify the next step which would then justify the next step and steps to 'get out of it' and live happily ever after in this digital tracking irradiating prison. You need a scare story and while you're at it, why not one that is easy to implement? Where nobody gets to see the actual boogeyman (no virus ever isolated nor proven to cause disease which is at worst was no more lethal than anything before etc), you get all the fearpropaganda and shaming if you don't participate in their 'war' on health, sorry, on 'illness'.

Imaging they would have blamed it on vampires and no one ever saw one, nor catched one, would have made the story harder to swallow and implement. I don't believe in lab virusweapons. It makes no sense, as well on physics as on effect. The pathogens they alledgedly create there (multi layer lie), are isolated from the outside world and people just follow the hollywood narrative: to protect the outside from the V!

Just impossible to seal off, lab leaks are constant. It's the opposite, to protect the V from the outside lifeforms that would eradicate the lab monsters in no time. A 'succes' is a V that actually 'survives' long enough, instead of never 'being born' at all. You cannot just create life like lego assemblies, not even with mixing of already existing life.

Physics: every single particle has the entire history in some form as it has been subjected to the influence of all the rest. Basically (physics theory) it is not possible to escape the influence of everything and thus everything is in sync, adapted to its environment. When tampering with V, the only V that can 'survive' is one more or less in sync. All the rest 'die'. Introduce artificial radiation and you change the sync parameters thus life, simple as that.

Mark as Spam | Posted On 2/27/2023 4:02:13 PM

Like Dislike

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tbran10

Joined On 10/3/2013 11:44:03 AM

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As long as our medical leader ship does not warn about the toxins in our food supply, they will continue to inflate the cost of medical care in the United States

Reply | Mark as Spam | Posted On 2/26/2023 7:57:22 PM

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