

Longevity Strategies That May Be Highly Counterproductive

Analysis by [Dr. Joseph Mercola](#)

✓ Fact Checked

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STORY AT-A-GLANCE

- › Longevity studies have found that tryptophan restriction helps achieve the longest lifespan extension, followed by cysteine and methionine restriction. Tryptophan and methionine are essential amino acids, so you do need some, but your daily requirement of these amino acids is very small
- › Research shows that restricting daily methionine intake to a maximum of 2 milligrams per kilogram body weight can reverse obesity in obese Type 2 diabetics
- › While studies have shown that calorie restriction extends lifespan, a closer look suggests it's not the fasting itself that is beneficial, but rather the restriction of inflammatory amino acids. Less food also means you're exposed to less endotoxin that promotes chronic systemic inflammation
- › Gelatin and/or glycine supplementation, can help counteract muscle breakdown in the elderly. Research shows that women given 20 grams of gelatin daily have a drastic decline in biomarkers for muscle breakdown
- › Resistant starch can feed endotoxin-producing gut bacteria, thereby promoting inflammation. So, avoid low-glycemic starches, including cooked and cooled rice or potatoes, semi-raw oats, green mango and green bananas

In the April 11, 2023, podcast above, Dr. Paul Saladino interviews Georgi Dinkov about

the benefits of fasting, the risks of carbs, the hazards of fatty acids and the root causes of diabetes and cancer.

It's nearly two hours long, but well worth your time to listen to several times at normal speed if you want to learn more about these topics. Dinkov is probably the most educated student of Ray Peat, who passed away around Thanksgiving 2022, leaving behind a legacy of iconoclastic wisdom on how to optimize biological health.

Amino Acid Restriction and the Reversal of Obesity

As noted by Saladino, a well-accepted idea within the longevity industry is that to live long, you need to eat as little as possible. It's basically a mentality of "no pain, no gain." And that has also morphed into "more pain, more gain." But is starving yourself really necessary?

As you'll learn in this podcast, the answer is no. You don't have to restrict calories. You can get the same results simply by restricting certain inflammatory amino acids.

According to Dinkov, longevity studies have found that tryptophan restriction helps achieve the longest lifespan extension, followed by cysteine and methionine restriction. Tryptophan and methionine are essential amino acids, so you do need some, but research suggests the daily need of these amino acids is very small.

Dinkov explains:

"A study with obese Type 2 diabetic people found that if you restrict methionine intake per day to be no more than 2 milligrams per kilogram body weight [you can reverse the obesity]."

For somebody who weighs 200 pounds that's about 200 milligrams per day. That's a really tiny amount, but it was sufficient to cover the requirements for methionine and resulted in reversal of the obesity.

They also noticed that the subjects arrested metabolic rate increased. So, we have another finding here that goes against the story of the day, which is that if you increase your metabolism, it's going to lead to reduced lifespan ... This study found that that's probably not the case, because when they increased the metabolic rate, these people became healthier."

'No Pain, No Gain' Paradigm Is Likely False

Interestingly enough, those fed a vegan diet ended up faring the worst. So, fasting, eating a vegan diet, and engaging in strenuous exercise may actually be highly counterproductive.

According to Dinkov, while studies have shown that calorie restriction extends lifespan, a closer look suggests it's not the fasting itself that is beneficial, but rather the restriction of inflammatory amino acids and undigested starch.

Less undigested food reaching your large intestine provides less fuel to feed the bacteria there and radically lowers the production of endotoxin (Lipopolysaccharide LPS) that promotes chronic systemic inflammation.

"Unfortunately, the current political movement in public health basically took only one of the messages and started running with it, because it benefits their current recommendation, which is that we need to drastically reduce our individual carbon footprint," Dinkov says.

"They're [telling us to] eat less, exercise more and eat vegan products, because those are much cheaper to produce. The vast majority of them are heavily subsidized. The powers that be want us to eat something that they fully control.

But if you look at the actual carbon footprint of a specific amount of rice and a specific amount of beef, beef is actually slightly lower. So even there, the

message is not backed by evidence. So, my message to the listeners is: Do not torture yourself and you'll live much longer than somebody who is going through these grueling fasting exercises and veganism.

And even if you don't live longer, you're going to enjoy life. There'll be more life in your years, and likely more years in your life as well, compared to somebody who's really torturing themselves."

'No Pain, No Gain' Is Likely False for Exercise Too

Saladino also highlights research showing that five minutes of high-intensity interval training per week produces equivalent or better cardiovascular fitness than one hour of running, six days a week.

"I thought, 'Wow! That really flies in the face of our puritanical perspective as Americans that I must destroy myself to be fit," Saladino says. "But if you can do one sprint for 30 seconds a day, a few times a week, and get significant cardiovascular fitness, that's wild!

And if you can't physically do a sprint, you can get on an exercise bike and go really hard, or you can just walk up three flights of stairs. I love that concept. It's like, 'You don't have to crush yourself. Just go do one hard thing for 20 seconds, once a day.

It's probably pretty beneficial and ... you don't need to get crazy in the specificity with that. Multiple studies show that chronic exercise leads to reduction of your basal metabolic rate, and you're going to lose muscle mass, which is the No. 1 predictor of morbidity and mortality.

When you're doing these high intensity exercises, I think the main benefit – because most of them are concentric – you're actually increasing the number of mitochondria in your inner cells. With the chronic long distance

kind of exhaustive exercise, you're not increasing the number of mitochondria."

What is concentric exercise? Concentric is the contraction of muscle with a load, whereas eccentric is the relaxation of the muscle with a load. So, when you're doing bicep curls, for example, the concentric portion is when you're flexing the muscle. This is more beneficial than lowering the weight, which is the eccentric part.

Protein Is Essential for Muscle Maintenance

As noted by Saladino, many in the longevity community (Dr. Ron Rosedale comes to mind) also recommend limiting protein, especially animal protein, but the fact is you simply must have sufficient protein to maintain muscle mass.

"They're sort of encouraging people to become sarcopenic [skinny but fat], and if you look at many of these longevity experts, they don't have a good amount of lean muscle mass in their body. They're quite skinny and they usually have a little bit of a pot belly.

So, I want to make this very clear for listeners. How do we reconcile that with the understanding that methionine and tryptophan, and maybe cysteine, might be problematic amino acids? How do you wrap your head around this? Is it getting enough glycine to balance the methionine, or is there a sweet spot for protein?" Saladino asks.

Dinkov responds:

"When I first got into this ... I was reading a Blog called Ergo-Log.¹ It's published by a bunch of bodybuilders in the Netherlands. They listed a study where mice were being fed extra branching amino acids at a rate of like 2% of the food intake per day. Those were extra, on top of what was already there, and this increased the mice's maximum lifespan by about 15% to 20%. That's

a lot.

So, now we know that the branching amino acids are fine. In fact, they're probably beneficial for us, so I wouldn't restrict those. Most of those you can get from animal foods. They're not that well represented in the in vegan foods. In vegan foods you actually get a lot more methionine, and potentially cysteine, but not that much of the muscle-building protein, glycine, and sarcopenia-preventing branching amino acids ...

So, the case for eating animal food is, to me, very strong. I think the reason we need to balance it the with gelatin, the glycine, these days is mostly because we don't eat the the whole animal. If you are eating the whole animal ... you are getting plenty of collagen."

Gelatin Helps Counteract Muscle Breakdown in the Elderly

Dinkov reviews research showing that women given 20 grams of gelatin daily have a drastic decline in biomarkers for muscle breakdown. So, gelatin had an anabolic effect. Another study demonstrated that in older people, dietary protein fails to trigger the same muscle protein synthesis that occurs in younger people.

According to Dinkov, even in younger individuals, the benefits of protein intake maxes out for most people at 35 grams per meal, simply because your body cannot utilize more. Above that, he says, the protein gets deaminated and converted to glucose, which is something you don't want. You want the protein to be used for its primary purpose, which is building muscle and bone. Dinkov continues:

"This study noticed that if you give elderly people the equivalent of about 6 grams of glycine daily – and since gelatin is about 40% glycine, that was basically 12 to 15 grams of gelatin – it immediately restored the anabolic effect of protein in their muscles ...

The consumption of glycine lowered the number of different biomarkers that are known to be associated with muscle breakdown, specifically tumor necrosis factor alpha (TNFa) ... Long story short, if you lower inflammation in an elderly person, this restores their anabolic response to protein."

Life Extending Benefits of Aspirin and Activated Charcoal

Dinkov also reviews how chronic inflammation and the accompanying chronic elevation of cortisol causes muscle wasting or sarcopenia in the elderly. This can be blocked, he suggests, by lowering inflammation, and one way to do this is a daily aspirin regimen. This will help lower cortisol, thereby helping you build muscle without staying in a chronically catabolic state.

Charcoal tablets may also be helpful. Dinkov reviews studies showing that if you give animals activated charcoal, they retain most of their lean muscle mass and look relatively young even in advanced age.

Charcoal does not absorb into your bloodstream, so whatever it's doing is happening in the gut. Dinkov suspects these benefits are related to the fact that activated charcoal absorbs and eliminates endotoxins from gut bacteria. This in turn suggests that endotoxins play a role in the aging process.

