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Is Your Sleep Disorder Linked to a Vitamin Deficiency?

Analysis by Dr. Joseph Mercola Fact Checked

December 30, 2021

STORY AT-A-GLANCE

- Vitamin deficiencies, such as vitamin D and the B vitamins, can interrupt your sleep patterns. Vitamin D influences sleep, including reducing neurological symptoms, sleep apnea, and lowering the risk of sleep disorders
- Vitamin D plays a role in the production of acetylcholine. The body uses B vitamins and vitamin D to produce this neurotransmitter, which helps regulate your sleep-wake cycle
- Acetylcholine allows the body to be paralyzed during deep sleep, which in turn helps promote cellular repair and regeneration. This is one reason why sleep dysfunction has such wide-ranging health effects
- Vitamin D is also important to the production of melatonin, a hormone crucial for the regulation of the sleep cycle
- Unfortunately, many don't get enough sun exposure to attain optimal levels of vitamin D and an oral supplement may be required. Take these the steps to help determine if you need a supplement and the ideal dosage

According to health experts, vitamin D[1,2] and sleep[3,4] deficiencies are at epidemic proportions. It also appears they are related, as vitamin D levels affect your sleep quantity and quality.[5] Sleep is an essential strategy for optimal health and immune support, and is at the heart of your circadian rhythm.

You may have heard your circadian rhythm referred to as your body clock. It's a natural, biological timer present in your cells that helps the body recognize sleepiness and wakefulness throughout a 24-hour period. Sleep is vital to remaining alert and awake during the day. But did you know that if you don't get enough sleep, nerve connections begin to break down in your brain?

Animal research[6] published in the Journal of Neuroscience looked at the astrocyte activity in the brain of four groups of mice. Astrocytes are a type of brain cell that normally gets rid of unnecessary nerve connections. In mice that were well rested, they noted 5.7% of brain synapses had activity indicating a breakdown of healthy nerve synapses.

In the mice that were sleep-deprived or chronically sleep-deprived the activity jumped to 8.4% and 13.5% respectively, demonstrating that chronic sleep deprivation raises the risk that astrocyte cells will break down healthy nerve synapses.

According to a Gallup poll[7] in 2013, 40% of those asked got less than seven hours of sleep each night. Yet, in 1942, participants in the survey slept an average of 7.9 hours. This dropped to 6.7 hours in 1990 and remained nearly steady at 6.8 hours to 2013.

Data from the CDC[8] show there appears to be a geographical component to sleep duration. They categorized short sleep duration by state, finding many of the people who slept less than seven hours resided in states east of a line through Michigan, Indiana, Kentucky and Alabama. In some cases, sleep deprivation is a choice, but in others sleep disorders impact quantity and quality, resulting in chronic deprivation.

According to the American Sleep Association,[9] up to 70 million U.S. adults have some type of sleep disorder, including snoring, insomnia, obstructive sleep apnea, narcolepsy and disrupted sleep.

When asked, 37.9% of people reported unintentionally falling asleep at least one time during the day in the past 30 days. While vitamin deficiencies may not influence what time you choose to go to bed, they can influence your sleep quality once you get there.

Improve Sleep by Optimizing Vitamin D Levels

Vitamin D plays a significant role in optimizing health. Scientists are still discovering the many ways in which your body uses vitamin D for regulation and modulation. Although it is found in few foods, it is also a hormone your body makes through sensible exposure to sunlight.[10]

Fatty fish, such as wild-caught Alaskan salmon, is among the best food sources of vitamin D.[11] Depending on how the animals are raised, beef liver, egg yolks and cheese may have small amounts of vitamin D, and mushrooms will provide varying amounts.

The combination of low vitamin D content in foods and spending many hours indoors[12,13] each day has likely contributed to the number of people who are deficient in vitamin D. Your serum level of 25-hydroxy vitamin D (25(OH)D) is the indicator used to measure the vitamin in your body.[14]

Research on Vitamin D and Sleep

Several studies have found a link between lack of sleep, sleep disorders and vitamin D deficiency. In 2012, Dr. Stasha Gominak, featured in the interview below, published a study[15] in which she and her colleague used a two-year uncontrolled trial to evaluate the effect vitamin D supplementation had on neurological complaints and abnormal sleep patterns.

