

# MELATONIN Scientific Research

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## **ABOUT MELATONIN - AND SLEEP**

Melatonin is a powerful hormone secreted by the pineal gland located in the brain. Its secretion is stimulated by the dark and inhibited by light, and it aids in the regulation of the body's circadian rhythm, or sleep-wake cycle. Research done at the Wurtman Lab at M I T has shown that melatonin tells us when to fall asleep and helps us remain asleep. Research at Wurtman also showed that as we age we make dramatically less melatonin. "Older people often complain of insomnia, particularly difficulty in staying asleep, and in falling back to sleep after they awoken at night. Doses of melatonin which give them "youthful" blood melatonin levels correct this insomnia." (1)

## **A POWERFUL ANTIOXIDANT**

The decades-long research of Dr. Russel Reiter found that melatonin is much more than a sleep enhancer and an unequalled remedy for jet lag. He states: "Right now...melatonin in your blood is preventing the oxidation of LDL cholesterol, the "bad" cholesterol that can clog your arteries. Melatonin in your brain is safeguarding your irreplaceable neurons from free-radical attack. Melatonin in the fluid within your eyes is helping to prevent ...cataracts. Melatonin in the lining of your gut is reducing your risk of ulcers. Melatonin is the most potent, versatile antioxidant." (2)

## **AUTISM SPECTRUM DISORDER**

In this article, researchers from Vanderbilt University describe their experience using melatonin to treat insomnia, a common sleep concern, in children with autism spectrum disorders....There was no reported increase in seizures after starting melatonin in children with pre-existing epilepsy and no new-onset seizures... "Melatonin appears to be a safe and well-tolerated treatment for insomnia in children with autism spectrum disorders." (6)

## **AGING**

A mouse study involved two groups of mice, 19 months old, that were housed, fed and treated identically, except that each evening one group received a trace amount of melatonin in their drinking water. Five months into the study, the plain water mice had a slower pace, were losing patches of fur, were humped over and were losing weight; they were aging. The "melatonin mice" were glossy and plump. Eventually the plain water mice lived an average of 752 days, typical for this strain of mouse. The mice that had been given the melatonin-laced water lived an average 20% longer, to 931 days. (3)

Dr. Reiter believes that because melatonin is a vital antioxidant that declines precipitously with age, its gradual loss could explain why aging accelerates over time. (4)

## **MENOPAUSE**

A six-month study of melatonin and menopausal women was carried out at a clinic in Rome, Italy. There were no side effects reported in the use of melatonin in this study. They asserted that “the six-month treatment with melatonin produced a remarkable and highly significant improvement of thyroid function, positive changes of gonadotropins towards more juvenile levels, and lessening of menopause-related depression.” (5)

## **MELATONIN AND THE MOUTH**

Melatonin may play a role in protecting the oral cavity from tissue damage that is due to oxidative stress, and it may contribute to the regeneration of alveolar bone through the stimulation of type I collagen fiber production ... (12)

Thus, Melatonin could be used therapeutically for instance, locally, in the oral cavity damage of mechanical, bacterial, fungal or viral origin, in post-surgical wounds caused by tooth extractions and other oral surgeries and, in helping bone formation in various auto-immunological disorders such as Sjorgen syndrome, in periodontal diseases, and in oral cancers. (13)

It was the purpose of this study to examine the relationship between periodontal diseases and melatonin level. Patients with periodontal disease had significantly lower plasma and saliva melatonin levels than healthy control patients. (14)

## **MELATONIN: MANY STUDIES, A FEW MENTIONED HERE**

\* **Alzheimer’s disease:** Melatonin supplementation improves sleep, and slows down the progression of cognitive impairment in Alzheimer’s patients. (7)

\* **Blood-Brain Barrier:** A major advantage of melatonin is that it can easily cross the blood brain barrier and enter cells and subcellular compartments. (9)

\* **Breast cancer:** Women with breast cancer tend to have lower levels of melatonin than those without the disease. In addition, laboratory experiments have found that low levels of melatonin stimulate the growth of certain types of breast cancer cells, while adding melatonin to these cells inhibits their growth. (11)

\* **Heavy Metals:** It has been shown to be protective against the oxidation stress toxicity of some heavy metals. (10)

\* **Mood Disorders:** Not only the levels but also the timing of melatonin secretion is altered in bipolar affective disorder and in patients with seasonal affective disorder (SAD) (8)

## **DRUGS THAT DEplete MELATONIN**

Studies have shown that these drugs deplete melatonin: aspirin, ibuprofen, beta-blockers, calcium channel blockers, sleeping pills and tranquilizers.

“Recreational drugs” that have the same effect are caffeine, tobacco and alcohol. (2)

(1) <http://wurtmanlab.mit.edu/melatonin.php>

(2) Reiter, Russel J. Melatonin, Bantam Books, New York, N.Y., 1995, 6.

(3) Maestroni, GJ et al, Pineal Melatonin, Its Fundamental Immunoregulatory Role in Aging and Cancer, Ann NY Acad Sci 1988; 521: 140-148.

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- (6) Andersen IM, et al. Melatonin for Insomnia in Children With Autism Spectrum Disorders. *J Child Neurol.* 2008 Jan 8 [Epub ahead of print]
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- (9) *Indian J Physiol Pharmacol.* 2003 Oct; 47(4):373-86
- (10) *Curr Med Chem.* 2005; 12(10):1161-208
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