EASY Does It: Melatonin and COVID

The EASY guide to deciding whether to try something for COVID

When you are choosing whether or not to do something for your health, take it EASY! All four factors - 1) Effects, 2) Access, 3) Safety, and 4) You – can help you make a decision.

Dave knew that people use melatonin to help with sleep, but he recently read that taking melatonin could help protect him from COVID too.[1] He used the EASY guide to help figure out if this makes sense for him:

Effects: Studies *in cells and animals* have found that taking melatonin might help prevent or treat a viral infection like COVID, but studies *in humans* have not been done. Melatonin is a hormone or chemical messenger in the body long thought of as the "sleep hormone" which regulates the body's internal biological clock and improves sleep. Getting enough sleep is important for the immune system, the main system that protects against disease. This is one way melatonin might help fight infection and illness.[2-4] Studies *in cells and animals* found that melatonin regulates inflammatory chemicals in the body and might help protect against different viruses.[5] Studies *in humans* showed that taking melatonin supplements may reduce some chemicals that make inflammation and in conditions with a lot of inflammation, people with higher natural levels of melatonin might have less severe illness.[4-8] Lower doses might be more helpful for sleep and minimize daytime sleepiness.[9] Eating foods that contain melatonin like tart cherry juice have also been shown to improve sleep.[10] Higher doses of up to 10 mg nightly for more than 12 weeks may be necessary to reduce inflammation.[6] Longer term studies and studies on the best dose for infection or viral protection are needed.

Access: Melatonin is made in many parts of the body, including the pineal gland in the brain where it is made in response to darkness. Levels of melatonin in the body follow a light-dark cycle and are highest at night and lowest during daylight.[11] Light, especially blue light, blocks melatonin from being made by the brain.[11,12] People that work at night and sleep during the day make less melatonin than people that work days and sleep nights.[12] So being exposed to bright light during your awake-time, and being in darkness while you sleep may help increase your natural melatonin levels. Melatonin also declines with age. People over 50 have less than half the level of natural melatonin as people aged 20-40 years which might contribute to increased insomnia in older people.[13] Several foods contain melatonin that may be absorbed into the body, and increase circulating melatonin, see **Table 1, Melatonin-Rich Foods**.[14,15] Some nuts, beans, whole grains such as red and black rice and wheat, mushrooms, and some fruits and vegetables have significant amounts of melatonin. Sprouting of grains and beans and fermentation appear to increase melatonin levels in certain foods.[15] Melatonin is also available as a supplement and is inexpensive. A thirty-day supply of 1 mg tablets from online sources ranges from 81 cents to $1.70.

Safety: Supplementing with melatonin for sleep at doses from 0.3 to 10 mg nightly for up to one to two months appears safe. The lower 0.3 mg dose can raise blood melatonin to normal peak levels.[9] Mild and rare side-effects include headache and daytime sleepiness.[13,16]

You: Dave is 68 and is generally healthy. He tries to eat well, exercise, social distance and wash his hands frequently to prevent a COVID infection. He doesn't sleep as well as he used to and wakes up often during the night.

Dave knows now there are no human studies on melatonin for COVID or other viruses. He decides to eat more foods that contain melatonin and to try 1 mg melatonin nightly to help him sleep and maybe also help his immune system. He also removes any light in his bedroom at night to maximize his natural melatonin.

Table 1 Melatonin-Rich Foods

FOOD	MELATONIN (nanograms/gram)[14,17]
Pistachios	233,000 ng/g DW*
Roasted Coffee Beans arabica	9,600 ± 800 ng/g DW
Brewed Coffee (per 50 mL)	3,900 ± 250 ng/g DW
Porcini Mushrooms	6,800 ± 60 ng/g DW
White/Portabella Mushrooms	4,300 – 6,400 ng/g DW
Sprouted Lentils	1,089 ng/g DW
Sprouted Kidney Beans	529 ng/g DW
Red Rice	212 ± 1.4 ng/g DW
Black Rice	182 ± 1.6 ng/g DW
Wheat	125 ± 15 ng/g DW
Tart Cherries	14 ng/g FW
Tomato	15-24 ng/g FW / 250 ng/g DW
Strawberries	11 ng/g FW
Bell Pepper	12 ng/g FW / 93 ng/g DW

* DW, based on dry weight; FW, based on fresh weight

The information in this handout is general**. Please work with your health care team to use the information in the best way possible to promote your health and happiness.**

For more information:

ORGANIZATION	RESOURCES	WEBSITE
University of Wisconsin Integrative Health	Other COVID resources	https://www.fammed.wisc.edu/integrative/resources/modules/

This guide was created by Sara Arscott, PhD, Education and Outreach Coordinator of University of Wisconsin's Integrative Health Program and Adam Rindfleisch, MD Medical Director of University of Wisconsin's Integrative Health Program, through the support of the Whole Health Institute.

