MERCOLA
Take Control of Your Health

DoraRay

Why did we lose the ability to eat food? Why do we need others to tell us what to eat? How about getting back to basics: local, organic, seasonal, moderate quantity. Why it is not as simple as looking around and seeing what has been grown for generations in our areas and eating it. My life-long search ended when I realised how simple this was. I stopped reading medical studies and learning complex biochemical processes and cycles - and totally relaxed. Now I eat meat straight from the farmers, pulses (prepared traditionally) grown in the region, some local seasonal vegetables including ferments, nuts and fruits. A good sourdough is an occasional treat. I raise few chickens to have the best possible eggs. I appreciate Dr. Mercola's work and acknowledge that there are many ill people, needing special diets. I was there until I decided that eating was not supposed to be complex.

Posted On 03/14/2024

Guillermou

Relevant information. Evidence is demonstrating that mitochondrial dysfunction is related to obesity, diabetes, and chronic and degenerative diseases, including cancer. Mitochondrial dysfunction is caused by poor nutrition. highly processed and pesticide-contaminated diet, load of refined sugars, linoleic acid and additives, vaccines, fluoridated and contaminated water, stress, sedentary life, etc., Mitochondria are involved in heat production, calcium storage, apoptosis, cell signaling, biosynthesis, and aging. Inflammatory mediators have an established role in inducing insulin resistance and promoting hyperglycemia.

It has been argued that hyperglycemia drives immune cell dysfunction as a result of mitochondrial dysfunction. Emerging evidence indicates that a decrease in mitochondrial respiration and increases in ROS are adaptations that take shape as mitochondria abdicate their adenosine triphosphate (ATP)-producing function (which is taken over by glycolysis) and instead “reequips” to perform an immunological function. Mitochondrial dysfunction, metabolic stress, and genomic instability are common comorbid biological characteristics among older people.

In this review of the first article, three main problems facing the aging immune system are discussed: (1) inflammatory aging (IA); (2) susceptibility to infection and (3) decreased T cell function. AI increases morbidity and mortality in older adults, and almost all diseases of aging share an inflammatory pathogenesis that includes neurodegenerative diseases and cancer. www.mdpi.com/.../26 (2018).---------- onlinelibrary.wiley.com/.../bies.201800260 (2019).--------- onlinelibrary.wiley.com/.../acel.13942 (2024).------

Posted On 03/14/2024

Guillermou

Mitochondria participate in the differentiation and activation processes of immune cells. Immune cells have a high need for energy. In pro-inflammatory cells, such as activated monocytes and activated T and B cells, energy is generated by increasing glycolysis, while in regulatory cells, such as regulatory T cells or macrophages, energy is generated by increasing mitochondrial function and beta-oxidation. During an infection, mitochondria release mitochondrial danger-associated molecules (DAMPs). These mitochondrial DAMPs have a specific structure and have been shown to reach elevated levels during severe unwanted inflammatory events.

www.sciencedirect.com/.../S0925443920301927 (2020).-- www.sciencedirect.com/science/article/abs/pii/S0300483X17302159 (2017).-- portlandpress.com/biochemsoctrans/article-abstract/51/2/735/232850/Mit.. (2023).--- www.nature.com/.../s41577-022-00760-x (2023).---------- The role of mitochondrial dysfunction in dysregulation of innate and adaptive immunity has been reported. Dysfunctional mitochondria due to deficient NAD+ production in inflammatory T cells. NAM could have a therapeutic role against neurodegeneration and cancer. journals.plos.org/plosbiology/article?id=10.1371/journal.pbio.3002084 (2023).--- www.mdpi.com/.../477 (2020).---- onlinelibrary.wiley.com/.../mc.23673 (2024).--- pubmed.ncbi.nlm.nih.gov/19473119 (2018).—-------- 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 03/14/2024

juststeve

Gui, for a short basic take on things, once insulin resistance is addressed and metabolic flexibility is restored, don't over do it on even healthy, good sourced fats, and as most long followers have practiced, stay away from refined sugars, refined starch products. Even under the former guidelines of Keto it was recommended not to overdo the fasting or stay in a permanent state of Ketosis, but to cycle in and out. There was always a need to move back and forth to maintain the metabolic flexibility. Doc's current recommendations are a refinement of understandings and recommendations, most likely to be followed by explanations easier to grasp.

Posted On 03/14/2024

stoneharbor

A very beautiful statement of "Relevant Information" Gui. It's always nice to see a nice statement of "The Problem" before proceeding further into proposing any solution, and you have done this, mentioning how hyperglycemia (too much glucose in the circulation) and linoleic acid (LA, or omega-6) plus other toxins in circulation are important factors in driving "immune cell dysfunction as a result of mitochondrial dysfunction". The quote included by Dr. Mercola from Bioenergetic researcher Georgi Dinkov includes: "...the direct cause of immune decline is rather simple — decline in mitochondrial function (OXPHOS).

When T-cells (immune cells produced by the thymus) have dysfunctional mitochondria, they have to rely exclusively on glycolysis for energy production. Glycolytic production of energy is insufficient to support proper T-cell differentiation and activity, and in fact can lead to T-cell damage or even death due to the high amount of reactive oxygen species (ROS) produced when glycolysis is the main mode of energy production." Further, in his paper that Dr. Mercola cited, he states: "mitochondrial dysfunction is the actual cause of T cell exhaustion" and obviously without robust T cells, one has a handicapped immune system.