They engaged 1,500 people, in whom they maintained a narrow range of 25(OH)D levels between 60 nanograms per milliliter (ng/mL) and 80 ng/mL. These patients showed improvement in their sleep patterns and neurological symptoms.[16]

Later studies by other teams of researchers found similar results. One paper[17] published in 2014 suggested that recent reports of vitamin D deficiency may increase symptoms of airway muscle myopathy, chronic rhinitis and/or adenotonsillar hypertrophy, which may lead to obstructive sleep apnea.

One study in 2015 showed low levels of serum 25(OH)D in older men decrease sleep duration and efficiency,[18] and a systematic review published in 2018 found vitamin D deficiency was linked to a higher risk of sleep disorders.[19]

Also in 2018,[20] a team of researchers evaluated vitamin D receptor genetic polymorphic variations and the impact serum concentration had on the susceptibility for obstructive sleep apnea syndrome. They found that one polymorphism explained 14.5% of the variability in serum concentration and was associated with excessive daytime sleepiness.

Finally, in late 2020, a paper[21] published in Current Pharmaceutical Design sought to explore the role vitamin D plays in sleep regulation and the impact deficiency may have on sleep disorders. In a review of clinical trials and correlation studies they found vitamin D receptors and enzymes control activation expressed in the brain areas involved in sleep regulation. The team wrote:[22]

> *"Furthermore, vitamin D can affect sleep indirectly through non-specific pain disorders, correlated with alterations in sleep quality, such as restless legs syndrome and obstructive sleep apnea syndrome."*

A Healthy Gut Microbiome Supports Health and Sleep

Download Interview Transcript

In this fascinating interview with neurologist Dr. Stasha Gominak[23] we discuss the relationship between your vitamin D status, microbiome health and sleep. During the interview, Gominak unpacks a large amount of information clearly and succinctly, describing how vitamin D modulates sleep and metabolism.

Many of her patients use fitness trackers that track sleep information, measuring slow-wave deep sleep, which is one of the sleep phases during which your body is paralyzed. She explains that the only time we are paralyzed is during restorative deep sleep, slow-wave sleep or REM sleep.[24]

As you consider fitness trackers, I would discourage the Fitbit for two primary reasons. First, it emits a green light that can interfere with sleep quality. Second, the company was recently bought by Google, which is siphoning your personal health and fitness data from these devices for their gain. Overall, I think the Oura ring is a superior device and it doesn't steal your personal data.

As you'll hear in the interview, Gominak used vitamin D and B12 to influence sleep patterns. Later, as patients' past symptoms were returning, she discovered that vitamin B5 may help improve sleep patterns and lower pain. However, in a few short months, she and dozens of her patients discovered that the supplementation levels were too high.

Once the supplementation was reduced, the symptoms went away. Gominak surmised that for some reason gut bacteria was not making enough vitamin B, which resulted in deficiency.[25] Through a literature search, she found that B vitamins contribute to the production of acetylcholine in the brain and that vitamin D is one of three components that come together to make acetylcholine.

Optimizing Acetylcholine May Improve Nighttime Brain Repair

Acetylcholine is a neurotransmitter that has several important functions. Your parasympathetic nervous system depends on acetylcholine. Gominak shared that many papers have shown people with sleep disorders have excessive sympathetic tone. This in turn results in elevated epinephrine and norepinephrine, which are indicative of stress.

According to Gominak, an elevated sympathetic tone may be the result of an acetylcholine deficiency. Additionally, acetylcholine is necessary to help maintain alertness during the day and help you fall asleep at night. It's part of what allows your body to be paralyzed during deep sleep.

She believes once your vitamin D and B levels normalize, your brain can start repairing damage that had occurred during years of poor sleep.[26] As a result, patients often find themselves sleeping longer than eight hours and remaining in REM sleep longer.