The Case Against Resistant Starches

As noted by Saladino, you don't want undigested food moving into your colon, because that is one hypothetical way that you may increase populations of harmful gram-negative bacteria that then increase endotoxin or LPS in your blood, causing a cascade of inflammation.

This is Dinkov's primary argument against resistant starch. Many people will cook potatoes and then cool them, to create resistant starch. Some eat semi-raw oats for

the same reason. But this may backfire if you have disease-causing bacteria in your gut, as the resistant starch can feed those bacteria in many individuals who have unhealthy gut microbiomes. Dinkov explains:

“Rice and potatoes, if they're well-cooked, are probably not going to increase endotoxin much because they're going to get absorbed before they reach the colon.

Now, you could have a problem [if you take] a lot of PPI drugs like anti-acid drugs, [because] the reduction of the production of stomach acid opens this pathway to the bacteria to start colonizing in the small intestine, and that's not a good thing.

So, if you have [small intestinal bacterial overgrowth or SIBO], eating starchy food is probably going to be problematic even if they're simple kinds of carbs like white rice and potatoes. But if your small intestine is clean, I know a lot of people that can actually thrive on starch if it's well-cooked and consumed with a little bit of butter or cheese, some saturated fat.

I know other people who cannot do any starch because they immediately get the flushing reaction. They start sweating a lot and whatnot, and to me that's a sign that they're having an endotoxin reaction to the starch.

So, it doesn't hurt to try, but I would make sure the starch is well-cooked ... Basically, whatever good the resistant starch will do, it'll be many times over-compensated for in a negative way by feeding the bacteria in the colon.”

Low-Glycemic Starches Feed Bad Bacteria

So, to summarize Dinkov's point, starchy foods that are advertised as “low-glycemic” may be worse than regular starchy foods, as they end up feeding bad bacteria that produce endotoxins in your gut. But what of their effects on insulin? Doesn't that

matter? According to Dinkov and Saladino, not nearly as much as you'd think.

When you eat a high-glycemic starch such as rice, or honey, your insulin will temporarily spike, which is normal. Provided you're healthy and don't have insulin resistance, your insulin will then rapidly drop back to normal.

When you eat resistant starch, you won't get the same elevated insulin response, but you'll pay for that benefit by increasing your endotoxin level, which drives inflammation. "So, these resistant starches advertised as low-glycemic index, those are the foods that I would avoid," Dinkov says. Saladino adds:

"I think it's important to drive that point home, that if people are looking for resistant starches, they might want to reconsider that perspective. I've heard people in the health space say you want to eat green mangoes and green bananas and unripe fruit, and I'm thinking that doesn't make any sense evolutionarily. Why would you do that? You don't want the resistant starches.

This idea that carbohydrates lead to insulin resistance is really not substantiated by the medical literature. Neither of us is a fan of high-fructose corn syrup and we would prefer people eat nutrient-rich whole foods, but to suggest that honey is causing diabetes is false.

To suggest that carbohydrates from potatoes are causing diabetes is false. Both Georgi and I believe that it's polyunsaturated fatty acids that, in the long term, are creating problems at the level of mitochondria."

Downsides of Fasting

While there are definite benefits to fasting, there are some downsides as well, and Saladino and Dinkov review both sides of this issue. According to Dinkov, the primary benefit of fasting is a reduction of endotoxin coming from undigested food in your colon.

However, some people don't do well with fasting. He suggests doing a blood work analysis to check your cortisol to DHEA ratio. If this ratio is higher than 0.5 in a fasted state, then fasting may do more harm than good, because fasting causes your cortisol to rise, and when cortisol goes up, it suppresses DHEA.

According to Dinkov, your cortisol to DHEA ratio is one of the best predictors of longevity and morbidity, so if that ratio is above 0.5, in other words if it starts going in favor of cortisol, your risk of cardiovascular disease, diabetes and neurological disease goes up. Over time, your risk for cancer goes up as well.

Dinkov cites research showing that no cancer patient had a cortisol to DHEA ratio below 1.5, so cancer patients are heavily weighed in favor of cortisol. "It looks like cortisol is contributing a lot to the growth of specific cancer cells," he says, "especially the ones that are difficult to treat." One example would be pancreatic cancer, which is notorious for expressing a lot of corticoid receptors.

A similar test specifically for males is the cortisol-to-testosterone ratio, which should ideally be below 10. Studies have shown that men with PTSD have a cortisol testosterone ratio that is 30 or higher.

"These chronic elevations of cortisol, which will happen with fasting, are not good for anybody, but a younger healthier person is probably in a better position to weather them and benefit from the reduction of endotoxin," Dinkov says. "But if you are older ... it's perhaps the worst thing you can do.

Older people are notorious for getting frail very quickly if they skip even one meal. They don't eat very often, but they need their meal. If you don't give it to them, they can very quickly decline.

So, depending on the person, fasting may not produce the benefits that are desired, and many of those benefits you can probably mimic by taking charcoal ... reducing resistant starches and eating more simple

carbohydrates such as honey and fruit juice. Those would probably all achieve the same thing in terms of the cortisol to the DHEA ratio ... and most people can do that ...

Really, what fasting does is reducing the endotoxin inflammation. So take some charcoal, take some insoluble fiber ... and eat a tablespoon a day. That's probably more than enough. You don't have to torture yourself. Invariably, the people who benefit the most from fasting tend to be younger, leaner and healthier.

The people that are overweight or on the older side, basically over 50, they don't handle fasting well. One study showed that people over 50 who fasted chronically, after they ended the fast, they were at a much higher risk of getting a potential lethal infection, probably due to cortisol [being] immunosuppressant."

How to Apply This When Using Time-Restricted Eating (TRE)

This information is also important for those using time-restricted eating (TRE), even though you're eating every day and not fasting for days or weeks on end. If you're metabolically inflexible, insulin resistant and unable to easily switch between burning sugar and fat as your primary fuel, then a TRE program, such as that described by [Dr. Mindy Pelz](#) in my interview with her, may be quite beneficial, and this is true whether you're eating a ketogenic diet or not.

However, once you regain your metabolic flexibility, which can take anywhere from a few weeks to a few months, you will need to increase your eating window. The reason for this is because when you deprive your body of glucose for too long, it will produce cortisol to stimulate your liver to make glucose.

This increased cortisol can contribute to chronic inflammation and cellular damage. Therefore, once you are no longer insulin resistant, it is best to vary your eating

window between eight and 12 hours and avoid going lower or higher than that window. It is also best to avoid eating before sunrise or after sunset and at least three hours before bedtime.

Can Extended Autophagy Have Detrimental Consequences?

Fasting is also known to trigger autophagy, the process your body uses to clean out old and defective cells. But is prolonged autophagy only beneficial, or may there be drawbacks? Dinkov comments:

“At some point, does fasting-induced autophagy become detrimental? What happens if you fast continuously? My guess is that at some point the body will down-regulate that response simply to preserve tissue ...

There’s at least some signal in the literature – and we don’t really fully understand this – that perhaps too much autophagy could lead to negative cardiac remodeling. It is maybe even like a pre-cancerous type of thing.

In fact, there are several trials now where they’re using drugs that block autophagy, mostly in the gastrointestinal tract. I guess the cells there need their energy and if you don’t give them energy through food, they may end up consuming each other, but that is not necessarily a good thing.

That is actually one of the core features of cancer. A study that I posted on my blog a couple of months ago showed that cancer cells are very good at devouring the mitochondria of healthy cells around them ... So we don’t know enough about the process to be stimulating it beyond the baseline.

Studies have shown that you trigger autophagy if you have at least three or four hours between meals, so I don’t know of a good reason or argument that we should be increasing it beyond that, because you know we’re creating catabolic processes that at some point may get out of hand. Cancer is one

such thing.”

More Information

Saladino and Dinkov cover a wide array of topics in this interview so, for more, be sure to watch it in its entirety. Topics not covered in my summary review include the potential hazards and drawbacks of metformin, an anti-diabetic drug promoted in some health circles as a longevity drug. Dinkov suggests the primary benefits of metformin can also be obtained from aspirin or niacinamide, which are less risky.

They also review the [role of omega-6 linoleic acid and other polyunsaturated fats \(PUFAs\) in diabetes](#), which is something I've reviewed in previous articles as well.

Also check out Georgi's blog at www.haidut.me or [follow him on Twitter](#). You can also obtain a major sampling of Ray Peat's work for free by going to these two sites: wiki.chadnet.org/Ray-Peat and RayPeat.com.

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Inflammation is a common factor in cancer, cardiovascular disease, and diabetes, as well as arthritis and other inflammatory diseases. Studies establish an inverse association of plasma glycine levels between patients with insulin resistance and diabetes, cardiovascular disease, and cancer. This suggests that low blood glycine levels can lead to a hyperinflammatory state, predisposing the body to a spectrum of chronic diseases including cancer. Plasma glycine levels in human populations, while may be adequate for the biochemical functions of glycine, including protein synthesis, may not be sufficient for the cellular physiological role of glycine in membrane voltage stabilization, cell activation.

in macrophages and other cells. Glycine comprises one-third of the mole fraction of collagen, and it is postulated that such chronic diseases have been on the rise because the consumption of glycine-rich bone and connective tissues has declined in recent decades. Amino acid metabolism suggests a more complex relationship between glycine and methionine, the latter of which is abundant in muscle meats. Specifically, glycine is the only substrate for glycine-N-methyltransferase, which comprises the only major pathway of methionine clearance.