The paper Dinkov cites, www.nature.com/.../s41467-023-42634-3 is providing results from tests where mitochondria move permanently into the glycolytic production of energy, so there is "Terminal T cell exhaustion", and thus a failure of the immune system due to a shortage of T cells. The problem with such studies is they keep feeding their T cell mitochondria glucose until they are exhausted. The solution to this problem, as Gui implies, is to get rid of the hyperglycemic state, just stop the intake of glucose in cells. And then what many studies have shown to happen is a switch to burning fats/ketones. This is the Randle Cycle. Intermittent Fasting brings this on.

Posted On 03/14/2024

stoneharbor

The Randle Cycle is so simple, is available so easily, and will always, if allowed to take place nightly during fasting (if you don't eat so many carbohydrates that your insulin can never deplete circulating glucose), put the mitochondria in this regeneration state where you gain new, healthy mitochondria every morning before you ever eat the first meal of your new day. This change in mitochondrial function is known now as "Mitochondrial Uncoupling". Intermittent fasting is a period of time when glucose is finally substantially removed from circulation such that mitochondia begin burning fats and ketones.

Yes, the “inefficient”,non-energy oriented actions of mitochondria that are using fatty-acid input to repair mitochondria and also cause generation of additional mitochondria. You are going to get less ATP energy, but more healthy mitochondria in a few hours time. This can happen every time the body enters a state of fasting. This fixes the entire problem that is studied in Georgi Dinkov’s cited study. You don’t get mitochondrial exhaustion if you produce plenty of new mitochondria.

This whole process of mitochondrial changeover to burning fats periodically is known as “Mitochondrial Uncoupling” and is even initiated by drugs as part of a cancer cure, as drug companies are never going to explain to you that your body does this automatically during fasting. Notice this study on how they suggest drugs to cause "uncoupling": ashpublications.org/blood/article/138/15/1317/475782/A-novel-and-highl.. So the drug companies know that uncoupling produces less ATP as stated here, from that link:

Posted On 03/14/2024

stoneharbor

"Mitochondrial metabolism is critically involved in the control of bioenergetic and biosynthetic molecular pathways to sustain tumor cell survival and proliferation.26 Specifically, previous studies showed that T-ALL cells rely on OXPHOS to maintain their proliferative capability.25 OXPHOS is coupled to protein complexes of the electron transport chain (ETC) to transfer electrons from reducing equivalents 1,4-dihydronicotinamide adenine dinucleotide (NADH) and dihydroflavin-adenine dinucleotide (FADH2) to oxygen, the final electron acceptor. As a consequence of this electron flux, the ETC generates a high proton gradient across the mitochondrial inner membrane that is required to drive adenosine triphosphate (ATP) synthesis (Figure 1A).

Uncoupling drugs reduce this proton gradient and compromise the energy efficiency of mitochondria, leading to a futile oxidation of acetyl coenzyme A (acetyl-CoA) without generating ATP (Figure 1A). Niclosamide (5-chloro-salicyl-[2-chloro-4-nitro] anilide) is an oral US Food and Drug Administration (FDA)-approved drug for anthelmintic treatment with mitochondrial-uncoupling properties." So why are they doing this? Precisely because in the uncoupled state, mitochondria can build numbers and thus renew their potency during the other, OXPHOS, state: " In this context, we hypothesized that uncoupler drugs that target mitochondrial OXPHOS might be potent antileukemic agents." So they reduce OXPHOS generation of ATP in order to bring on the uncoupling that allows mitochondrial repair and generation. Here's is a general review of the values of uncoupling, a very new concept in mitochondrial health these days: www.semanticscholar.org/paper/Uncoupling-to-survive-The-role-of-mitoch.. And also this: www.sciencedirect.com/science/article/abs/pii/S0531556519306722

Posted On 03/14/2024

Guillermou

Thank you Just and stoneharbor for the extension of practical and scientific actions by adding actions of mitochondrial dysfunction. Over the last decade, type 2 diabetes (T2D) has emerged as a complex multifactorial heterogeneous disease. About 90 to 95% of all diabetes cases worldwide are made up of cases of type 2 diabetes [. Individuals are clinically diagnosed with type 2 diabetes when there is relative insulin deficiency (i.e., islet -cell dysfunction) combined with peripheral insulin resistance (IR). Alarmingly, 541 million adults worldwide are currently living with prediabetes, an asymptomatic hyperglycemic transitional state between normoglycemia and type 2 diabetes, and these individuals are at significant risk of developing type 2 diabetes and other metabolic complications that affect their life expectancy.

life and its quality of life Also as we know, mitochondria are the main participants in cellular energy metabolism, and their dysfunction is associated with the development of insulin resistance in DM2. Mitochondrial function is affected by insulin resistance in several tissues, including skeletal muscle and liver, which greatly influence whole-body glucose homeostasis. This review studies mitochondrial dysfunction in T2DM and its impact on disease progression.

Additionally, consideration should be given to the causes underlying the development of mitochondrial dysfunction in T2DM, including mutations in the mitochondrial genome, mitochondrial DNA methylation and other epigenetic influences, as well as the impact of impaired mitochondrial membrane potential. An increase in glycogenolysis and a decrease in hepatic glucose uptake by glucagon result in a hyperglycemic phenotype, which is determined by insulin deficiency and insulin resistance (IR). To minimize alterations in glucose and lipid metabolism, a reciprocal relationship between IR and insulin sensitivity and secretion is required.

