THE TUESDAY MINUTE

IT'S TIME TO FEEL GOOD AGAIN

THIS WEEK'S TOPIC

Exciting New Research On Melatonin

Way More Than Just For Sleep!

"Since Melatonin possesses antioxidant, anti-viral, anti-cancer, and anti-inflammatory properties, it has been shown to be beneficial in treating COVID-19 on several fronts."

Back in June 2021, Dr. Frank Shallenberger in his newsletter, Second Opinion, recommended 1 mg of melatonin for every pound of body weight for people with elevated PSA's that were not cancerous. I was stunned with that recommendation, that's a lot of melatonin.

I also know many integrative doctors have recommended melatonin therapeutically and preventatively in the 20-40 mg range. Then I remembered that for years, Dr. Alex Vasquez has melatonin as one of his antiviral strategies and now new research is showing it has benefits treating COVID-19 on several fronts.

Let's take a few minutes and update our understanding of melatonin. Originally thought to be exclusively made in the pineal gland and known for its sleep benefits, melatonin is also made in the mitochondria. When mitochondrial melatonin is depleted, it easily crosses the mitochondrial membrane. And of course, the gut, our second brain has melatonin. According to some researchers the gut contains 400 times more melatonin than in the pineal gland.

Melatonin, like other hormones, drops as we age. So by the time, we reach 40, chances are pretty good we're low, especially since the half-life of this amazing hormone is only 1 hour. Melatonin possesses antioxidant, anti-viral, anti-cancer, and anti-inflammatory properties. It also contains anti-convulsant and anti-excitotoxic properties, buffers cortisol and can inhibit cortisol production.

Most of us on this forum are familiar with Dr. Otto Warburg and his work with cancer and its Energetics. Cancer cells reduce the amount of ATP our bodies generate. A phenomenon called the "Warburg Effect"

is the tendency of tumor cells to switch from using mitochondrial oxidative phosphorylation to aerobic glycolysis. Aerobic glycolysis generates 2 units of cellular (ATP) per unit of glucose instead of the standard mode of energy production via the kreb cycle and electron transport chain which yields 36 units of ATP, a process called mitochondrial oxidative phosphorylation. In effect, aerobic glycolysis enhances the ability of the cancer cell to proliferate.

Let's come back to melatonin, energy production and our immune system. Melatonin has the likely ability to force activated immune cells to abandon aerobic glycolysis in favor of mitochondrial oxidative phosphorylation.

Here's what Dr. Russel J. Reiter, said in his article, Plasticity of glucose metabolism in activated immune cells: advantages for melatonin inhibition of COVID-19 disease. "Macrophages have a high degree of plasticity such that they can readily switch between the pro-inflammatory (M1) and anti-inflammatory macrophages (M2), depending on the microenvironment of the cell.

For example, when activated they are polarized to the M1 phenotype and produce high levels of pro-inflammatory cytokines such as IL-1beta, IL6, TNF-alpha and others. M1 macrophages also upregulate inducible nitric oxide synthase (iNOS) resulting in the generation of nitric oxide (NO), a gaseous free radical. NO can then couple with O2 to produce the powerful oxidizing agent, the peroxynitrite anion (ONOO). Other free radicals generated by excessive M1 activation are the superoxide anion and the highly destructive hydroxyl radical. Thus, M1 macrophages are proinflammatory while also being pro-oxidative."

Multiple authors have shown how melatonin reduces the formation of pro-inflammatory M1 macrophages and convert them to macrophages of the M2 phenotype, which are anti-inflammatory. Melatonin downregulates these inflammatory cytokines and upregulates antioxidant enzymes, particularly mitochondrial superoxide dismutase (mSOD). Dr. Russel J. Reiter went on to say, "In the absence of melatonin at the intracellular level, the cytokine storm can proceed mainly without resistance in the lungs and in the other organs thereby contributing to a bleak situation of extensive and progressive molecular damage and organ deterioration."

So, melatonin is a potent antioxidant made in the mitochondria, but it also has the ability to enter the mitochondria if needed. In this way melatonin can "prevent mitochondrial impairment, energy failure and apoptosis of mitochondria damaged by oxidation." Other authors have shown it also helps recharge glutathione, and glutathione deficiency has been linked to COVID-19 severity.

So much exciting research is emerging on melatonin and, as I mentioned, like other hormones it drops as we age which means chances are most of your patients are probably low in this amazing hormone.

Thanks for taking time to join me. I look forward to being with you again next Tuesday.