It's during this phase that cellular repair and regeneration is done. Without deep sleep, your body does not perform the needed cellular repair to maintain health, which is one reason why sleep dysfunction has such wide-ranging health effects. Another interesting piece of the puzzle that Gominak discovered is that sleeping longer increases the need for more B vitamins.

To optimize your gut microbiome to produce the needed B vitamins, she recommends having a vitamin D level above 40 ng/mL and using a B50 or B100 supplement for three months.[27] This helps the microbiome produce the ideal amount of B vitamins on its own. She uses these strategies to improve sleep function and repair in her patients.

One-Two Punch for Sleep and Health: Melatonin and Vitamin D

You likely know that your circadian rhythm is in part dictated by the hormone melatonin. But did you know that vitamin D is involved in the pathways that produce melatonin in the pineal gland?[28,29]

Vitamin D has multiple effects on the body and as discussed, evidence demonstrates that low levels are associated with sleep disorders. An evaluation of clinical trials and correlation studies have shown that "Vitamin D has both a direct and indirect role in the regulation of sleep."[30]

Melatonin, the hormone secreted by your pineal gland located near the center of the brain, is crucial for the regulation of your sleep cycle. With enough exposure to bright light during the daytime, the gland starts secreting melatonin during the evening darkness.[31]

As this amount increases the body prepares for sleep. When you stay up past dark using artificial light, especially light emitted by electronic devices, it inhibits melatonin production. Ideally, you would stop using electronics at least an hour or two before bedtime. This helps to raise your melatonin production and maintain a steady circadian rhythm.

Yet, like vitamin D, melatonin does more than support quality sleep.[32] It's also a potent antioxidant[33] that plays an important role in cancer prevention.[34] It's thought to be important for brain, cardiovascular and gastrointestinal health,[35] and has been shown to boost your immune function in a variety of ways.[36]

Melatonin was also found to be significantly reduced in adolescents diagnosed with Type 1 diabetes.[37] In one paper,[38] researchers suggested melatonin may improve the treatment of bacterial disease and combat sepsis. In 2020, sepsis and tissue oxygenation expert Dr. Paul Marik and colleagues proposed melatonin as an adjunctive treatment in severe sepsis and septic shock.[39]

Optimize Your Vitamin D Level

You know that optimizing sleep is one important way to take control of your health. And as Gominak notes in this interview, your sleep quality and quantity are related to maintaining optimal levels of nutrients and vitamins.

For optimal health, immune function and disease prevention, you want a vitamin D blood level between 60 ng/mL and 80 ng/mL year-round. In Europe, the measurements you're looking for are 150 nmol/L and 200 nmol/L.

If you live in a sunny locale like Florida and practice sensible sun exposure year-round, you might not need any supplements. The DMinder app[40] is a helpful tool to see how much vitamin D your body can make depending on your location and other individual factors.

Many, unfortunately, don't get enough sun exposure for one reason or another, and in these cases, an oral vitamin D supplement may be required. Just remember that the most important factor here is your blood level, not the dose, so before you start, get tested so you know your baseline.

Here's a summary of how to determine whether you might need an oral supplement, and your ideal dosage:

1. **First, measure your vitamin D level —** One of the easiest and most cost-effective ways of measuring your vitamin D level is to participate in GrassrootsHealth's personalized nutrition project, which includes a vitamin D testing kit. Once you know what your blood level is, you can assess the dose needed to maintain or improve your level.

2. **Assess your individualized vitamin D dosage —** To do that, you can either use the chart below, or use GrassrootsHealth's Vitamin D*calculator. (To convert ng/mL into the European measurement (nmol/L), simply multiply the ng/mL measurement by 2.5.) To calculate how much vitamin D you may be getting from regular sun exposure in addition to your supplemental intake, use the DMinder app.[41]

vitamin d serum level

   Factors that can influence your vitamin D absorption include your magnesium[42] and vitamin K2[43] intake. Magnesium is required for the conversion of vitamin D into its active form.[44,45,46,47] If your magnesium level is insufficient, the vitamin D you ingest orally may simply get stored in its inactive form.[48,49]

   Research by GrassrootsHealth[50] shows you need 146% more vitamin D to achieve a blood level of 40 ng/ml (100 nmol/L) if you do not take supplemental magnesium, compared to taking your vitamin D with at least 400 mg of magnesium per day.