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Guillermou

This connection is disrupted by a reduction in the ability to influence these cellular signals to trigger insulin secretion, leading to further development of dysglycemia. People with type 2 diabetes experience early -cell dysfunction without significant IR. Regardless of the primary event (i.e., RI versus cell dysfunction) contributing to dysglycemia, significant early-onset oxidative damage and mitochondrial dysfunction in multiple metabolic tissues may be a driver of diabetes onset and progression. type 2. Oxidative stress, defined as the generation of reactive oxygen species (ROS), is mediated by hyperglycemia alone or in combination with lipids.

Physiological oxidative stress promotes tissue-to-tissue communication, while pathological oxidative stress promotes tissue-to-tissue miscommunication, and emerging evidence suggests that this is mediated through extracellular vesicles (EVs), including EV-containing mitochondria. In addition to dysglycemia, concomitant conditions of IR are dyslipidemia, hyperinsulinemia, obesity, and high blood pressure, which means that IR is a key sign of the development of metabolic syndrome and CVD.

Impaired mitochondrial function has been demonstrated in muscles with impaired insulin resistance in type 2 diabetic patients. Defective mitochondrial fatty acid metabolism in skeletal muscle is thought to affect insulin signaling pathways, leading to insulin resistance. Some studies indicate that the resulting mitochondrial dysfunction in liver cells can directly cause hepatic insulin resistance. Furthermore, a genetic predisposition is considered in the development of mitochondrial dysfunction in adipocytes in T2DM and has been previously demonstrated.

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Guillermou

Figure 1 of the first link shows the pathogenesis of DM2 based on mitochondrial dysfunction in different tissues. Factors that affect the development of mitochondrial dysfunction in DM2: 1) Alteration of the mitochondrial membrane potential. 2) Mitochondrial DNA mutations. 3) Epigenetic changes. 4) Modulators of oxidative phosphorylation www.imrpress.com/.../htm (2024).---- www.ncbi.nlm.nih.gov/.../PMC10921183 (2024).--- www.mdpi.com/.../1504 (2024).--- There are mechanisms by which hypoglycemia could worsen cardiovascular disease, including thrombosis, inflammation, and arrhythmias, but the relationship could also be explained by "confounding," in which people with comorbidities.

Obesity is recognized as a risk factor for multiple systemic conditions, including metabolic syndrome, type 2 diabetes mellitus, sleep apnea, cardiovascular disorders, and many others. Obesity-related changes in adipose tissue induce functional and structural changes in cardiac myocytes, promoting a wide range of cardiovascular disorders, including atrial fibrillation (AF). Due to the large amount of epidemiological data linking AF with obesity, the mechanisms underlying the development of AF in obese patients are an area of rich ongoing research.

However, progress has been somewhat slowed by the complex phenotypes of both obesity and AF. The triad of inflammation, oxidative stress and mitochondrial dysfunction are fundamental for the pathogenesis of AF in the context of obesity through multiple structural and functional proarrhythmic changes at the level of the atria. We must consider a comprehensive view of the close relationship between oxidative stress, inflammation and mitochondrial dysfunction induced by obesity and the pathogenesis of AF. www.mdpi.com/.../117 (2024).--- www.sciencedirect.com/science/article/abs/pii/B9780323857321000281 (2024).---

Posted On 03/14/2024

stoneharbor

Thanks Gui for connecting the dots. In summary, since a lot of this is technical, just remember that Dr. Mercola has said: "You Want to Burn Glucose in Your Mitochondria". That's a very simple rule, easy to accomplish. In fact if you just concentrate on eating carbohydrates, and eat them to excess, (as explained every time Gui talks about insulin resistance caused by a faulty diet), you are going to absolutely guarantee that you don't burn any fat. Even the fats you consume will be shuttled off to storage in fat cells while you are insulin resistant (IR).

That's because IR means there is continually insulin circulating in your blood, and as long as insulin is present, no fat gets taken into any cells except fat cells. Ah Ha! So if you want to "Burn Glucose in your Mitochondria", the easiest way is to drive yourself into insulin resistance which guarantees that fats can only be taken into fat cells, never muscle cells or other cells, so never burned. But it's also easy to see that this is what finally causes the problems described in this article on T cell mitochondrial dysfunction.

Mitochondria that are kept in a state of always producing maximum ATP for energy never have time to reproduce. But fatty acids and ketones being burned in mitochondria are the signal to pass up the chance to produce ATP, and instead use the fuel to re-enervate and multiply the mitochondria. The simple Randle Cycle "flips" into fat-burning mode and allows mitochondria to stay healthy, and in sufficient numbers to never allow an energy shortage.

How? Fat/ketone utilization in mitochondria (when no new glucose is being digested and put into circulation) comes only when insulin is finally be depleted. This allows release of fat from storage and its use within mitochondria to stop the damaging "ATP only" cycle. This "uncoupling" allows mitophagy (intended removal of old mitochondria), and mitochondrial regeneration to take place. It only takes intermittent fasting to accomplish this.

Posted On 03/14/2024

stoneharbor

Here is a fairly exhaustive study on mitochondrial uncoupling which shows the many advantages of the uncoupling process, precisely taking place routinely when free fatty acids (FFA) and ketones are the primary source of fuel for a cell: www.researchgate.net/publication/334774426_Mitochondrial_Uncoupling_A_.. In the discussion we find: "FFAs form one of the major class of endogenous mitochondrial uncouplers. They can act through various mechanisms. First, they stimulate directly mitochondrial respiration, as seen in intact isolated brown adipocytes or mitochondria isolated from these cells [28,29].

