MELATONIN IN AUTOIMMUNE DISEASE

Benefits and A Need For Caution

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The hormone melatonin promotes sleep and enhances immune function. Despite these benefits, until studies are complete, it should be used cautiously in autoimmune diseases.

What is Melatonin?

Melatonin is a hormone produced by the pineal gland in the center of the brain, a gland once referred to by the French philosopher Rene Descartes as “the seat of the soul.” Melatonin regulates circadian rhythms, sleep, mood, tumor growth, immune system function, and aging. Recent studies show that besides regulating the immune system, melatonin can be synthesized by immune system cells [A Carillo-Vico, JM Guerrero, A Review of the Multiple Actions of Melatonin on the Immune System, Endocrine, 2005 July; 27(2):189-200].

Melatonin Production

During the day, melatonin levels remain low. At sunset, the cessation of light triggers melatonin production, with levels normally peaking at 2 am. When the melatonin peak is disrupted as in aging, jet-lag, or shift work, many physiological and mental functions are adversely affected. Numerous studies, for instance, show a significant increase in breast and prostate cancer rates in shift workers that are related to low melatonin levels.

Melatonin’s Biochemical Properties

1. Melatonin is a potent scavenger of free radicals and reduces the effects of oxidative stress.
2. Melatonin enhances the immune response by stimulating the production of interleukin-4 in T cells. Melatonin receptors are found in T lymphocytes but not B-lymphocytes.
3. Melatonin increases sleep propensity and promotes an increased duration of REM sleep.
4. Melatonin enhances the production of sex steroids

Melatonin Supplements

The average dose of melatonin for sleep induction is 1-5 mg daily although higher doses are used for immune system effects. For instances, in one study patients with sarcoidosis treated with 20 mg melatonin daily showed improvement within 4-5 months. Melatonin levels peak one hour after administration and begin to fall within 4 hours. Time-release
synthetic preparations of melatonin are recommended because the natural hormones may contain viruses and contaminants.

**Controversy over the Safety of Melatonin in Autoimmune Diseases**

In general, although melatonin is one of the least toxic substances known, it is not recommended for people with autoimmune diseases or immune system cancers because of its ability to stimulate immune function. However, in numerous studies of people with specific autoimmune disorders, melatonin can modulate the immune system in a beneficial way. Studies show that melatonin can inhibit cytokine production and reduce inflammation. [JM Guerrero and RJ Reiter, Melatonin-immune system relationships, Current Topics in Medical Chemistry, Feb 2002; 2(2): 167-179].

Current research suggests that melatonin should not be used in autoimmune diseases unless it is used as a therapy in a closely supervised clinical trial or under the guidance of a qualified practitioner. This recommendation may change as further studies of melatonin’s effects on the immune system are complete.

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