June, 2020

References

1. Alschuler L, Weil A, Horwitz R, Stamets P, Chiasson AM, et al. Integrative considerations during the COVID-19 pandemic., Explore, online 3-26-20, https://doi.org/10.1016/j.explore.2020.03.007. Accessed 4/10/2020.
2. Besedovksy L, Lange T, and Born J, Sleep and Immune Function, Eur J Physiol, 2012; 463:121-37.
3. Prather A, Janicki-Deverts D, Hall M, Cohen S, Behaviorally assessed sleep and susceptibility to the common cold, SLEEP, 2015, 38(9):1353-9.
4. Haspel J, Anafi R, Brown M, Cermakian N, Depner C, Despalts P, Gelman A, Haack M, Jelic S, Kim B, Laposky A, Lee Y, Monogodin E, Prather A, Prendergast B, Reardon C, Shaw A, Sengupta S, Szentirmai E, Thakkar M, Walker W, Solt L, Perfect timing: circadian rhythms, sleep, and immunity – an NIH workshop summary. JCI Insight, 2020, 5(1).
5. Carrillo-Vico A, Lardone P, Alvarez-Sanchez N, Rodriguez-Rodriguez A, Guerreri J, Melatonin: Buffering the immune system, Int J Mol Sci, 2013; 14:8638-83.
6. Zarezadeh M, Khorshidi M, Emami M, Janmohammadi P, Kord-varkaneh H, Mousavi, S, Mohammed S, Saedisomeolia A, Alizadeh S, Melatonin supplementation and pro-inflammatory mediators: a systemic review and meta-analysis of clinical trials, Eur J Nutr, 2019, Nov 2.
7. Henderson R, Kim S, Lee E, Use of melatonin as adjuvant therapy in neonatal sepsis: A systematic review and meta-analysis, Comp Ther in Med, 2018; 39:131-136.
8. Perras B, Kurowski V, Dodt C, Nocturnal melatonin concentration is correlated with illness severity in patients with septic disease, Intensive Care Med, 2006, 32:624-625.
9. Costello R, Lentino C, Boyd C, O'Connell M, Crawford C, Sprengel M, Deuster P, The effectiveness of melatonin for promoting healthy sleep: a rapid evidence assessment of the literature, Nutr J, 2014, 13:106.
10. Pereira N, Fernanda Naufel M, Beraldi Ribeiro E, Tufik S, Hachul H, Influence of dietary sources of melatonin on sleep quality: A review, J Food Sci, 2019, 85(1), 5-13.
11. Gorman M, Temporal organization of pineal melatonin signaling in mammals, Mol and Cellular Endocrinol, 2020, 503.
12. Hunter C and Figueriro M, Measuring light at night and melatonin levels in shift workers: A review of the literature, Biol Res Nurs, 2017, 19(4):365-74.
13. Bubenik G and Konturek S, Melatonin and aging: Prospects for human treatment, J Phys and Pharm, 2011, 62(1):13-19.
14. Meng X, Li Y, Li S, Zhou Y, Gan R-Y, Xu D-P, Li H-B, Dietary Sources and Bioactives of Melatonin, Nutrients, 2017, 9, 367
15. Rebollo-Hernanz M, Aguilera Y, Herrera T, Cayuelas LT, Duenas M, Rodriguez-Rodriguez P, Ramiro-Cortijo D, Arribas S, Matin-Cabrejas M, Bioavilability of melatonin from lentil sprouts and its role in the plasmatic antioxidant status in rats, Foods, 2020, 9, 330.
16. Melatonin. In: Natural Medicines online database. Somerville (MA): Therapeutic Research Center; 2020. Available at: https://naturalmedicines.therapeuticresearch.com/. Accessed 6/5/2020.
17. Ramakrishna A, Giridhar P, Sankar K, Ravishankar G, Melatonin and serotonin profiles in beans of Coffea species, J Pineal Res, 2012, 52:470-76.