The FFA protonophoric effect depends on the chain length [30]. FFAs with a carbon chain between C12 and C16 as well as long unsaturated FFAs (length above one-half of the mitochondrial membrane thickness, 3.5 nm) seem to have the most potent effect." There is a table listing all kinds of uncoupling agents, including many natural substances such as Thyroid T3, and Capsaisin from red pepper. And also "Mitochondrial uncoupling has often been associated with autophagy activation, and more specifically, with mitophagy (specific degradation of mitochondria by macroautophagy) (Figure 1). Indeed, the mild uncoupling of oxidative phosphorylation by various mitochondria-targeted penetrating cations may contribute to their reported therapeutic effects via the induction of both autophagy and mitochondria-selective mitophagy [90].

In this section, we will review data available regarding the interconnection between these two processes, with details regarding the specificity of the regulated autophagy form, when possible. " Obviously, mitochondrial uncoupling in order to maintain health, even though it side-steps the other mitochondrial function of ATP production, is part of how animals stay healthy. I'm sure there is going to be a lot more available in the future on how this works to our benefit

Posted On 03/14/2024

Stephjask

Red light and near infra-red light therapy is an excellent and proven way to restore and re-energise your trillions of mitochondria, and even more effective when used in combination with methylene blue intake. We need to muster as many tools as we can manage from the toolbox to combat the toxins coming from our industrial processed food, our water supplies, the air we breath, the so-called medicines that are pushed on us and the ridiculous poisons they call vaccines that we cannot avoid because of "treated" people shedding the destructive spikes here, there and everywhere, which is just what the maniacs who lord over us intended. Improved nutrition is essential, but becoming more difficult to attain because of the many genocidal policies being inflicted everywhere, resulting in the accelerating transfer of wealth to the mega rich, the destruction of agriculture and the spiralling food prices reducing the choices for most of us.

Don't even mention the insane wars being waged, and the fear of even greater, widespread and nuclear conflicts, being threatened by the very people who are supposed to protect us. I have a couple of decent books on red light therapy but would love to see some posts by Dr Mercola explaining it (again) to a wider audience as there are now many more affordable and effective LED devices on the market for home use.

Posted On 03/14/2024

Guillermou

This article may also be of interest. Therapeutic benefits of red to near-infrared (NIR) light therapy have been reported in neurodegenerative diseases such as Parkinson's disease (PD) and Alzheimer's disease (AD). Neuronal mitochondria have been identified as the main target of red and NIR light. At the cellular level, preclinical studies in animal models have shown promising effects in increasing adenosine triphosphate (ATP) production in response to light treatment. In this study the results revealed that continuous 850 nm light irradiation produced the greatest increases in intact cellular respiration. At the level of the mitochondrial complex, light wavelengths of 850 nm and 940 nm were the most effective in stimulating the capacity of the electron transport system and the activity of cytochrome c oxidase.

This suggests that SH-SY5YSH neuroblastoma cells irradiated with continuous 850 nm and 940 nm light possess higher cell viability and have the potential to cope with increased ATP demand. Furthermore, exposure to 830 nm and 940 nm pulsed light demonstrated an improvement in the resistance of SH-SY5Y cells to KCl-induced stress. Overall, this thesis provides insights into neuronal metabolism in response to NIR red light therapy at specific levels of intact cells and the mitochondrial complex, and demonstrates the potential of NIR red light therapy to ameliorate neurodegenerative diseases. researchspace.auckland.ac.nz/.../66995 (2023).--

Posted On 03/14/2024

Guillermou

Neurons are metabolically protected from degeneration by interventions with low-level methylene blue and near-infrared light. Both novel interventions act through a cellular mechanism that involves improving the electron transport chain in mitochondria, which promotes energy metabolism and neuronal survival. Methylene blue preferentially enters neuronal mitochondria after systemic administration and, at low doses, forms an electron-cycling redox complex that donates electrons to the mitochondrial electron transport chain. Low-level near-infrared light applied transcranially delivers photons to cortical neurons that are accepted by cytochrome oxidase, causing an increase in cellular respiration and cerebral blood flow.

Groundbreaking in vivo studies with these interventions suggest that targeting mitochondrial respiration may be beneficial for protection against different types of neurodegenerative disorders. In general methylene blue (MB) and photobiomodulation (PBM). They promote energy production and reduce both oxidative stress and inflammation, and have attracted increasing attention in recent years. MB and PBM have similar beneficial effects on mitochondrial function, oxidative damage, inflammation, and subsequent behavioral symptoms www.frontiersin.org/.../full (2015).-- link.springer.com/.../s40035-020-00197-z (2020).---

Posted On 03/14/2024

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rrealrose

This is in the article archive - - articles.mercola.com/sites/articles/archive/2023/01/29/red-light-near-.. - - Jan 29, 2023.

Posted On 03/14/2024

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seastars

Besides red light every other day-full body, we use a PEMF (pulsed electromagnetic field) daily. See Dr. Pawluk for more info.

Posted On 03/14/2024

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artist.jill

Off today's topic but of interest to my fellow health freedom advocates here. Remember when in 2020 the CDC stepped outside its jurisdiction to declare a nationwide eviction moratorium, remember the consequences that have followed? Catherine Austin Fitts (CAF) of solari.com has interviewed New York attorney Bobbie Anne Cox, who explains the lawsuit she is engaged in which is aiming to protect NY'er rights as well as establishing precedent for the rights of us all. Cox' regular practice was real estate law, so as a result of the 2020 events she was able to recognize this as an attack on ciivil rights. She took it upon herself to study constitutional law to fight an unconstitutional NY regulation that was created at that time.