Triggered by the absorption of a methionine-rich meal, elimination of excess methionine requires two to three molar equivalents of glycine per mole of methionine. Therefore, it could be hypothesized that high consumption of methionine-rich, glycine-poor muscle meats without the connective tissues as staple foods causes a net reduction in plasma glycine levels. This hypothesis among the participants of the EPIC study in the United Kingdom. Carnivores consuming high methionine and low glycine intake had the lowest plasma glycine levels than other diets.

Guillermou

Observational studies, a clinical trial in Mexico City a decade ago reported the reversal of type 2 diabetes with the consumption of 15 g/day of supplemental glycine for 90 days. Glycine decreases proinflammatory cytokines and increases interferon- in patients with type 2 diabetes.

Observationally, the inverse association of type 2 diabetes and prediabetes with plasma glycine has been abundantly documented, as evidenced by the recent SRMA of 46 studies.

www.ncbi.nlm.nih.gov/.../PMC4839172 (2016)----- www.ncbi.nlm.nih.gov/.../PMC4859380 (2016).----- analyticalsciencejournals.onlinelibrary.wiley.com/doi/abs/10.1002/bmc... (2017).----- www.jbc.org/.../S0021-9258 (17)30753-6/fulltext (2009).--- www.nature.com/.../ejcn2015144 (2015).--- link.springer.com/.../BF03346417 (2008).----- www.bmj.com/.../rr-1 (2018).--- Glycine administration modulates dietary amino acid levels especially methionine, which may increase healthy lifespan in mice and provide a basis for further investigation of the effects of diet on aging and old-age diseases.

onlinelibrary.wiley.com/.../acel.12953 (2019) GLYNAC (GLYCINE AND N-ACETYLCYSTEINE) SUPPLEMENTATION IMPROVES IMPAIRED MITOCHONDRIAL FUEL OXIDATION AND LOWERS INSULIN RESISTANCE IN PATIENTS WITH TYPE 2 DIABETES. www.mdpi.com/.../154 (2022) .----- Glycine supplementation improves various components of the metabolic syndrome, such as diabetes, obesity, hyperlipidemia, and hypertension. In the future, the use of glycine may have a significant clinical impact in the treatment of patients with metabolic syndrome. link.springer.com/.../s40618-021-01720-3 (2022)

Posted On 04/28/2023

Glycine and N-acetylcysteine (GlyNAC) supplementation in older adults improves glutathione deficiency, oxidative stress, mitochondrial dysfunction, inflammation, insulin resistance, endothelial dysfunction, genotoxicity, muscle strength, and cognition

onlinelibrary.wiley.com/.../ctm2.372 (2021) INDUCTION OF GLUTATHIONE BIOSYNTHESIS BY GLYCINE-BASED TREATMENT MITIGATES ATHEROSCLEROSIS

www.sciencedirect.com/.../S2213231722000854 (2022) EXTRACELLULAR SERINE AND GLYCINE ARE REQUIRED FOR MOUSE AND HUMAN SKELETAL MUSCLE STEM AND PROGENITOR CELL FUNCTION www.sciencedirect.com/.../S2212877820301800 (2021) Higher levels of glycine, glutamine, betaine, indolepropionate, and (phosphatidylcholines) were associated with a lower risk of type 2 diabetes.

diabetesjournals.org/care/article/45/4/1013/144892/Metabolomics-and-Ty.. (2022) Glycine is synthesized from serine, threonine, choline, and hydroxyproline through interorgan metabolism primarily involving the liver and kidneys. The main pathway is glycine synthesis is a serine cleavage reaction that yields two different products: a glycine molecule plus a C1 unit carried by tetrahydrofolate for other metabolic processes.

Metabolism requires much more glycine than C1 units. The amount of glycine available from synthesis, around 3 g/day, together with that from the diet, may be below the amount needed for all metabolic uses, including collagen synthesis by 10 g per day. day for a person of 70 kg. This result supports that glycine is a semi-essential amino acid. www.ncbi.nlm.nih.gov/.../20093739 .--- www.ncbi.nlm.nih.gov/.../19179765 .--- www.ncbi.nlm.nih.gov/.../23615880 .---

Glycine also plays a role in the transmission of nerve signals and the removal of toxins from the body. Glycine stimulates the production of serotonin, the "feel good" hormone that helps elevate mood, improve sleep, and improve memory. Glycine is anti-inflammatory and antioxidant, both of which are properties that reduce the risk of heart disease. Therefore, some researchers have looked at the connection between glycine and heart disease. TOP 9 BENEFITS AND USES OF GLYCINE www.healthline.com/.../glycine .----- Glyphosate in particular is working synergistically with most other factors to increase toxic effects.

Glyphosate causes insidious damage through its action as an amino acid analogue of glycine, and that this interferes with natural protective mechanisms against other exposures.

www.ncbi.nlm.nih.gov/.../PMC6695815 (2019) Glycine also plays an important role in fighting inflammation, as explained by Dr. Mercola in the article "Glycine Suppresses Oxidative Damage by Inhibiting Superoxide NOX Production and Raising NADPH Levels," and is used in the detoxification process. As a result of glyphosate toxicity, many people do not have sufficient glycine levels for efficient detoxification. NADPH is used as a reducing reservoir of electrons that serves to recharge antioxidants once they are oxidized.

NADPH is also needed to produce steroid hormones and fats. To prevent many chronic diseases, we need to find a way to inhibit or modulate NOX. Such strategies include avoiding fructose, practicing nutritional ketosis, and taking spirulina, niacin, glycine, and collagen supplements. Glycine might be beneficial in preventing or treating metabolic syndrome, diabetic complications, and cardiac hypertrophy, as well as fatty liver disorders.

articulos.mercola.com/sitios/articulos/archivo/2022/04/01/que-son-la-n.. (2022) FOODS BY GLYCINE CONTENT

Models of neurodegenerative disorders show reduced concentrations of taurine in the brain. Models of diabetes, insulin resistance, and diet-induced obesity show taurine accumulation in the hippocampus. Given the possible cytoprotective actions of taurine, such cerebral accumulation of taurine could constitute a compensatory mechanism that attempts to prevent neurodegeneration. This article provides an overview of taurine homeostasis in the brain and reviews the mechanisms by which taurine may provide neuroprotection in people with obesity and diabetes. We conclude that further research is needed to understand taurine homeostasis in metabolic disorders with an impact on brain function.

TAURINE SUPPLEMENTATION AS A NEUROPROTECTIVE STRATEGY UPON BRAIN DYSFUNCTION IN METABOLIC SYNDROME AND DIABETES www.mdpi.com/.../1292 (2022) Several studies using different experimental models have shown the importance of taurine during development; its scarcity during various phases of development has been linked to various pathological problems such as retardation, cardiomyopathy, and retinal degeneration. Taurine is involved in a number of metabolic processes, including osmoregulation, membrane stabilization, and detoxification. Taurine transporter-deficient mice are characterized by impairment of several physiological functions, suggesting a crucial role for taurine in cellular homeostasis.

Additionally, taurine has been used to treat cystic fibrosis, Alzheimer's disease, cardiovascular disease, epilepsy, muscle breakdown, and liver disorders. In this article, we review the sources and synthesis of taurine and examine the evidence from in vitro and in vivo studies on the ability of taurine to protect against dyslipidemia, obesity, hypertension, and diabetes mellitus, as shown in Figure 2. **BENEFICIAL EFFECTS OF TAURINE ON METABOLIC PARAMETERS IN ANIMALS AND HUMANS** www.ncbi.nlm.nih.gov/.../PMC9284575 (2022)

Guillermou

Taurine is the most abundant amino acid in the retina. In the 1970s, it was thought to be involved in retinal diseases with photoreceptor degeneration. Retinal vascular perfusion disturbances in these retinal diseases may therefore affect retinal taurine uptake, resulting in local depletion. The low plasma taurine concentrations observed in diabetic patients may further increase such local decreases in taurine concentration. In this study we review the evidence for the role of taurine in the survival of retinal ganglion cells and the studies that suggest that this compound may be involved in the pathophysiology of glaucoma or diabetic retinopathy. Therefore, along with other antioxidant molecules, taurine should be seriously reconsidered as a potential treatment for such retinal diseases.

www.sciencedirect.com/science/article/abs/pii/S1350946214000147 (2014) The mechanism by which taurine supplementation acts is mainly related to the reduction of oxidative stress. In particular, it has been shown to enhance retinal reduced glutathione, malondialdehyde, superoxide dismutase, and catalase activities. Antiapoptotic effects are also involved; however, the protective mechanisms exerted by taurine against retinal damage still need to be further investigated.

onlinelibrary.wiley.com/.../cns.13610 SYSTEMIC TAURINE TREATMENT AFFORDS FUNCTIONAL AND MORPHOLOGICAL NEUROPROTECTION OF PHOTORECEPTORS AND RESTORES RETINAL PIGMENT EPITHELIUM FUNCTION www.sciencedirect.com/.../S2213231722002786 (2022)

Posted On 04/28/2023

rrealrose

"Morning report" - Recently started glycine/nac before bed. Using glycine-only (in tea) during the day. Too soon to tell; however, right away started fairly vivid dreaming. So staggering nights...alternating with vit D plus mg for deep sleep. (Waiting for warmer weather to ditch the D.)