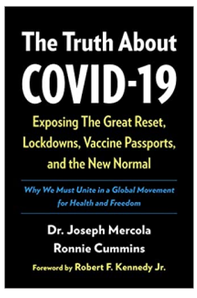
   Your best bet is to take your vitamin D with both magnesium and K2. According to GrassrootsHealth,[51] "combined intake of both supplemental magnesium and vitamin K2 has a greater effect on vitamin D levels than either individually," and "those taking both supplemental magnesium and vitamin K2 have a higher vitamin D level for any given vitamin D intake amount than those taking either supplemental magnesium or vitamin K2 or neither."

   Data[52] from nearly 3,000 individuals revealed 244% more oral vitamin D was required to get 50% of the population to achieve a vitamin D level of 40 ng/ml (100 nmol/L) if they weren't concurrently also taking magnesium and vitamin K2.

3. **Retest in three to six months —** Remeasure your vitamin D level in three to six months, to evaluate how your sun exposure and/or supplement dose is working for you.

#1 Best Seller In Books

"The Truth About COVID-19" exposes the hidden agenda behind the pandemic, showing the countermeasures have nothing to do with public health and everything to do with ushering in a new social and economic system based on totalitarian, technocracy-led control. So, it's not misinformation they fear. It's the truth they want to prevent from spreading. Pick up a copy of this best-selling book today before it's too late.



The Truth About COVID-19

by Doctor Joseph Mercola

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grulla

Joined On 1/17/2012 8:03:55 AM

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Article title, "Is Your Sleep Disorder Linked to a Vitamin Deficiency?" Not me, my only sleep disorder comes from the age related need to go pee in the middle of the night. So far, according to a recent thorough MRI in Tucson, AZ, (www.simonmed.com/.../mri), my enlarged prostate is cancer free, but I do have an elevated PSA reading, for which my integrative doctor has prescribed Mebendazol (MBD), a known anti parasite, (sort of like Ivermectin???) from a compounding pharmacy in FL, that he prefers for certain natural remedies. www.askdrmaxwell.com/2015/08/mebendazole-from-antiparasitic-to-cancer-..

But as for my Vit D level, last year I was going downhill from a previous 68 to a 58ng/ml, a drop I had previously experienced, much worse. Though still in the acceptable 40-60 ng/ml zone, due to this Covid, (and now Omnicorn) situation, I decided to pre-emptively strike, and double up on both my 5K IU of Vit D3, (and also double my 100 mcg of Vit K2-MK7), with the first of two 5K IU doses at IF (intermittent fasting) 5AM breakfast, and the second D3 5K IU dose (And K2), at IF noontime dinner. Lo 'n behold, my recent bloodwork test showed 101 ng/ml...awesome! Back Covid, back!!! :-), and hopefully a better night's sleep.

Reply | Mark as Spam | Posted On 12/30/2021 10:51:08 AM

Like | Dislike

datadragon

Joined On 6/14/2015 6:50:55 PM

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Hi Grulla, Magnesium was found to have a regulating effect, raising and lowering vitamin D based on the original starting baseline 25(OH)D levels. In those people who had a baseline 25-D level of 30 ng/ml or below, magnesium supplementation raised up their 25-D level. However, In those who started out with higher 25-D baseline levels starting around 30 ng/ml (75 nmol/L) up to 50 ng/ml (125 nmol/L), magnesium supplementation LOWERED THEIR 25-D levels back down, not raised 25-D levels further higher.

Magnesium regulates vitamin D levels, low magnesium impedes your body's ability to utilize vitamin D, even when it's present or taken by supplementation. Magnesium deficiency shuts down the vitamin D synthesis and metabolism pathways. academic.oup.com/.../5239886 Perhaps in the early on cases of covid-19 where Vitamin D was shown to be rapidly depleted after infection a higher level would have been beneficial during the infection period and may even have required using prescription 25-d or 1,25d forms rather than over the counter to replenish it quicker and bypass potential conversion issues.