You guys heard about this --the “Isolation and Quarantine Procedures” regulation that allows the governor to illegally lock people without notice and without due process. (Please note my use of present tense in that last sentence was not an error.) Watch the video here to learn more; you will be shocked at how these regulations are unlawfully established (and you will likely want to support Cox' effort): home.solari.com/stop-the-greater-taking-with-bobbie-anne-cox CAF has made the video available publicly; you don't need to be a subscriber to access. As CAF points out, although this suit is re: the state of New York, "it has major implications for all of us."

Posted On 03/14/2024

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vanessa3436

Thank you for sharing CAF. I LOVE her ability to see things as they are.

Posted On 03/14/2024

Docathelake

I've been eating keto for 9 years, it saved my life, every time I try and add back in plants it makes my intestines bleed... I bled for 33 years before losing the ability to digest all plants at age 48 and was forced to eat mainly meat... I eat a diet full of essential nutrients and my blood sugar spikes if I eat low-fat, so if what I'm doing is still working I'd be an idiot to change it now...

Posted On 03/14/2024

BookGal11

We are all different. There is no eating plan that is right for everyone despite what experts say. It sounds like you've found the one that works for you.

Posted On 03/14/2024

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kp1946

I was diagnosed with bowel cancer last year and had surgery to remove a bowel section. Then I had a Guardant reveal blood test to discover with 91% certainty, no remaining microscopic cancer cells in my bloodstream. Good news! I am now fine. So I started looking into T cells and natural killer cells as a way to mop up any very few microscopic cancer cells that might remain. I learnt that T cells cannot recognise microscopic cancer cells, whereas natural killer cells can attack them. So the issue was to boost my natural killer cells. I found 2 supplements with clinical support - sea cucumber; and another called NK activator supplement. So your NK cells matter more than your T cells in at least some cases.

Posted On 03/14/2024

Alan845

For me, this is a fascinating article. My wife has recently died of cancer in both kidneys, liver, ovaries, lymph nodes and lungs, going from early symptoms to death in approximately 4 weeks. Since 2018 she also had ANCA vasculitis, requiring immune suppressant medications, and she drove local tours for cruise ship tourists in summer. She had frequent blood tests and her lymphocytes showed a decrease over 2022-3 summer when she was driving, an increase over winter (no driving) and another decrease from Oct-Dec 23 when she began driving again.

(Note that this is in the southern hemisphere.) As cruise ship passengers are jabbed against Covid, it seems feasible that the reduction in lymphocytes over summer, when they could be expected to be at their highest, could be due to shedding from passengers in reasonably close contact with the driver in a moderate sized passenger van. Thus it seems likely that the cancer began from shedding in summer 22-23, was held at bay by a more effective immune system and lack of contact with jabbed passengers during the winter of 2023, then grew at an amazing rate once in close proximity with shedding again in Oct 24.

This is, of course, circumstantial evidence, but due to the low values (0.2 in summer to 0.8 in winter while normal levels are 1 to 4), depressed by the immune suppressants, a reduction of 75% in lymphocytes in the blood sample could have crippled what remained of her immune system and could have allowed the rapid and devastating cancer growth and spread that occurred. Another unwitting victim of the jabs.

Posted On 03/14/2024

Guillermou

Much mespiritual strength for you in the painful moments of memory. This set of immune cells will undoubtedly have influenced the progression of the cancer. In this sense, it should be considered that sepsis generates ROS, and also reactive nitrogen species (RNS), nitric oxide and peroxynitrite. Enzymatic defenses, such as superoxide dismutase 2 (SOD2), convert O 2 (*-) to hydrogen peroxide (H 2 O 2), which can then be detoxified into water by catalase or selenium-containing glutathione peroxidase. SOD2 expression is higher in critical illness survivors. Glutathione and coenzyme Q10 (CoQ10) also have an important mitochondrial antioxidant function.

CoQ10 levels are lower in sepsis, suggesting a potential role in mitochondrial dysfunction. The mtDNA damage resulting from this phenomenon is associated with reduced mitochondrial respiratory capacity, which is potentially irreversible, depending on the intensity of the oxidative "attack." Mitochondrial function is maintained by a balance between fission, fusion, biogenesis and autophagy. Defective mitochondria can become toxic by excessive production of ROS, which can lead to apoptosis.

The hallmark of the inflammatory response in sepsis is an imbalance between a systemic inflammatory response and a compensatory anti-inflammatory response. The imbalance of pro-inflammatory and anti-inflammatory responses often results in immunoparalysis among critically ill patients, making them more vulnerable to additional infections and other pathologies including cancer. We are also seeing that “vaccines” against C-19 cause cancer.
www.ncbi.nlm.nih.gov/.../PMC10308342 (2023).----------
www.sciencedirect.com/.../S1567724923000053 (2023).---

Posted On 03/14/2024

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jennifermetz

I'm so sorry for your loss.

Posted On 03/14/2024

GBoysMama

I'm sorry for your loss. Did your wife have genetic testing? She may have had an inherited gene mutation that caused the incredibly rapid spread. My husband recently passed away from metastatic colon cancer. After his diagnosis, we learned he had the marker for Lynch Syndrome, which caused the colon cancer to very aggressively metastasize. If she did test positive, your (her) children should also be tested.

Posted On 03/14/2024

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pecanroll

So sorry for your loss.

Posted On 03/14/2024

QuebecCity

QuebecCity has deleted the comment.