Posted On 04/28/2023

fvomasch

Gui- Nothing is mentioned by mainstream media about Otto Warburg when a century ago he discovered that glucose feeds cancer cells. Sugar consumption then was maybe 5 or 6 pounds per year per person and now it's 130+ pounds per year primarily in the form of high fructose corn syrup (HFCS). Reducing sugar consumption can go a long way to increase longevity but it is highly addictive. This does not include the damage done by sugar from obesity and diabetes. But Big Pharma makes a fortune treating these diseases with RX drugs but never address the root cause-HFCS.. www.cancer.gov/research/key-initiatives/ras/ras-central/blog/2021/vand..
killcancercells.com/.../warburg
alcoholstudies.rutgers.edu/sugar-addiction-more-serious-than-you-think..

Posted On 04/28/2023

jhy7142

Gui I think its quiet simple never before has the human body been inundated with so much processed junk food . Our digestive systems have way more work to do their job than ever before . Most of the things in the grocery stores arent even food that the body can use utilize . The take over of the FDA in the 1930s has led us to this point where almost all foods allowed are detrimental to humans and only getting worse as the mad men running the show are ramping up their efforts to totally destroy the human race .Dr. Royal Lee fought them for decades to no avail and here we are on the brink of extinction if we dont turn this thing around .Eat simple and dont over eat and most things will take care of themselves .

Posted On 04/28/2023

Rosebud10000

It seems that the old adage "everything in moderation" applies. Nothing too extreme. Because even "good" science and "good" advice changes with time. One thing I am sure of is that veganism has really wrecked some individuals.

Posted On 04/28/2023

Almond

Very wise comments, Rosebud. I realized that I am already doing some of these exercises. They say "every dark cloud has a silver lining". I feel that I benefitted so much from physical therapy exercises after an accident that I have continued to do them, but only once a day now. I notice I am much stronger and more flexible than many women my age. At many kinds of work, I am stronger than my husband. I had a long day yesterday and worked very hard at physical labor, so did not feel guilty sleeping in this morning. I was surprised to wake up this morning without being in pain or complete agony.

A hot shower, a cozy bed and a good night's sleep revived me. I like to wake up and find something good about the day, something to look forward to and be in a positive state of mind. Hard to do if you are hurting. I find that hard work does not bother me as much as tense situations when I must be around mean or critical people. I have found a happy place of contentment by eating well, producing our own food, doing much of our own labor and living in harmony with nature. (Did you ever take time to stop, think and realize that no food tastes as good to you as that which you produce yourself?) I find it easy to be content without any number of modern gadgets and the toys that many people seem to need to support their fragile ego--it is more about what they own than what they value or who they are.

I think it says a lot about the values of people I choose to hang around that I can go anywhere in grubby work clothes and be treated with affection and dignity. If you are constantly dissatisfied and have not found that place of contentment within yourself it probably means you need to make changes in your life--or, at least, be actively pursuing goals.

Posted On 04/28/2023

Sue12Cross

Rosebud and Almond - oh how true! Every afternoon after a hard morning's physical work, just sitting in our garden taking a coffee made on our rocket stove, listening to the wild birds and watching the antics of our chickens, surrounded by trees shrubs and flowers, is magical. People can enjoy life at such a simple level but that makes no money for the corrupt system we live in. Free yourself from that and gain contentment and health. Oh and the work clothes - totally agree!

Posted On 04/28/2023

I practice meditation regularly, it helps me to rest my brain and eyesight and to produce melatonin for eye and general health. Meditation practices regulate the hypothalamic pituitary adrenal (HPA) axis. Meditation practices are reported to increase levels of melatonin the precursors of melatonin, especially serotonin and norepinephrine. Meditation increases the concentration of melatonin by slowing down its hepatic metabolism or by increasing synthesis in the pineal gland. Daytime melatonin levels were found to be significantly higher in Vipassana meditators (approximately 300 pg/ml) than non-meditating controls (65 pg/ml; unpublished data).

Considering the role of melatonin in sleep maintenance, it could be concluded that meditative practices improve melatonin levels and therefore sleep quality. Meditation, in addition to promoting melatonin levels, acts on the stress hormones cortisol and catecholamines in response to stress. Additionally, meditation techniques are also known to increase dehydroepiandrosterone, anterior pituitary hormones such as growth hormone, thyroid-stimulating hormone (TSH), prolactin- Melatonin plays a vital role in the physiological regulation of sleep in both blind and normal people.

The melatonin rhythm follows an ascending and descending phase with corresponding disturbances in sleep propensity. Melatonin is widely used in the treatment of sleep rhythm disorders due to jet lag, shift work, and insomnia. In addition to its role in sleep, melatonin acts as an antioxidant and immunomodulator, an oncostatic agent, anti-aging, and helps generate a sense of well-being. Aging attenuates melatonin secretion and therefore affects sleep quality in the elderly population. Acute increases in plasma melatonin levels occur overnight after a period of meditation

Guillermou

In conclusion meditation, with its global effects on the functions of the body and the brain, helps to establish a harmony between the body and the mind. Thus, meditative practices as a global integrated phenomenon of self-regulation open up a broader field for understanding the unique aspects of human sleep and consciousness. The findings indicate elevated melatonin and serotonin levels in long-term meditators with possible beneficial effects in lowering stress and improving relaxation in people. www.frontiersin.org/.../full (2012).----

www.sciencedirect.com/science/article/abs/pii/S0301051100000351 (2020).---

www.sciencedirect.com/science/article/abs/pii/S1550830723000678 (2023).---- Melatonin is the central player in the circadian rhythm and protects cardiomyocytes by acting as an antioxidant, anti-inflammatory mediator, and DNA damage repair.

Meditation induces melatonin and improves heart health.

biointerfaceresearch.com/wp-content/uploads/2022/02/BRIAC131.064.pdf (2022).---- Obesity, hypertension and reduced heart rate (HRV) are compensated by long-term meditation. Notably, meditative monks have comparable blood pressure and HRV to their matched Tibetan controls. Meditative monks have a protective plasmatic proteome, related to decreased atherosclerosis, increased glycolysis and oxygen release, conferring resilience to the development of cardiovascular diseasesCVD. In addition, plasma clinical risk factors were significantly reduced in monks compared to controls, including total cholesterol, LDL-C, Apo B, and Lp(a).

www.sciencedirect.com/.../S2352396422002109 (2022).---

Posted On 04/28/2023

Guillermou

From a scientific perspective, melatonin acts as a powerful antioxidant that can cross the blood-brain barrier, inhibit inflammation, and interact with the gut microbiome. From a clinical standpoint, melatonin imbalance can indicate a "dark deficiency" in the same way that vitamin D can infer whether or not someone is "light deficient." To some degree, melatonin has been misconstrued as a sleep aid. It has been shown to have systemic effects through its mechanisms of action and ultimately has the potential to have a significant impact on the etiologies of multiple chronic diseases. There are clear similarities between melatonin and vitamin D in the depth and breadth of their impact on health.

Both act like hormones, affect multiple systems through their immunomodulatory and anti-inflammatory functions, are found in the skin, and respond to sunlight and darkness. In fact, there may be similarities between the widespread concern about vitamin D deficiency being a "sunshine deficiency" and reduced melatonin secretion as a result of "darkness deficiency" from overexposure to artificial blue light. The trend toward increased use of melatonin supplements has raised concerns about its safety, especially at higher doses, long-term use, and application in certain populations (eg, children).

This review aims to assess recent data on the mechanisms of melatonin, its clinical uses beyond sleep, safety concerns, and a comprehensive overview of therapeutic considerations related to dietary supplementation, including the different formats available (animal, synthetic and phytomelatonin), dosage, timing, contraindications, and nutrient combinations.

www.mdpi.com/.../htm (2022) This report is very complete: IS MELATONIN THE "NEXT VITAMIN D"?: A REVIEW OF EMERGING SCIENCE, CLINICAL USES, SAFETY, AND DIETARY SUPPLEMENTS
www.mdpi.com/.../htm (2022)

Posted On 04/28/2023

radarphos

60 years ago as a kid, people who didn't know my name would call me "Red". They were referring to my skin hue-color. I've been reddish all my life that via Mercola articles convinced me that I don't store much collagen in my skin, particularly scalp, cheeks, and back of hands, fingers, wrists. I had taken powder collagen supplements in the past but they didn't seem to work. Recently I bought Mercola's L-glycine after reading his blurb on how it builds collagen. One Commenter (younger and more athletic than me) said he took up to 20 pills a day. So I take 2-6+ pills a day for 2 weeks, and I have doubled the thickness of my skin on the back of my hands; and my skin is more pleasant everywhere. That is impressive to me because I tend to run "cold" all the time in my four-season State, even indoors in summers because of air-conditioning.

Posted On 04/28/2023

rrealrose

Interesting comment, as I also had ditched collagen as it did not seem to do a thing. However, I found a collagen-gellatin and that, mixed with coconut cream and berries or OJ helps the gut. Planning to add back collagen while taking glycine to see if this may be more effective. Suspect both at the same time may be the ticket. Time will tell!!