Furthermore, Vitamin A (true Vitamin A in retinol form) is necessary for the binding of copper onto the protein ceruloplasmin which makes copper bio-available (usable) (and in turn supports iron). Unfortunately, Vitamin D taken one sided lowers Vitamin A which lowers ceruloplasmin which then contributes to copper bio-UNavailability - leaving problematic free copper rather than ceruloplasmin bound usable copper. It would also lower your supply of magnesium until it potentially causes a deficiency. In that state unless you were also taking K2 and A it can lead to Vitamin D toxicity. This is not advice to take anything just some information based on the research I've read.

Mark as Spam | Posted On 12/30/2021 10:57:15 AM

Like | Dislike

grulla

Joined On 1/17/2012 8:03:55 AM

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Thanks "data", If I understand you correctly, I"ll be observant of my Mg l-threonate intake in regard to any drop in my Vit D level. As for my Vit A intake, I only take one 8K IU just twice a week, due to it's known toxicity. The smallest Vit A capsules I can find are 8K IU, perhaps a good remedial dose for a short time, but much too large for everyday lifestyle dosage consumption, hence the reason for only twice a week.

I wish the vitamin producers would make Vit A readily available in much smaller, less dangerous doses, like 400 IU. Back in the early 70s, I used to mail order combination D3/5kIU with Vit A/400IU from the L&H pharmacy in NYC, but cannot find that small 400 IU Vit A dose in a discrete component capsule, so as I'll use up my current Vit A supply soon and will stop taking it, and rely on my fresh veggies for my A instead. nutritiondetective.com/toxicity

PS: Because of your Vit A comment, and the above Vit A toxicity link, coupled together with some small amounts of fat deposits on my liver from a recent MRI, I think I'm gonna chuck the remaining Vit A capsules right here and now. Gotta save my liver for my once a day organic Coors Light at noontime dinner, lol. Thanks for bringing up the Vit A subject.

Mark as Spam | Posted On 12/30/2021 11:41:45 AM

Like Dislike

MaryRN

Joined On 11/23/2009 11:22:14 AM

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As my husband has restless leg syndrome and a sleep disorder this was very informative information. I just need to see what his vitamin D level is because he is very active, but he does seem to have the symptoms of sleep depravation.

Reply | Mark as Spam | Posted On 12/30/2021 7:36:08 AM

Like Dislike

Tirlittan

Joined On 12/26/2016 12:04:40 PM

Add as Friend | Send Message

I too have restless legs, specially after heavy sport. Treating soles with solemassage device helps me a lot. It can be ball with spikes, small roller, rolling pin ..

Mark as Spam | Posted On 12/30/2021 9:54:22 AM

Like Dislike

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datadragon

Joined On 6/14/2015 6:50:55 PM

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A small study, headed by Richard P. Allen, Ph.D., an associate professor of neurology at the Johns Hopkins University School of Medicine, used MRI to image the brain and found glutamate — a neurotransmitter involved in arousal — in abnormally high levels in people with RLS. The more glutamate the researchers found in the brains of those with RLS, the worse their sleep.
www.hopkinsmedicine.org/news/media/releases/restless_legs_syndrome_ins..

Mark as Spam | Posted On 12/30/2021 10:52:35 AM

Like Dislike

Shasha

Joined On 5/10/2007 4:23:27 PM

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Zn/Mg maybe low and thyroid maybe low due to eating gluten. Gluten is in wheat/barley/rye..oats/corn/rice. Rice is low in gluten. Wild rice has no gluten...is a grass. A hair test from Doctor's Data (Amazon) shows good mineral levels/heavy metals in a person.

Mark as Spam | Posted On 12/30/2021 11:10:06 AM

Like Dislike

Maritt

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

Add as Friend | Send Message

Red light therapy also helps to improve sleep, and improve health.

Reply | Mark as Spam | Posted On 12/30/2021 2:54:19 AM

Like Dislike

jlb76943
Joined On 10/25/2020 1:55:55 PM
Add as Friend | Send Message

My husband has been having migraines every day. It was suggested that he take Vitamin D, Camomile, and B-2, along with Magnesium. It looks like I need another order!