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seastars

The gov't. discriminates Mercola because he is not afraid to speak out on Covid vaxxes, fluoride, toxins in our food, etc. "No one is more hated than he who speaks the truth." Plato

Posted On 03/14/2024

GreekPrincess77

Eye opening article. It's clear to me excess LA is to blame for much of the metabolic dysfunction in humans today. We never consumed these machine lubricants 100 years ago. We are fatter, sicker today than we have ever been. A lack of sleeping also damages the mitochondria, a lack of vitamin D. Convenience has become the enemy of society. We have become dependent of clicking a button to get UberEats, Door Dash etc. Resturants are using seed oils in everything, and the majority of society are eating their meals out. Obesity is at an all-time high, a lack of movement all create stress and inflammation in the body.

Our bodies are quite resistant to cancer in general, we really have to assault our bodies to create such cell division. As Dr. M has stated sugar itself isn't a carcinogen, but elevated blood sugar levels do create systemic inflammation and this is where the problem lies. Even everyday things we don't think about can contribute to cancer like what type of laundry detergent we use, fragrances, drinking from plastic bottles, to the water we bathe and shower in. It's all has a cumlative effect.

I would say to consume more omega 3's in the form of grass-fed/finished beef and ruminate animals is another way of decreasing high LA levels. Certainly cook at home. Practice fasting in moderation, regular use of hot/cold therapy, grounding are great. Cancer doesn't just happen, we have so much control over how we prevent/manage it. Important to add here is to avoid vaccines as they impair the immune system with all these foreign substances that enter the body. Practice gratitude and remove anything or anyone that is toxic.

Posted On 03/14/2024

HumaneEccentric

I absolutely agree with all of this. Society no longer guides itself - it is guided by drug manufacturers, food manufacturers and the alphabet agencies. They do NOT have our best interests in mind. When society guided itself, it was to keep the peace with manners and to have standards of behavior, appearance and cleanliness. The goal was for everyone to be safe, happy and healthy in order to prosper and THAT was for the benefit of all who lived in the area. We used to have standards. Those standards were slowly replaced with the above mentioned manufacturers' and government agencies desires to control the people in order to financially profit - no care was given for the downfall of society.

In fact, they WANTED society to fail, to be unhealthy, so they themselves would benefit in some way - all of them being tied into each other, for the overall profits. People were being wooed with the glamorizing of anything that would seem to give us more time to do what we wanted AND make chores/living tasks easier. Who doesn't want that? We have been constantly bombarded with this terrible practice and each generation has fallen for it, worse than the previous generation. So now, we have this current sh*t show around us, where good, well-meaning people like Doc M.

and the "disinformation dozen" (and others) are vilified and kept hidden so we can't be knowledgeable and become healthy. Our food, water and environment have been poisoned to the point of no return.....without there being a civil war and complete breakdown of our country's very structure. We have to start over. From scratch. Until that happens, we are doomed to be severely ill and constantly fighting against the mainstream to have better. To be better. The best we can do now, is just "choose the lesser evil" in everything and wait for the re-start. Sorry for the soapbox - I guess I just needed to say all this.

Posted On 03/17/2024

Ambassador777

Few people realize the importance of the information in this article and its widespread significance for many ailments. The reference to Ray Peet is also worth the read. Thanks.

Posted On 03/15/2024

Ronald_H

What would be the new function of the unusually and phenomenally effective natural killer cells in my blood that are 100% effective in protecting me, if I gave someone suffering a direct transfusion as a universal donor? Would my natural killer cells suddenly in a different person with disease go after the disease and quickly destroy it?

Posted On 03/14/2024

Track Record

Almost 100 years ago German scientists led the world in biochemistry. Bayer and Aspirin is a remnant from that time. But they had discovered mitachindfial dysfunction as the key cause of cancer. Most of the leading scientists were Jews and and were annihilated by the *** and after the War science thought genetics would be a far more interesting and complex science to show was the cause of cancer..in a nutshell that's why progress in reducing the incidence of cancer is now worse than it was in 1935. Finally a reawakening ng is taking place but the science was virtually lost and has to be recreated. However there are powerful supplents we can take, particularly from Ayurvedic medicine, which helps.in dealing with dysfunctional mitochondria characteristic of cancer cells.. Cancer is mainly a disease of the metabolism. . ..

Posted On 03/14/2024

RJPage1

I understand that soaking nuts neutralizes phytic acid, which inhibits absorption of minerals and neutralizes enzymes in our gut. If we only consume seeds and nuts that are soaked/sprouted, are they still high in linoleic acid? Also, is rice bran oil a suitable oil for cooking? Is rice bran oil a PUFA/LA/seed oil?

Posted On 03/14/2024

Smudge2

I wish someone had a cure for SIBO. At this point, only fecal transplants. I manage it well, but there's nothing out there but Nemechek's and Davidson's protocols. Sigh. Doc, you're smart, find a cure, not just a symptom reliever. Sigh again. I'm running out of sighs, need to stock up on Amazon. ;-)

Posted On 03/14/2024

Dr. Mercola

Cure for SIBO is very simple. Will reveal it later this year. First step is get your LA intake as low as possible as that is the cause. I will describe the detailed corrective actions that are required later this year, in meantime I guarantee you that your LA intake is not low enough. Work on that now.

Posted On 03/14/2024

Martix

Did you try L-Gasseri and L-Reuteri from CultureFoodLife.com !!!!!