Posted On 04/28/2023

ghereinaus

It is true that a lot of people have bad bacteria in the gut, but when the gut is fed resistant starch it usually increases good bacteria and decreases the bad bacteria. If people have a gut full of bad bacteria and aren't reacting well to RS then that bacteria needs to be eliminated and then people can feed their good bacteria. I've always preferred my fruit a bit green. I feel better when eating greenish fruit that is more alive and not fruit that is starting to decay. Charcoal binds to vitamin K and other nutrients in the gut so taking much of it every day isn't wise. I took charcoal years ago and my existing muscle pain got worse because of calcification - ceasing the charcoal and taking a K1/K2 supplement sorted it.

I still take charcoal sometimes but not too often. 'The effect of activated charcoals on the content of several water-soluble vitamins in apple juice was studied. Considerable reduction in ascorbic acid, niacin, pyridoxine, thiamine and biotin concentrations was found.'

www.researchgate.net/publication/230132079_Effect_of_activated_charcoa.. There is a study from the 1930's where they found vitamin K deficiencies in chickens fed charcoal.

Posted On 04/28/2023

What is certain these days is that there's no shortage of confusion..Nary a day passes by where we don't see it..One day it's like take this , take that, eat this, don't eat that..Exercise like a lab rat for half a day, don't exercise as much.. ah lordie the See Saw effect is always alive and well..So where's the fulcrum, YOUR fulcrum ?? Much to write on these topics here, but time is not on my side..So i'll give you my personal preference/experience that has been tried tested and proven for and by ME..Eat whole foods you do well with, the way they exist in nature..This is the fuel God designed our bodies ..Make sure they are grown in nutrient dense soils, WITHOUT the use of any Synthetic Petrochemicals..

Add in some good exercise or movements like walking; detox your body by eating a good diet ensuring your consuming a lot of GOOD PLANTS & NON-IRRADIATED NON-HYBRID HERBS.. Sleep well, have a good Social and Spiritual life - this is very, very important.. Personally i don't want to live as long as Methuselah. I just want to live well, honest, holy, healthy and do what i was tasked with..All of these insane extremes are not designed to assist you, i believe they add more confusion and do more harm.. This is just my personal observations over the many years researching health topics. And it has brought me a full 180 to the very topics i just outlayed.. Don't be afraid to be your own Guinea pig and for heavens never ever outsource your critical thinking to ANYONE..Be well..

Posted On 04/28/2023

jhy7142

Segstar well said way too much confusion with all of these so called scientific studies . Eat normal , drink clean water and sleep if you can with all the ridiculous stuff going on in this corrupt driven world .

Posted On 04/28/2023

versatile

Fasting is the first true panacea, the first cure. All animals fast instinctively when they get sick, because fasting cures. We can view many illnesses as caused by a deficiency or by an excess and Hippocrates clearly stated: "Diseases which arise from repletion are cured by depletion; and those that arise from depletion are cured by repletion; and in general, diseases are cured by their contraries;" Logically, half of those types of diseases are caused by repletion, by excess - and cured by some form of fasting. In addition, many infectious diseases have potential to be cured by fasting, which can starve the infectious agent.

Fasting can promote healing in specific situations and can be a powerful preventative in specific situations as well. However, corporate medicine doesn't like fasting cures for two reasons: 1. They cure. Most medicines don't cure any disease. and 2. Corporations cannot patent a fast, cannot bottle it and sell it to customers, not even as a preventative. When we have any illness that can be cured by a fast, corporate medicine would rather sell us a medicine that doesn't work - and take credit when natural healthiness, or even fasting, cures. to your health, tracy

Posted On 04/28/2023

jhy7142

versatile all very true and to the point . You are right just observe the animal kingdom and when ill no eating takes place . We are a part of that kingdom but somehow common sense has been bred out of most . Keep it simple and clean and life will return .

Posted On 04/28/2023

Segstar

Versatile, quite true, fasting has been practised around the world for thousands of years ..It has been tried , tested and proven..It's even in the good book, Jesus fasted once for 40 days so there we have it..So whom do we want to believe and trust? jhy, yep i have personally witnessed dogs when they are not feeling well will naturally go out and eat GRASS...

Posted On 04/28/2023

Pwd175yahoo.co.uk

There was extensive research done on calorie restriction & longevity. Turned out it was the glycine / proline to methionine ratio that mattered. Just need to increase the glycine / proline intake & not get too much methionine. The fisetin (strawberries) angle for autophagy is interesting, anyway I'll probably live till I'm 135 as I'm particularly partial to strawberry (fisetin) trifle & chicken soup which supplies a decent amount of glycine & proline.

Posted On 04/28/2023

Cabochon

High carb, low carb, high fat, low fat, the right fat, the wrong fat, the big fat lie, whatever. All I know is that in the fifties and sixties when we were growing up, there were hardly any fat folk around and the few that were fat, were figures of fun such as Billy Bunter or Fat Bob of comic book fame. We ate plenty refined carbs, little protein, plenty sat fats and root veg, but we didn't have the money to dine out nor eat junk food. In spite of war time and real poverty, it seems we led a less stressful life more in touch with nature, lived more of an outdoor life and largely free of technology.

Oddly enough, before today's article by Dr Mercola, I had singled out for a reread "The Cortisol Connection" 2002, by S. Talbot. Must have been a gut reaction to failed hypotheses. The liver is always key and as cases of TOFI in adults and NAFLD rise even in kids, insulin will never work properly without liver health. But there are compensations: - the eye candy on the right of the screen was pleasant to watch. More please.

Posted On 04/28/2023

rrealrose

Hi Cabochon, When growing up, do you remember a wide variety of jello deserts and vegetable aspics on menus? My oldest sister was drinking powdered Knox gelatin for nail strength. Yes on the NAFLD, I agree; however, other aspects are also at play, massive increases in toxin load, food laced with herbicides and pesticides tend to ruin the liver; then weight piles on.

Posted On 04/28/2023

katndognco

Family and neighborhood connections are greatly reduced in American life today. I believe this disconnect greatly amplifies our toxic food, air, water supply. Love conquers all but if we lack human touch and connection we are weakened. Animals and gardening have to suffice for many, including myself, probably why I have 3 dogs, chickens and a garden :)

Posted On 04/28/2023

With some people there is an attitude of one is good, so two would be better and four would be better yet. With others there is monkey see, monkey do. In the mix the I heard from a friend, didn't look into it, but thought they heard it all. When actually at best they possibly heard some key elements of whatever 'it' is. But this went through the filter of the telephone game. (For the uninitiated a group of people are lined up and the meme starts with 'Dog's shouldn't be in bars then after passed on one by one through the group, the last person hears all the logs are on Mars.) All of it ripe and fertile grounds for Slick Sales Dog Marketing Messaging for the many Predators Entity's.

In this case, heavy on the Too Big to Fail, Big P-Harma to either attack the real deal or confuse with bogus messaging to undermine the real deal. If understanding the information correctly, extreme long-term fasting is useful for resetting the fat/carb flexibility system we should have to reboot it to a proper base line. After this is accomplished, the intermittent fasting with healthy proportions and food sources can be fine-tuned to Your Size Fits You. On a personal note, fine tuning glycine, niacinamide, NAC & methylene blue use are making a big difference in energy levels, recovery, and mental alertness.

Also, a very important quote; "They're [telling us to] eat less, exercise more & eat vegan products, because those are much cheaper to produce. The vast majority of them are heavily subsidized. The powers that be want us to eat something they fully control." These are heavily soaked in gut offenders of one type or another. Leaky guts make our health leak out. With gut offender-soaked foods encouraging an imbalance and over bloom of microbes throwing out the endotoxins described in the article. This is also showing the need to develop short, stable, supply lines of Biodynamic Regenerative Grown Foods done Locally.

Posted On 04/28/2023

Yes, Just, taking care of the intestine is protecting health. A paper by researchers at the University of Turku in Finland said they were able to determine, in a "conservative estimate", that approximately 54 percent of the species in the core of the human gut microbiome are "potentially sensitive" to glyphosate. The researchers said they used a new bioinformatics method to make the finding. A conservative estimate of our results shows that 54% of the species in the core of the human gut microbiome are sensitive to glyphosate, which represents approximately 20% of the total number of bacterial species in the gut.

Concerns about glyphosate's impact on the human gut microbiome stem from the fact that glyphosate works by targeting an enzyme known as 5-enolpyruvylshikimate-3-phosphate synthase (EPSPS). This enzyme is essential for the synthesis of essential amino acids. "We can assume that long-term exposure to glyphosate residues leads to the dominance of resistant strains in the bacterial community." The most common EPSPS-associated domains are shikimate pathway and aromatic amino acid synthesis enzymes and promiscuous domains (HTH 3).

Additional EPSPS-associated domains exhibit functions such as DNA modification, gene expression and other enzymatic activities (Supplementary Table 6). Overall, the EPSPS-associated domains can be classified into shikimate, enzymatic, expression (domains whose products are needed in controlling gene expression) and structural functions.

usrtk.org/pesticides/new-glyphosate-papers-point-to-urgency-for-more-r..