Reply | Mark as Spam | Posted On 12/30/2021 5:33:46 PM

Like Dislike

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datadragon
Joined On 6/14/2015 6:50:55 PM
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As much as 86 percent of children on the autism spectrum experience disrupted sleep, compared to between 10 and 16 percent of children in the general population have difficulty sleeping. Sleep problems in patients with autism spectrum disorder were linked to a mutation in the gene SHANK3 that in turn regulates the genes of the body's 24-hour day and night cycle. Their study showed that people who were missing the SHANK3 gene and mice that lacked part of the gene had difficulty falling asleep even when sleepy. Shank3 is an important modulator of sleep and clock gene expression www.sciencedaily.com/.../190429094907.htm

What is most interesting about that research was that in 2014, it was first found that a loss of synaptic Shank3 comparable to that observed in Shank3 knock-out mice was detected in immunohistochemical and biochemical analyses of zinc deficient animals. Zinc shapes the properties of developing synapses via Shank proteins. Shank activation and function require zinc. So someone with a zinc deficiency would experience the same problems as someone with the rarer Shank3 mutation problems. www.ncbi.nlm.nih.gov/.../24277719 In fact, shank3 mutations are also linked to zinc deficiency. www.ncbi.nlm.nih.gov/.../28345660

There are also nutrient interrelationships and Vitamins D and A both are related to zinc metabolism. Positive and significant correlation exists between 25(OH) D serum levels and zinc level. The mean Zinc level was significantly lower in the Vit D deficient group than in controls (deficiency at 6.34±1.47ng/ml) www.ncbi.nlm.nih.gov/.../PMC5307609 Plasma zinc levels increased significantly only in the group receiving the combination of zinc and vitamins A and D (in RDA concentrations not high doses). link.springer.com/.../s11011-006-9023-4

Reply | Mark as Spam | Posted On 12/30/2021 10:16:08 AM

Like Dislike

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datadragon
Joined On 6/14/2015 6:50:55 PM
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We review the role of vitamin A and retinoic acid (RA) as mediators of rhythm in the brain. In the suprachiasmatic nucleus and hippocampus they control expression of circadian clock genes while in the cortex retinoic acid is required for delta oscillations of sleep. Retinoic acid is also central to a second rhythm that keeps pace with the seasons, regulating function in the hypothalamus and pineal gland www.ncbi.nlm.nih.gov/.../PMC4283048

This is again part of the interrelationships of D, A, Zinc, and Magnesium - Zinc and Magnesium are both involved in Vitamin A/Retinoic Acid metabolism. Classical signs of magnesium deficiency are type II insomnia, excessive perspiration, and general body odor. (Excessive odor of the feet is peculiar to zinc deficiency.) Type II insomnia, characterized by falling asleep easily but awakening frequently throughout the night. Type I insomnia, however, is associated with a calcium deficiency and causes difficulty in falling asleep.

In my personal experience type II insomnia seemed related to when inflammation was high (waking up such as 4 am) and spraying a few sprays of ancient minerals magnesium chloride when that happened for me helped. Mice lacking exon 21 of Shank3 have problems falling asleep even when sleepy. Using RNA-seq we show that sleep deprivation increases the differences in prefrontal cortex gene expression between mutants and wild types, downregulating circadian transcription factors Per3, Bhlhe41, Hlf, Tef, and Nr1d1. elifesciences.org/.../42819

Mark as Spam | Posted On 12/30/2021 10:17:08 AM

Like Dislike

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datadragon
Joined On 6/14/2015 6:50:55 PM
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A significant decrease was observed in melatonin levels of the zinc-deficient group compared to the control and zinc-supplemented group (P<0.01). The results of this study suggest that zinc deficiency decreases the melatonin levels and zinc supplementation may increase the plasma melatonin levels in rats pubmed.ncbi.nlm.nih.gov/14708876

Mark as Spam | Posted On 12/30/2021 10:42:28 AM

Like Dislike

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forbiddenhealing
Joined On 2/21/2011 9:51:43 AM

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It's hard for a healthy mind to reside in a polluted low-voltage biochemically deficient vehicle and.... reflexively a body becomes acidic/hypoxic when ruled by a stressed worried fearful sleepless mind, and can not be sound.

