

# MicroActive® Melatonin Overview

7 hour sustained release in two stages to help fall asleep faster and maintain sleep overnight

A good night's sleep can be defined as falling asleep quickly and easily, staying soundly asleep until the normal sleep cycle is complete. Generally, adults are advised to sleep for 7–9 hours each night. Insomnia is the chronic condition in which a full night's sleep is significantly shorter than this advised amount, usually with accompanying fatigue. When a person experiences difficulty falling asleep, it is called sleep-onset insomnia. This is often exacerbated by stress, anxiety, excessive light exposure, and a less than ideal sleep setting. Another common sleep condition is waking up once or more in during the night and having difficulty falling back asleep, often referred to as sleep-maintenance insomnia. This is commonly worsened by pain, illness, frequent urination, and suppressed anxious thoughts. The third type of insomnia is known as early-awakening insomnia, or terminal insomnia, in which the individual can't fall back to sleep after waking up early. This is caused by poor sleep quality, aging, depression, and exposure to early morning light.

Melatonin is a hormone that is essential for high-quality, long-lasting sleep. It is secreted from the pineal gland in the brain. The pineal gland is linked to the optic nerve via the suprachiasmatic nuclei. When the retina is exposed to reduced lighting, melatonin is released. Reduced light triggers the body's internal circadian clock that it is "nighttime" and time for sleep. Melatonin essentially initiates the sleep cycle in the body.

Normal melatonin levels and quality sleep are vital to a healthy immune response and may have an anti-cancer function by suppressing certain hormones related to breast and prostate cancers (Hill, 2015). Melatonin may also function as a powerful antioxidant, providing a neuroprotective function against free-radical damage (Wade, 2014). Melatonin has been found to be a useful adjuvant therapy for a wide variety of other conditions as well, including macular degeneration, glaucoma, irritable bowel syndrome, arterial hypertension, diabetes, and jet lag (Sánchez-Barceló, 2010).

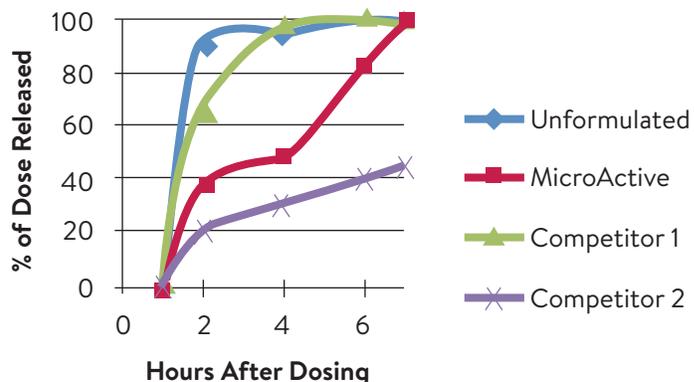
As we age, or if we expose ourselves to light in the evening before bed, melatonin release is reduced. This leads to occasional or persistent insomnia. Because of reduced melatonin release in these common circumstances, melatonin replacement is essential for quality restful sleep.

Pharmaceuticals and melatonin supplements are the primary options for improving sleep quality. Pharmaceutical sleep aids

target receptors in the brain to cause drowsiness or trigger sleep, with varying degrees of efficacy. A study found that after dosing with diazepam (Valium™), blood melatonin levels observed at 2, 3, and 4 a.m. were lower than the corresponding values in patients given a placebo. This indicated that nocturnal melatonin levels may be suppressed by the acute administration of sedatives (Monteleone, 1989). Zolpidem (Ambien™) significantly impaired psychomotor and driving performance 1 hour and 4 hours postdosing. Long term, they may affect short-term memory.

Melatonin supplements do not impair psychomotor functions, memory, or driving skills (Otmani, 2008). One study found that 9 out of 14 elderly subjects receiving hypnotic drugs were able to switch to melatonin, thereby improving their sleep and reducing behavioral disorders (Garzon, 2009). Another study found that 13 out of 20 patients taking benzodiazepines (such as Xanax™ or Temazepam™) along with melatonin were able to cease their pharmaceutical use. Another 4 patients decreased their dose by 25–66% (Garfinkel, 1999). Melatonin supplements have been shown to hasten sleep onset, improve quality of sleep, and increase sleep duration, all without causing drowsiness, early morning "hangover" symptoms, or adverse daytime effects. Instead, they produce a refreshed feeling in the morning and throughout the day (Andrade, 2001). As low as 1 mg of melatonin in elderly subjects can improve feelings of restfulness in the morning, verbal learning test scores, and the ability to fall back asleep after awakening in the night (Peck, 2004). Unfortunately, pure melatonin has a half-life of 30 minutes. This means that most of a sleep-inducing dose will break down within 3 to 4 hours of absorption. This will often lead to rebound or early awakening insomnia. One solution to this short half-life is time-release-formulated melatonin supplements.

## MicroActive® Melatonin: The Right Time-Released Dose



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Time-release melatonin can be used to improve sleep quality, morning alertness, sleep onset latency, and overall quality of life. Notably, this was recorded by a study of primary insomnia patients ages 55 years and over dosed with 2 mg (Wade, 2007). MicroActive Melatonin is a sustained-release matrix that provides an initial dose of melatonin, followed by a gradual release of more melatonin through the night. Dissolution studies show that MicroActive Melatonin delivers 40% of the dose at 1 hour, a gradual release of 50% of the remaining dose over the next 5 hours, and 10% after 7 hours. This makes it perfect for falling asleep, staying asleep, and preventing early awakening. By comparison, pure melatonin was shown to have an initial release of 90% of the dose, and released the remaining 10% over the next 3 hours. Competing Brand 1 had an initial release of 64% of the dose, followed by 98% over the next 2 hours. Competing Brand 2 had an initial dosage release of 20% followed by 30% more over the next 5 hours; the remaining 50% was not fully released over the normal sleep period. The chart on the previous page presents the results of the dissolution studies comparing these different formulations. MicroActive Melatonin released the “right” dose over the optimal time span.

## References

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