Posted On 04/28/2023

An essential factor in this care is that the diet must be personalized. There are people who have developed bacterial overgrowth or have intolerances to certain vegetables, especially those high in lectins. The term FODMAP is used to distinguish various sugars called fructose, lactose, fructans, galactans and polyols. It is an elimination diet used as a treatment for digestive problems, such as Irritable Bowel Syndrome (IBS) and small intestinal bacterial overgrowth (SIBO). We must consider that research on dietary approaches and food properties constitute an excellent tool to address an adequate personalization of food. As you specify, in this way we also have Nutritional Genomics that focuses on the interaction between the bioactive components of food and the genome.

Nutrigenetics and Nutrigenomics. The influence of nutrients on the expression of f genes is termed nutrigenomics, while the heterogeneous response of gene variants to developing nutrients, dietary components, and nutraceuticals is termed nutrigenetics. Ideally, we would have the possibility of evaluating our genetic variants and polymorphisms, which can reveal diseases or a predisposition to suffer from them and thus have more information for a better personalization of the diet. This is not always possible due to the cost and diagnostic advice.

Then we can also apply the phrase "experience is the mother of science" How Humans Evolved To Be Natural Omnivores. On evolutionary anthropology. You surely know the three fathers of the ancestral diet: Drs. S. Boyd Eaton, Loren Cordain and Seignalet. !! Three different ancestral diets!!. Our ancestors is the reference updated in 2015: "Blood, bulbs, and bunodonts: on evolutionary ecology and the diets of Ardipithecus, Australopithecus, and early Homo", a long article with 275 references. He concludes: time, climate, geography and customs must be considered to define the diet of our ancestors. europepmc.org/.../pmc4350785

Posted On 04/28/2023

He concludes: time, climate, geography and customs must be considered to define the diet of our ancestors. The man who lived on the coast did not have the same diet, as on the plateau, the man who lived in Africa, as in the Nordic countries. Hunter-gatherers in a northern climate may have a largely animal-based diet, while hunter-gatherers near the equator may rely heavily on plant resources. The customs, although conditioned, also influenced. A preview of said book is summarized in the article: "What Was The "Paleo Diet"?"

Researchers Suggest There Was More Than One Way To Feed A Caveman". according to researchers at Georgia State University and Kent State University.

www.sciencedaily.com/.../141216082143.htm As Dr. Mercola reports, one of the reasons for being an omnivore and eating grass-fed fish and meat is carnosine. In people with diabetes, carnosine levels are lower than in people without diabetes. Strict vegetarians, who do not consume carnosine in their diet, tend to have higher levels of glycosylated proteins in their bodies than people who eat an omnivorous diet.

Carnosine greatly reduces the damage caused by highly reactive radicals that are produced by the uncontrolled oxidation of lipids and sugar that can occur in metabolic syndrome and diabetes. Several lines of evidence, particularly from cell and animal studies, demonstrate the potential effects of carnosine on disorders related to the brain and the mechanisms underlying these disorders, including antioxidant, anti-inflammatory, chelating, antiapoptotic, and antiglytic properties.

Posted On 04/28/2023

juststeve

And Gui, what are we to make of Our Gardens' "Gut?" With the pervasive glyphosate found everywhere on the planet, including rainwater, what is this doing to the 'Gut Health' throughout the world of Soil? Throughout the Animal and Plant Kingdom's. Recent reports suggest even though banned decades ago, pools of DDT are being found in pockets of the ocean. This does not bode well for removing these offenders or the other forever chemicals using Life and our shared Planet as a waste dump.

Posted On 04/28/2023

ThyroidGirl

Fasting for 20 hours per night definitely DID put a small DENT in my bodies lymphedema and inflammation and weight. But it was too hard to do when I work full time in a medical job for the matrix. Fasting 12-16 hours didn't do much for me it was only the 20 hour mark, but yeah...was easier when my life was more leisurely and stress free. Unsustainable for me.

Posted On 04/28/2023

Anything that improves health is an advance in our self-esteem. Research has shown that people who experience intense and prolonged (i.e., chronic) stress may have digestive problems, fertility problems, urinary problems, and a weakened immune system. People who experience chronic stress are also more prone to viral infections like the flu or the common cold, and to headaches, sleep problems, depression, and anxiety. Chronic stress weakens the immune system, leaving it prone to diseases such as cancer. It also increases the risk of digestive problems and depression. "Chronic stress can also help cancer grow and spread in a number of ways," says Anil K.

Sood, MD, professor of Gynecologic Oncology and Reproductive Medicine at MD Anderson. As Dr. Mercola has reported, getting 8-9 hours of sleep each night is a great defense against stress. A full night's sleep is essential for proper immune function. It also affects your mood, memory, and ability to concentrate. Following a regular sleep schedule, avoiding TV in bed, and getting regular exercise can help you sleep more soundly. Primarily, chronic stress activates the classical neuroendocrine system [the hypothalamic-pituitary-adrenal (HPA) axis] and the sympathetic nervous system (SNS) and leads to a decline and dysfunction of the prefrontal cortex and hippocampus under stress.

Stress hormones produced during activation of both the HPA axis and the SNS can promote tumorigenesis and cancer development through a variety of mechanisms. Chronic stress can also cause corresponding changes in the body's immune function and inflammatory response, which is significant because a long-term inflammatory response and decreased immune surveillance capabilities of the body are implicated in tumorigenesis.

Neuroendocrine pathways are the most widely studied possible mediators of these associations. The neuroendocrine pathways that constitute the hypothalamic-pituitary-adrenal (HPA) axis and the sympathetic nervous system (SNS) are the first systems shown to be closely related to stress. Under chronic stress, nerve impulses from the brain can continuously activate the hypothalamus to produce corticotropin-releasing factor (CRF). CRF is transported through the blood to the pituitary gland, which stimulates the cells to release adrenocorticotrophic hormone (ACTH), which travels through the blood to the adrenal cortex and promotes corticosteroid synthesis.

Chronic stress also activates the SNS, thereby stimulating the release of important neurotransmitters such as norepinephrine (NA) and adrenaline (Ad). NA and Ad are also hormones secreted by the adrenal medulla and are known as catecholamines because they contain catechol and amine groups. Corticosteroids and catecholamines produced by the HPA and SNS may cause a decline in prefrontal cortex and hippocampal functions, and may potentiate activation of the SNS and HPA by regulating the expression of glucocorticoid receptors.

www.ncbi.nlm.nih.gov/.../PMC3797253 (2013) www.ncbi.nlm.nih.gov/.../PMC4816215 (2015)

www.sciencedirect.com/science/article/abs/pii/S0006322316300038 (2016)

www.ncbi.nlm.nih.gov/.../PMC6999625 (2020) Stress hormones promote the onset and development of cancers through several mechanisms, such as inducing DNA damage, increasing p53 degradation, and regulating the tumor microenvironment.

Chronic stress can also activate the inflammatory response and the interaction between inflammatory cells and cancer cells to form the inflammatory tumor microenvironment, thus promoting all stages of tumorigenesis (24). It can also improve neuroinflammation, which further impairs the cognitive processing of stress in the brain.

This is a vicious circle. Chronic stress can also selectively suppress type 1 (Th1) helper T cells, suppress cytotoxic T cell (CTL)-mediated cellular immunity and interferon production, and weaken immune surveillance and other processes, thereby increasing the risk of invasion. and cancer metastases reduce the effectiveness of antitumor therapy.

www.sciencedirect.com/science/article/abs/pii/S088915910900049X (2009)

www.klinikum.uni-muenchen.de/i-Target/download/de/Seminare/Yang-et-al-.. (2019) Chronic stress and stress hormones can upregulate the expression of stress-related proinflammatory genes in circulating white blood cells, thereby increasing proinflammatory cell release and proinflammatory cytokine production, and can activate aging.

inflammatory response without the trigger of exogenous inflammation, leading to the promotion of tumorigenesis and metastasis. www.sciencedirect.com/.../S153561081300322X (2013)

internal-journal.frontiersin.org/articles/10.3389/fonc.2020.01492/full (2020) Stress hormones also induce COX-2 cyclooxygenase and a variety of COX-2-dependent inhibitors in human colon and breast cancer tissue cells, thereby activating the COX-2/PGE2 pathway. PGE2 is a biologically active lipid that can trigger inflammation and cancer.

COX-2/PGE2 activation can affect the tumor microenvironment and inhibit tumor immunity through a variety of mechanisms, including inducing tumor cells to produce vascular endothelial growth factor C (VEGFC) and promoting vascular endothelial growth factor C (VEGFC) remodeling.

lymphatic networks in and around tumors to provide a pathway for tumor cells to escape the immune system. www.nature.com/.../ncomms10634 (2016)

www.sciencedirect.com/science/article/abs/pii/S0889159117300508 (2019)

internal-journal.frontiersin.org/articles/10.3389/fonc.2020.01492/full (2020)

www.mdpi.com/.../htm (2021)

ThyroidGirl

Thanks Gui! <3 ~Why are peoples comments to me getting deleted? I liked the guy who said "don't focus on your health too much, we're all gonna die" LOL ~He gave me a new idea for a new custom hoodie I'm making with my cricut machine! Whoever is censoring comments please stop. :) I enjoy everyones viewpoint and take no offense. Love to all, God speed!