Reply | Mark as Spam | Posted On 12/30/2021 7:27:49 AM

Like Dislike

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forbiddenhealing

Joined On 2/21/2011 9:51:43 AM

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Great to know your Vitamin levels, many monitor their own dietary and supplemental intakes...Equally important to know your mineral levels and ratios as well as heavy metal burdens and their depletions of vits/mins...A hair analysis/not blood work tells this. Nice to know what you are made of..stop guessing.

Mark as Spam | Posted On 12/30/2021 8:44:54 AM

Like Dislike

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datadragon

Joined On 6/14/2015 6:50:55 PM

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Hi RANDALL, yes I also found the hair tissue mineral analysis preferably through TEI LABS (Trace Elements Inc) to be useful in providing additional information such as the modern day pollution of heavy metals but should generally be careful about relying on it exclusively, especially for attempting to balance nutrient levels that some do as the optimal levels set to a group of typical healthy individuals may not reflect your unique genetics and nutrient profile.

HTMA shows 3 months of whats been circulating for metals which is useful. A bit better for catching the acute exposures to see where its coming from. For metals, should your inflammation be too suppressed, it too will only show current exposures during that time such as iud, food and drink ingestion, but would not reflect tissue storage yet at first. I had mercury show up for example due to amalgams and seafood I ate, but nothing else. Once the adrenals and inflammation are brought back up, the body will start to mobilize the stored metals and they will begin to show on the tests and thats when the other metals came out and started showing storage release on the tests. The 'metal mobilization' range of a sodium to potassium ratio is 1.9-4.0 is a rough value and not absolute metabolichealing.com/htma-toxic-metals-the-ratio-between-sodium-potass..

Mark as Spam | Posted On 12/30/2021 11:43:59 AM

Like Dislike

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datadragon

Joined On 6/14/2015 6:50:55 PM

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the body attempts to remove excess from the blood by excretion or storing in cells and tissues if the bodys detox pathways are not working efficiently. So if you were to be exposed to a significant one time lead exposure, and went to get a blood test for lead within a week of the exposure, yes the blood test may show a higher level of lead and doctors would catch it.. But if the blood test was done 2 or more months after the exposure, the blood would show normal.

So here is why once the immediate source of an exposure such as to copper or mercury is removed, the blood will return to normal even though toxic levels are now stored in the bodys tissues. This is one reason why the copper issue isnt more known, as levels are only higher in blood when its coming in or when its being mobilized back to be excreted. If copper has accumulated and is tightly stored in the tissues, and adrenal function is too weak to mobilize that stored copper, it's not going to show up in the blood! and therefore not on HTMA right away.

Mark as Spam | Posted On 12/30/2021 11:44:10 AM

Like Dislike

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forbiddenhealing

Joined On 2/21/2011 9:51:43 AM

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Data...It takes electrons to mobilize ensconsed positive metal ions like Hg/Cd, and chelators in the gut like chlorella, charcoal, clay and or sauna to expell them...NAC is more specific to remove excess Cu, Silica/horsetail, Figi Water for Al, borax/iodine for fluorides...and of course electrolyte levels and ratios of Mg/K/Na/bicarbonate to buffer and maintain alkalinity/body charge. Mega C/NAC/RALA, earthing and fasting raise body voltage so all "accessories" function, oxygen is protected/delivered and metabolic voltage production is peak.

I look at hair analysis as a history of contaminants and mineral intake where Na/Mg/K become depleted during detoxification so intake should be boosted. Even after body chemistry is corrected, an out of balance ego will still experience fear, anxiety and seek drugs and perversions...but these and depressions will be easier to overcome. The body needs about .5 volts to function and brain/heart need 1.0 volt to be happy with a body voltage reflected in a 7.35 to 7.4 pH or ORP/oxidation-reduction potential...It all starts and ends there.