Posted On 03/14/2024

Melles

I am trying to follow the advice in this article, but struggling — not from metabolic inflexibility; I am fine there — from endotoxin production with fructose. In the past I have had trouble balancing candida. Now I think it is SIBO. I have no problem with rice, potato, and sweet potato. I can drink pineapple juice fine, but the minute I try to add something like pulp free orange juice I am plagued with gas, bloating, and IBS. Honey will 100% trigger a bout of pancreatitis. So for some of us, this transition to burning glucose in the mitochondria is easier said than done. Maybe someday soon Dr. Mercola can do an article on how to work through SIBO issues while transitioning to burning glucose in the mitochondria. That would be wonderful!

Posted On 03/14/2024

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agapemom

Dr. Mercola, I hope that you write a book about how to implement this knowledge into a diet. I've followed Ray Peat, but don't know how to turn his information into actionable steps. I'd love it if you could give examples of what you eat for breakfast, lunch and dinner. I'd pay good money for a diet plan.

Posted On 03/14/2024

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seastars

Exactly! I eat the right foods but have the same problem. I did get this from Paul Saladino. Somewhat helpful. Cronometer has caused me some usabilility difficulties (not much of a techie). I don't eat organs. Paul writes: For every 100lbs you weigh, aim for at least 1lb of meat per day. Here’s how to calculate your optimal range: RANGE PROTEIN (G) Goal body weight * 1g Goal body weight * 1.2g MEAT (LBS) Protein (g) / 100 Protein (g) / 100 ORGANS With liver, aim for 0.5oz daily (2-3 oz per week). Try to include an assortment of organs, including heart, testicle, bone marrow, tripe, kidney, spleen, pancreas, brain, intestine, etc.

FRUIT AND HONEY (CARBS) My recommendation for carbohydrates is based on your goal body weight and activity level: Activity Level Carbs (g) Low Carbs (g) High Low (0-3 hours) Goal body weight * 0.7g Goal body weight * 0.9g Medium (3-6 hours) Goal body weight * 0.8g Goal body weight * 1.1g High (6-12 hours) Goal body weight * 1g Goal body weight * 1.5g Very High (12+ hours) Goal body weight * 1.2g Goal body weight * 1.7g RAW DAIRY Raw dairy has superior nutritional value in comparison to pasteurized dairy. If you're intolerant to lactose, try fermenting your dairy.

ANIMAL-BASED CALCULATOR GOAL BODY WEIGHT (lbs) ACTIVITY LEVEL (hours/week) CALCULATE RESULTS. Range Low End High End PROTEIN 125 g 150 g MEAT 1.3 lbs 1.5 lbs Eat 1.3 - 1.5 lbs of meat to hit your goal of 125 - 150g of protein per day. FAT 100 g 125 g Get 100 - 125g of fat - If you’re eating 1.3 lb of fatty meat, you’ll hit this! Think ribeye, 80/20 ground beef. CARBS 125 g 188 g High activity level (6-12 hours) Get 125 - 188g of carbs from fruit and honey!

Posted On 03/14/2024

URMe2

Thank you Dr Mercola, very interesting information, following on from your “Understanding the Randle Cycle" article. One query re. your advice to take 50 mg of niacinamide three, or four times a day. Why not one dose daily, say of 500mg, or 1000mg? Have set of 5 small spoons, 1/4 to 1/64 tsp, so no problem with small amount, in my tea.

Posted On 03/14/2024

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rrealrose

scroll up into the posted article, find the word Niacinimide in blue, click on it to reach the earlier article.

Posted On 03/14/2024

Zoltannovax

The only thing missing perhaps from this amazing discussion is regarding the current availability of mitochondrial transfer and transplantation that at least a handful of functional medicine practices are currently offering, as well as the continuous efforts by Big Pharma to suppress this work in favor of pushing more useless and dangerous drugs and vaccines. At the risk of getting too far into the weeds, the science is very clear on how GTPase (Miro1), along with connexin 43 (C43), M-Sec (also known as tumor necrosis factor alpha [TNF-]inducible protein 2), exocyst complex, and leukocyte-specific transcript 1 (LST1) are all essential and play critical roles in mitochondrial transport.

More specifically, modified transferred mitochondria that code for Miro1 overexpression promote mitochondrialalveolar epithelial-cell (EC) transfer in a co-culture system and, in mouse models of lung injury and asthma, intravenous (i.v.) injection of these same modified and transferred mitochiondria that overexpress Miro-1 has been shown to partially reverse ischemic effects and improve neurological function when compared with injection of unmodified C43. These processes have all been harnessed now, and they are already demonstrating their life-changing effects on reversing vaccine toxicity and its role in promoting immunogenetic celluar dysfunction and organ dysbiosis.

Posted On 03/14/2024

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forbiddenhealing

I agree with the recommendations and cautions, but protection of mitochondria from oxidative stress, maintaining an alkaline pH/O2 levels and preventing Hypoxic Induction Factor (HIF1) stimulation are also required... Appropriate large doses of Vitamin C (as Lipo or sodium ascorbate) is key to halt HIF1 activation and its conversion to anaerobic fermentation and angiogenesis. Vit C, R-alpha lipoic acid and K2 synergize antioxidant protection along with polyphenols, magnesium and breathwork. Zeta potential and Structured water via light and radiant heat along with sulfates/NAC insure rapid circulation.

Posted On 03/14/2024

MoMac46

Went into my health shop to ask for nicinamide and the shop assistant offered me B3 and said it was the same I asked if they had nicinamide and she told me it was a skin treatment not a supplement, so I didnt buy anything as I already have B complex

Posted On 03/14/2024

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bpm4539

If you take B-complex, you are already taking niacinamide. Check label to find how much niacinamide is in each capsule. And you can also buy it as separate supplement, but you will not find 50mg tablets except at Dr Mercola's store.

