

# MIT study confirms melatonin's value as sleep aid

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A new study by MIT scientists and colleagues confirms that melatonin is an effective sleep aid for older insomniacs and others. Misuse of the hormone had led some to question its efficacy, but the latest work (published in the February issue of *Sleep Medicine Reviews*) could jump-start interest in the dietary supplement and help more people get a good night's sleep.

In earlier research, scientists led by Professor Richard Wurtman, principal investigator for the current study, showed that only a small dose of melatonin (about 0.3 milligrams) is necessary for a restful effect. Taken in that quantity, it not only helps people fall asleep, but also makes it easier for them to return to sleep after waking up during the night--a problem for many older adults.

The researchers also found, however, that commercially available melatonin pills contain 10 times the effective amount. And at that dose, "after a few days it stops working," said Wurtman, director of MIT's Clinical Research Center and the Cecil H. Green Distinguished Professor. When the melatonin receptors in the brain are exposed to too much of the hormone, they become unresponsive.

As a result of these inadvertent overdoses, "many people don't think melatonin works at all," said Wurtman, who is also affiliated with the Department of Brain and Cognitive Sciences. This belief, coupled with potentially serious side effects related to high doses such as hypothermia, has earned the hormone a bad reputation in some quarters--"and something that could be very useful to a lot of people isn't," said Wurtman, who said that he and his wife have been taking melatonin every night for about a year now.

To determine conclusively whether melatonin works or not, the scientists in the current study analyzed 17 peer-reviewed scientific papers about the hormone. To be included in this study, or meta-analysis, the experiments reported in each paper

had to satisfy specific criteria. For example, each had to be placebo-controlled and include objective measurements on at least six adult subjects.

"A meta-analysis essentially tells 'yes' or 'no'--that a treatment does or does not have a significant effect," Wurtman said. "When a meta-analysis says 'yes,' there should no longer be any controversy about whether the treatment works."

The melatonin meta-analysis delivered a definitive "yes."

Wurtman notes that some of the 17 studies included in the analysis involved very high doses of the hormone over long periods, a "situation where we know it's not going to work." Yet the meta-analysis still showed that the hormone's positive effects on sleep "are statistically significant."

When Wurtman first discovered the efficacy of small doses of melatonin, he and MIT patented its use for dosages up to one milligram. Because the FDA defined the hormone as a dietary supplement, however, manufacturers were free to sell it in much higher dosages, "even though we knew they wouldn't work," Wurtman said.

As a result, until recently the hormone was commercially unavailable to the public in small doses. "People who knew that small doses were best often bought the high-dose pills, then divided them with a knife," Wurtman said. "But that's not very accurate."

The company Nature's Bounty has since licensed the work, and now the hormone is easily available in the effective dosages.

Wurtman's colleagues in the meta-analysis work are Amnon Brzezinski of Hadassah-Hebrew University Medical Center in Israel; Mark G. Vangel, a visiting scientist at the Clinical Research Center; Gillian Norrie and Ian Ford of the University

of Glasgow in Scotland; and Irina Zhdanova of the Boston University School of Medicine.

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Source: MIT

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