Posted On 04/28/2023

katndognco

Recently purchased grass fed, pastured beef gelatin powder. Blended 1 cup frozen mango, 1/2 tsp salt and tsp honey with 3 cups water let it set overnight. Was enjoying it as I read today's article. Yum Yum Yum! Happy days :)

Posted On 04/28/2023

wct5588

Phenomenal interview. Two of my favorites. PUFA, who knew?! Thank you!

Posted On 04/28/2023

calico48

I have insomnia without supplementing with melatonin and tryptophan having gotten into trouble taking benzodiazepine for jet lag. I currently take 1500 mg of L-tryptophan 1/2 hr before lights out together with a couple other things and it does the trick. So now it sounds like I might have to sacrifice sleep for longevity? I know for sure I won't last very long without a good nights sleep. What to do?

Posted On 04/28/2023

scuppi

Coconut flour is 87% insoluble flour, and a good substitute for grain flours in recipes. Be aware that it is very hydroscopic, so it will suck up any liquids in a recipe, and you will have to adjust.

Posted On 04/28/2023

jonfischer

Every article like this should have a summary of what practical things to do. For example, what foods to eat or not eat. How much exercise to have, etc. The medical jargon is pretty useless to a layman like me.

Posted On 04/28/2023

forbiddenhealing

Such conjecture is confusing...Inflammation is simply the redox balance favoring oxidation/burning...More efficient metabolism, high ORAC electron rich foods, sunshine and exercise favor reduction/biochemical integrity...with emphasis on emotional equanimity so threatened by our cultural narrative, errant opinion and an epidemic of neurotic anxiety....Kitchen chemistry using whole clean natural foods is the best prevention....Muscle meats/organs/sticky bone-cartilage stocks/stews seafoods plus fruits/vegetables in endless seasonal variety arrive at a congenial dinner table; makes a good life physically and emotionally.....Extra Vitamin C, minerals, etc. as needed oppose oxidative damage and toxins to raise body voltage/pH to optimal levels so biochemistry can proceed as designed....

You know intuitively like any animal what makes ya feel great, so I'd avoid constantly tweaking these simple basics.Dead processed food lacks life force/chi/electrons...conventional agriculture supplies flavorless low-energy produce...industry contaminates creation with all manner of poisonous chemicals and metals...media eats at your natural soul...A life of neurotic hypochondria and worry is a life stolen by hearsay...Personal responsibility and sovereignty are not empty words...DIY brings freedom and independence...Worshipping heroes, following leaders and a dependency personality does not. Honesty, integrity and the use of logic make lies and deceptions "glow in the dark." There are very few certain truths, all else remains in a huge undecided file; what works contains truth.

Posted On 04/28/2023

bfr27915

If you improve by 2/10ths of one percent each day, you will double your potential in one year (give me some rope). Do the math - 1.002 to the power of $365 = 2.073$ If I study to gain insight and understanding of just this post --- thinking I'm good for the day. Thank you.

Posted On 04/28/2023

bfr27915

"what works contains truth." What works, what endures, what aligns itself with the forces of the universe - is truth - is reality. Is this a good place to start? Truth and reality?

Posted On 04/28/2023

jhy7142

Forbidden very true keep it simple and maybe the mind can return from these crazy times . Give me the life of the 60s and 70s again and let life begin again . I know these demons were already at it back then but no where like today . I feel for those who never got to experience the so called freedoms of the past . Never really free from the Money Changers but it was easier to believe back then . I am ready for the clean up to begin .

Posted On 04/28/2023

Andrea1956

I'm a woman; which labs do I order to test my cortisol to DHEA ratio? I looked at a lab website and there isn't a specific one.

Posted On 04/28/2023

MoMac46

I could only understand a some of this, as I dont have enough knowledge of medical jargon.

Posted On 04/28/2023

Stephjask

This article seems to negate much of what has been written in these pages and in recommended books here for the past few years. It produced a fair amount of cognitive dissonance for me anyway. It really gets harder to believe what anyone says in this dystopian world post 2019.

Posted On 04/28/2023

Ioridobson

I'm with you there. I recently re-subscribed to Dr. Mercola's articles after taking a break from too much attention being given to non-health topics. After this article, I will have to take all of his reporting with a grain of salt and look further at other natural reporting. My disappointment is with email leads like the one this morning of this article " Is Fasting Propaganda?" which is far from the real topic in my opinion. I have followed and respected Dr. Mercola for many years, but we have been seeing sensationalism quite a lot which is off-putting, and should be below Dr. Mercola. Whoever is in charge of managing his communications needs to be advised to stop pushing emotionally charged messages. To your point, some clarity relating to the apparent conflicts of information would be more helpful and not so discouraging.

Posted On 04/28/2023

Lee1959

I have to agree. I kept reiterating to myself, "This goes against what Dr. Mercola has been recommending."

Posted On 04/28/2023

jhy7142

Stephjask True Dat

Posted On 04/28/2023

Darwina

I give up!

Posted On 04/28/2023

TMZDDZ

So when it says in the article above, "Research shows that women given 20 grams of gelatin daily have a drastic decline in biomarkers for muscle breakdown", if I take 20 grams of powdered collagen per day, this is the same difference as taking gelatin, and is of benefit, correct? I'm currently taking 10 grams per day, but if I would see greater improvement taking 20 grams per day, I'll do it!

Posted On 04/28/2023

kfa6931

How much is 20 grams? A scoop, two scoops?

Posted On 04/28/2023

TMZDDZ

kfa6931 The collagen I take is 10 grams per scoop. I've read that when starting it's best to "LOAD" with up to four scoops per day for a few weeks, because the older you are, the more deficient you are.

Posted On 04/28/2023

grulla

"kfa", the conversion from grams to tspns varies depending on the density of the particular substance. On the AVERAGE, you could consider ~4 grams/tspn. You can check various websites for specifics: duckduckgo.com/?q=teaspoon+%3D+grams&t=newext&atb=v282-1&i..

Posted On 04/28/2023

navisos34

One must be very cautious when confronted with new ideas, like carnivorous diet or harmful fasting, as if a lot of research results are now to be discarded by one or two individuals. Personally, I am 88 but have greatly benefited from time-restricted eating, moderate but consistent exercise, and reversing my pre-diabetes with reasonable dietary adjustments.

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otis101

navisos34, good for you still going at it at age 88. I also practice time restricted eating and moderate exercise and approaching 82. Should have been gone years ago but something just keeps me going. Avg life span for males is now about 73.5. Never a problem with diabetes but lots of cardio and BP issues. With 16 years on veins from my legs that replaced arteries on the heart I'm not sure of the life expectancy for veins.

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All good advice. I will soon be 74 years old and I have had a youth with rheumatic problems that I have minimized. Life teaches that our deficiencies can be counteracted with a healthy diet rich in phytochemicals, fasting, sleeping well, exercising and, in short, a healthy lifestyle. Let's also consider the care of arteries and veins. Collagen is the most abundant structural protein in the body, constituting more than 25% of the total protein in the body. Its main function is to provide strength, structure and support to all the tissues and organs in which it is present. To give us an idea of its importance, it constitutes approximately 80% of the tendons, 74% of the skin, 64% of the cornea, 50% of the cartilage, 23% of the cortical bone, 12-24% of the arteries, 10% lung and 4% liver.

The collagen molecule has a characteristic and unusual composition. Almost a third of its composition is glycine and 13% is proline. Of the derived amino acids, it presents 9% 4-hydroxyproline and 0.6% 5-hydroxylysine. It also contains glutamate, arginine, alanine and other amino acids of less structural relevance. The main process affected by glycine deficiency is collagen synthesis, since more than 90% of the available glycine is spent on it.

A deficient supply of glycine means that not enough collagen is synthesized and this can cause weakness in the body's mechanical system (weakness in the joints, osteoarthritis, broken bones, sprains, etc.) It can also be the cause of the appearance of anemia, muscular dystrophies, excess cholesterol, and many other pathologies, which could be resolved by increasing the daily intake of glycine. www.researchgate.net/profile/Kolja-Gelse/publication/9004464_Collagens.. .----
link.springer.com/.../978-94-007-7893-1_2

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Some of the many health benefits of glycine include: 1)helping build lean muscle mass 2)preventing sarcopenia (muscle loss, muscle wasting or deterioration) 3)playing a role in the production of human growth hormone 4)boosting mental performance and memory 5)helping prevent ischemic strokes and seizures 6)protecting skin from signs of aging or cellular mutations 7)protecting collagen in joints and reducing joint pain 8)improving flexibility and range of motion 9)stabilizing blood sugar and lowering risk for type 2 diabetes 10)improving sleep quality 11)lowering inflammation and free radical damage by increasing glutathione production 12)reducing risk for certain types of cancer 13)building the lining of the gastrointestinal tract 14)producing bile salts and digestive enzymes 15)helping reduce allergic and autoimmune reactions 16)boosting energy levels and fighting fatigue, stress and anxiety 17)helping produce red blood cells 18)helping control symptoms of seizures, schizophrenia and mental disorders

draxe.com/.../glycine .---- TOP 9 BENEFITS AND USES OF GLYCINE www.healthline.com/.../glycine
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Among the phytochemicals we consider the senolytics. Senolytics that selectively eliminate senescent cells, more frequent in aging, and that cause other cells to be dysfunctional. Senolytic fisetin increases muscle strength. Fisetin reduces senescent fat stem cells, thereby increasing the proportion of functional muscle stem cells needed to regenerate muscle and promote growth and strength. With age our muscles become less able to regenerate or grow if we don't act properly. This lack of regenerative capacity is related to the deterioration of muscle stem cells.