Mark as Spam | Posted On 12/30/2021 12:43:09 PM

Like Dislike

datadragon
Joined On 6/14/2015 6:50:55 PM
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Interesting Randall. NAC appears to be very promising for both treating cocaine addiction as well as other drug dependence, including alcohol, normalizing drug-dependent decreases in extracellular glutamate levels and GLT-1. www.ncbi.nlm.nih.gov/.../PMC4437505 ~ www.ncbi.nlm.nih.gov/.../PMC3883353 By increasing the expression of a glial transporter of glutamate (GLT-1) in the same reward-associated brain region, NAC promotes efficient uptake of glutamate by the glia. Deficiency in this glial activity (and a consequent excess of glutamate) is associated with depression, bipolar disorder, OCD, cocaine addiction and anxiety. In fact, NAC's enhancement of GLT-1 activity may well be its principal mode of action in extinguishing repetitive, 'loop' behaviors (Gipson, 2016 www.biologicalpsychiatryjournal.com/article/S0006-3223%2816%2932383-6/.. You have been viewing the body in different fashion/perspective.

Mark as Spam | Posted On 12/30/2021 12:59:37 PM

Like Dislike

tallulah3
Joined On 4/21/2021 9:26:59 AM
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Vitamin d gave me insomnia

Reply | Mark as Spam | Posted On 12/30/2021 11:38:13 AM

Like Dislike

Shepard505
Joined On 7/26/2018 10:09:50 AM
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Those with higher vitamin D levels may be outdoor workers who are more physicially active, which makes me sleep better than when doing office work for days.

Reply | Mark as Spam | Posted On 12/30/2021 5:40:35 AM

Like Dislike

GoldCoaster
Joined On 4/20/2009 11:20:19 AM
Add as Friend | Send Message

In Australia and Canada vit D is measured in nmol/L, not just Europe. I've written to Contact Us on this website 3 times regarding this, but it continues to not be mentioned and I get no response.

Reply | Mark as Spam | Posted On 12/30/2021 4:10:52 AM

Like Dislike

ela3783
Joined On 9/7/2018 9:52:52 AM
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Hi GOLD - what's imp is that your Vit D levels are in high normal range of whatever the measuring method is . Just aim for that high normal range and you'll be healthier than you've ever been

Mark as Spam | Posted On 12/30/2021 10:09:34 AM

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datadragon
Joined On 6/14/2015 6:50:55 PM
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Hi GoldCoaster, https://unitslab.com/node/84 and www.endmemo.com/.../Vitamin__D.php are two different calculators you can use for future reference, they convert both directions. Also if you need to convert IU to mcg belabelwise.org/conversion-calculator

Mark as Spam | Posted On 12/30/2021 12:44:00 PM

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Joe_Below
Joined On 3/17/2020 11:04:08 PM
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Does a vitamin deficiency cause all night erections, keeping you up at night.

Reply | Mark as Spam | Posted On 12/30/2021 11:44:46 PM

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mourningwarbler
Joined On 7/24/2009 3:16:05 PM
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Does Vitamin D mean D3 or what? I'm trying to understand what people mean by Vitamin D. Thanks if you know. D3 comes from sun. I have to take vegan D3 because I'm allergic to lanolin and it closes up my throat and other places.

Reply | Mark as Spam | Posted On 12/30/2021 7:59:51 AM

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grulla
Joined On 1/17/2012 8:03:55 AM
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www.mercola.com/.../vitamin-d-resources.htm

Mark as Spam | Posted On 12/30/2021 10:22:27 AM

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scuppi
Joined On 6/20/2006 2:28:50 AM
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Joe needs to interview Jim Stephenson Jr., and upgrade his knowledge of vitamin D. All this oral vitamin D supplementation may not be necessary, and even quite harmful. Nothing has changed, nature took care of our D levels before, and there is no need to start slamming our livers with D supps, especially when we don't even test for active D, and most people that have the arbitrarily low numbers on a storage D test, have high levels of active D. Go to the FB group Secosteroid Hormone D to learn more.

Reply | Mark as Spam | Posted On 12/30/2021 7:58:15 AM

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