Posted On 03/14/2024

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mik52133

Ya sure, eat honey and maple syrup? How can this be true?

Posted On 03/14/2024

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seastars

Is there a lab test for levels of LA in the body? Life Extension for $99 has one but one has to order the Omega 3 test and then they can get it from that. I just had my omegas tested so don't want to spend that.

Posted On 03/14/2024

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bchristine

Where is the CENSORED LIBRARY Link? I always refer to it and save the articles (I am a member).

Posted On 03/14/2024

Forrester2

This is all good information, but I'm confused as to how a significantly overweight metabolically inflexible person should get started. In this article, Dr. M says that such people should keep fats in the 10-20% range, but a few days ago he said that these people should follow a low carb/high fat diet for 3-6 months until metabolic efficiency returns. So which is it? Aside from this, I have several other questions: - Dr. M says that dairy fats and some meat fats don't count. So should we count those as a 4th macronutrient category which isn't subject to any limitations? - Most starches are bad, but white rice seems to be acceptable. Are potatoes okay? Which other starches are acceptable?

- In a previous article about Niacinamide, Dr. M mentioned a weight-based dosage and said that the 50 mg dose would be good for a typical 150 lb. person. Would a heavier person need to take more than this? - A skinless boneless chicken breast is almost all protein and no fat. Isn't a blanket ban on chicken going too far? - Are grass-fed beef hot dogs & sausages considered to be processed food? - How is one to know when they have regained metabolic flexibility? I would really love it if Dr. M would write an article leaving out the theory and giving specific advice as to how a typical overweight person should start out and then how it should be modified as time goes on.

Posted On 03/14/2024

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chris25

Niacinamide is linked to reducing glaucoma. www.ncbi.nlm.nih.gov/.../PMC9905873

Posted On 03/14/2024

AntoniaG

@agapemom. I wholeheartedly agree. A dietary plan would be worth its weight in gold. I have no idea how to get healthy protein aside from the salmon and sardines I eat. I have grass fed whey but would prefer something less processed. I can't afford free range chicken at $35 CAD a bird and I don't eat beef. So that leaves me with beans and lentils, which upset my digestion and cause severe bloating. My immune cell numbers are not good and I apparently have T-cell exhaustion. However, I don't catch things like others seem to. Absolutely no jabs. I eat healthily but am at a loss as to what to do with the "no chicken" thing.

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NaturalGrown

The key factor is to find sources that produce pasture raised products, preferably using regenerative farming properly. That method allows for the most delicious products. Raw goat milk from Nubian or Dwarf Nigerian types is fantastic. Chickens that roam freely and eat their natural diet have the correct balance if they aren't fed grains constantly. Great eggs. And there are hundreds of delicious fish in the ocean, much safer to eat than farmed salmon. Find a proper source of your foods, or farm your own. Enjoy!

Posted On 03/14/2024

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oti4757

Have you read Dr. Frank Shallenberger's book "Bursting With Energy", or consulted with him on mitochondrial function? He is a firm believer in the importance of mitochondrial function regarding human health.

Posted On 03/14/2024

Robin_Whittle

(2 of 2) See also See et al. 2021 www.nature.com/.../s41590-021-01080-3 , summarised at vitamindstopscovid.info/00-evi regarding Th1 regulatory lymphocytes from the lungs of hospitalised COVID-19 patients failing to transition from their pro-inflammatory start-up program to their anti-inflammatory shutdown program, despite detecting the condition to do so. This failure of the Th1 cell's intracrine signaling system was due primarily or wholly to inadequate supplies of 25-hydroxyvitamin D based. Most doctors and immunologists have never heard of this intracrine signaling system, which is entirely within a single cell. Many immune cell types rely on this for their ability to respond to their changing circumstances. This has never been explained in a tutorial fashion in a peer-reviewed journal article. Please see the explanation at: vitamindstopscovid.info/00-evi .

Posted On 03/14/2024

Robin_Whittle

(1 of 2) Mitochondrial dysfunction is not the only problem which weakens most people's immune systems. The most important nutritional deficiency is vitamin D3, which can't be fixed with food, since no food - fortified or not - has more than a trace of it. UV-B light on ideally white skin can create plenty of it, but this is not generally available all year round to people who live far from the equator. UV-B damages DNA, so raising the risk of skin cancer. Please see the research on 25-hydroxyvitamin D (made in the liver from vitamin D3) and the immune system, cited and discussed at: vitamindstopscovid.info/00-evi .

The immune system can only function properly with 50 ng/mL 125 nmol/L circulating 25-hydroxyvitamin D. Without proper vitamin D supplementation or recent extensive UV-B exposure on ideally white skin, most people have half or less than this. Those with brown or black skin who live far from the equator and who do not properly supplement vitamin D3 typically have even lower levels all year round. The above page begins with recommendations from New Jersey based Professor of Medicine Sunil Wimalawansa on how much vitamin D3 to take, as ratios of body weight, with higher ratios for those suffering from obesity.

These are Prof. Wimalawansa's recently slightly simplified version of the recommendations in his 2022 article in Nutrients: www.mdpi.com/.../2997 . This will attain at least the 50 ng/mL 125 nmol/L level of circulating 25-hydroxyvitamin D the immune system needs to function properly. This is higher than can be attained with the very small government-approved supplemental intake quantities of vitamin D3, which at best can attain about the 20 ng/mL 50 nmol/L level which the kidneys need to regulate calcium-phosphate-bone metabolism.

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