Researchers are getting closer to rejuvenating aging muscles by restoring stem cell function. US- and China-based scientists report in the *Journal of Cachexia, Sarcopenia and Muscle* that the senolytic fisetin rescues stem cell function in a mouse model of premature aging (progeria). Liu and colleagues show that fisetin, while increasing the size and strength of muscle cells, decreases the formation of non-living scar tissue in the muscle of Progeria mice. Fisetin also decreases senescent fat stem cells and increases muscle stem cells in the muscle of Progeria mice.

These findings suggest that fisetin may help restore muscle regenerative capacity.

onlinelibrary.wiley.com/.../jcs.13101 (10/11/2022) Also, one study showed that senolytic quercetin was associated with reduced odds of frailty in middle-aged and older adults. Muscle from older adults also has more senescent cells, which has been associated with reduced strength. Therefore, senolytics could possibly prevent or reverse the signs of muscle aging. academic.oup.com/cdn/article/6/Supplement_1/39/6606812?login=false (06/14/2022)

Inflammation has a detrimental effect on muscle mass and function. Protein synthesis and catabolism have been shown to be affected by inflammation. The elevated level of low-grade chronic systemic inflammation, called inflammation, seen in aged mammals is characterized by elevated serum levels of proinflammatory cytokines including the components of SASP, IL-6, and TNF. The source of these cytokines is assumed to be the presence of increased numbers of senescent cells in old age that contributes to this chronic systemic inflammation. Studies where senescent cells were transplanted into muscle showed that the presence of senescent cells had a detrimental effect supporting a role for the greater presence of senescent cells in the development of sarcopenia.

Chronic activation of NF- κ B can lead to activation of degenerative pathways and therefore play a direct role in the development of sarcopenia. There are two main possibilities for senescence in skeletal muscle in vivo, 1) chronic systemic inflammation from a local or distant site resulted in NF- κ B activation in muscle cells and muscle cytokine production further contributes to the cytokine system. inflammatory or 2) that the muscle cells themselves show some indices of senescence in old age.

livrepository.liverpool.ac.uk/.../200882238_Jan2021.pdf .---- Fisetin has anti-inflammatory effects, acting on the most frequent neurodegenerative diseases in old age, it is also effective in obesity, cancer, diabetes, osteoarthritis, and cardiovascular diseases, the attention of researchers is drawn with this review to the light of actual studies. www.ncbi.nlm.nih.gov/.../PMC8009086 (2021) .-----
dergipark.org.tr/.../899925 (2020) .-----
www.apjtb.org/article.asp?issn=2221-1691;year=2021;volume=11;issue=1;s.. (2021) .--- ---
onlinelibrary.wiley.com/.../efd2.3 (2022) .-----

Guillermou

Flavonoids are emerging as potential therapeutic agents to mitigate senescence. Naringenin, hesperetin, hesperidin, quercetin, fisetin, kaempferol, rutin, apigenin, luteolin, nobiletin, tangeretin, genistein, wogonin, epigallocatechin gallate (EGCG), theaflavin-3-gallate (TF2A), and procyanidin C1 have potent antisenescence effects . Flavonoids directly modulate underlying cellular senescence processes or interact with molecular targets that regulate aging-related pathways. This review discusses the potential use of flavonoids to mitigate senescence and consequently delay the onset of age-related diseases.

link.springer.com/.../s40290-022-00444-w (2022) Fisetin is found in small amounts in many foods, mainly strawberries, apples, persimmons, grapes, onions, and cucumbers. Strawberries have the highest content of this compound, followed by apples. The amount of fisetin in strawberries is approximately 5 times that found in apples, and generally more than 30 times that found in mangoes, kiwis, grapes, tomatoes, onions, cucumbers, and various fruits. dry.

However, the amount of fisetin in these foods is insufficient to provide the amount found in dietary supplements. The estimated daily intake of fisetin in Japan is 0.4 mg per day. The recommended daily dose of fisetin as a dietary supplement is 100 mg per day. The highest concentration of fisetin was found in strawberries (160 mg/Kg), followed by apples (26.9 mg/Kg) and persimmon (10.5 mg/Kg), onion 4.8 mg, grape 3.9 mg, kiwi 2.0 mg, peach 0.6 mg, cucumber 0.1 mg, tomato 0.1 mg. Figure 2. www.ncbi.nlm.nih.gov/.../PMC3689181

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umfuli

Thank you for your encouragement. I am a youthful 79, I eat once a day good fatty meat and home grown vegetables and a couple of glasses of wine. Perfect body weight, zero inflammation, zero medications. It's not hard if you adjust slowly and sensibly.

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grulla

Same here "Navisos". I'm 77 Y.O., and am very wary of Dr. Dinkov's article, as I, just like you, have had good success for the past ~10+ years since joining Mercola.com., with IF/TRE, starch resistance, and turning in at night with a 3-4 hour emptied stomach. Since I retired in 2010, I've lost weight from 112+ lbs down to today's ~175Lbs. And I might add that my regularity couldn't be any better, having to consistently go first thing in the morning, and my recent BP reading this week, at a periodic annual visit to my vascular surgeon in Tucson, AZ, for a routine carotid artery ultrasound check, was 108/70.

However, for a while during the covid nonsense, I did experience some loose stool, (and some other unexplainable symptoms???), but am now normal again. And there are 4 different types of starch resistant foods (type 1 thru type 4) that the writer neglected to mention which could be very important important to the article.

www.verywellhealth.com/best-foods-to-eat-for-resistant-starch-4000028 ~~~

draxe.com/.../resistant-starch ~~~

www.livestrong.com/article/305559-list-of-foods-very-high-in-resistant..

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fundamentalassumptions

Thank you for the objective facts in this. But, 'puritanical'?.....lol!! America? That's a joke, unless you're talking the mystical Babylonian existentialist pagan lean that was there in the unbiblical parts of that, such as killing & persecuting heretics rather than warning with faithful exhortation, & forcing religious conformity rather than reasoning & proving from the scriptures, peacefully parting where agreement is impossible. Many get stuck there because it's prideful & flattering to the self-righteousness of the 'seize the day' & wouldbe 'gods' types, as well as to those willing to blindly follow such men & spirits so long as self-justification, self-direction, &/or self-righteousness are duly indulged & stroked, 'managed' along the way, selling their souls.

Those who continued in the word, coming out of her fought against the corporatism of the first Constitutional convention, & insisted upon the Bill of Rights upon the humbling, level ground at the foot of the cross to counter nicolaitan tyranny common to all the cults of idolatrous humanism.

This has been methodically undermined, the history revised & so forth with the dumbing down/superstition and demoralization/sin tax & control mechanism. The problem with Puritanical theology was due to its assumption of Catholic Augustinian philosophy & tradition, illegitimate authority, the illegitimate & unbiblical polity & authority of the nicolaitans following the world, supposing that gain is godliness & so forth: one world empire.

You could call the hard work tendency that lingers 'stoick', maybe, as opposed to 'epicurean', but today's hard karma & corporatist catholicism in concordat with&over kabala & pagan idolatrous humanism is hardly cognizant or receptive to the grace of God which the Puritans at least did not totally lose touch w/ thanks to the exposing, faithfully warning & exhorting word of God, the King James Bible, pure Cambridge text, fulfilling Psalm 12 for these most subtil latter days.

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kfa6931

I'm completely confused now. Do we exercise or not? Do we fast or not? Who has the time to actually fine tune any of t his?

Posted On 04/28/2023

Steveeeej2100

Agree completely kfa. Simple advice is what Mercola needs to deliver. Do this not that. Test for this and do that. ABC'S PLEASE!

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Stephjask

Good to see that I am not alone in finding this article confusing, especially considering Dr Mercola's several books and many articles promoting various forms of fasting plus his enthusiasm for exercise. (I'm also a little surprised to find how unpopular this dissenting view is proving.)

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GoldCoaster

Reduce methionine and increase glycine. Can do regular intermittent fasting without problems if younger than 50ish. (But Mercola has a short eating window and he's 68 ???) The exercise not recommended is prolonged exercise, like long distance running. Do sprints for 20-30 secs., a few days per week minimum. Weights are excellent also, to maintain muscle mass and strength as we age., when sarcopenia can reduce wellbeing and longevity. What hasn't been mentioned, is that glycine/gelatin produces oxalates in the body when metabolised.

Dinkov says 12-20 gms of gelatin to maintain muscle mass, but elsewhere in the video recommends more than that. Paul doesn't recommend hydrolysed. I am on a low oxalate diet, but so confused now about if I should eat gelatin. Paul didn't ask Dinkov about oxalates, but I've heard him mention it in the past in reference to gelatin supplementation. Remember when we were told not to drink fruit juice because it's like drinking sugar? Now we're told to drink it. Paul does too. Yes, it does get confusing!

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bfr27915

I always skim the comments. I like blogs that not only provide answers but generate questions. Great questions. Agree kfa6931 - the process needs to be reasonable and most vital - implementable.

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reg5821

Don't get too much of a headache trying to figure it all out, the WEF is going to wipe your azz out. Have some pizza.

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