

Brown University

# The Long Term Effects of Melatonin Supplementation on Sleep

Informative Essay

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## **Abstract**

Insomnia is a common sleep disorder shared by many Americans across the United States. Supplements and drugs have been proven to help bring the side effects of sleep deprivation to bay. In this analysis, I use conclusions from several other studies conducted on various different groups of people to piece together my own conclusion on how melatonin supplementation can affect one's sleep health in the long term. Through my analysis, I discover that when taking melatonin supplements, in healthy doses, side effects such as addiction and dependence are not shown, and people are able to return to a healthy sleep schedule. When people stayed on melatonin in the long term, there was also discovered that there were no negative side effects, with people in the short term, seeing positive effects on their sleep health. All of this suggests that there is little to no risk to taking melatonin supplements in the long term, and when compared to other sleep medications, if proven successful in personal use, melatonin supplementation should be used due to addiction and withdrawal symptoms not being present in use, but effectiveness should be monitored, as there are examples of melatonin's effects wearing off over time.

## **Research Question**

How do taking melatonin supplements affect the natural occurring levels of melatonin in someone, and does this change affect the quality/ the amount of sleep someone gets?

## **Research Hypothesis**

Since melatonin is a naturally occurring hormone, In long term use, people are not likely to become addicted, but may suffer from withdrawal symptoms as the body may get used to daily melatonin supplementation and may release reduced levels of melatonin.

## **Literature Review**

After going over information related to my subject, I found out that there were many studies related to melatonin supplementation, but they were focused on specific groups of people, and other illnesses other than insomnia. Although there were not many pieces of information that focused directly on my study, there were about 1-2 that I could find, and those were where I built most of my conclusion upon.

## **Introduction**

Over 60 million Americans suffer from sleep disorders[5], with many taking supplements to cope with and minimize the side effects of the lack of quality and quantity of sleep people get due to these sleep disorders. The question becomes, are these prescriptions safe, and do they actually help people get better sleep? Melatonin, a naturally occurring hormone in humans, is released when the body detects a lack of light during the nighttime. This hormone encourages the

body to sleep, and is a key player in a person's sleep-wake cycle[1]. Ever since it was approved in the mid-1990s, melatonin has been used as a sleep supplement, however, there is still confusion on if melatonin supplementation is beneficial in the long term.

## **Methods**

When collecting my data for my study, I chose to take the information found in the abstracts of the studies I chose. Any study which was somewhat related to my topic(Long term melatonin interactions) I looked through, and if there was any information which could be used to help piece together my hypothesis, I took it. I used mainly google scholar, and Pubmed when it came to finding my sources, with my last resort being google itself to find scientific articles. When organizing my sources, I labeled each source for how much of a connection each source had to my research topic, and what kind of connection it has to my topic(Is it about sleep habits? Or long term melatonin use?) This Organization of research helped me structure my actual analysis, and helped me understand if I had enough information to conduct my analysis. This especially helped as I am using qualitative research, meaning I am focusing on outcomes, and conclusions, not numbers. I used the conclusions I found, and drew my own conclusions based on the results found in the studies I used, while also explaining how/why I am able to use the results of other studies to draw my own valid conclusion.

## **Results & Conclusions**

After looking through the studies I chose, there seems to be a common trend in their conclusions that show in the long term, Melatonin show no negative effects on sleep health, and in the short term, it can offer positive effects. Our first piece of evidence covers repeated melatonin use in patients who are also on beta blockers, medicines which stop, or slow down the body's natural flight or fight response, or adrenaline. They concluded that in the short term(3 weeks) there were benefits for taking melatonin, and there did not seem to be any negative side effects, with no withdrawal symptoms being present. Although this data is focused on a specific group of people over a short period of time, it shows that there is potential for there to be use in the long term without negative side effects[4]. The next study I chose out focused on the long term effects of melatonin, precisely what I am researching. Due to the circumstances being in my favor, this source pulled the most weight for me, with it being the center of my conclusion. In this study, they also did focus on a specific group of people, this time, they focused on haemodialysis patients, people who suffer from kidney dialysis. They conclude that in the short term, there were numerous benefits, but as they went on, (6-12 months), the effects wore off and although there were no negative side effects, there were no longer positive side effects either. This shows that even though there are no negative effects of taking melatonin in the long term, the positive effects slowly fall, meaning it may not be worth taking the supplement after long term(6-12 months) daily use[2]. The final source I am using focuses on Melatonin's effect on sleep health, when comparing them to other drugs, like Benzodiazepines. They conclude that melatonin can be used to help treat Insomnia, and should be considered as an option, as people using BZD's often do not make a full recovery, and even if they do not suffer from the side

effects of insomnia, they will now have to deal with the side effects of taking BZD's, as it is common to experience a poorer quality of life (impaired daily function) when taking them[3]. In conclusion, melatonin has shown to be extremely beneficial in the short term, but if you end up taking the supplement in the long term, positive effects should be expected to fall off, and eventually offer you no more benefit. Although they offer no benefit, there have been shown to not be any negative side effects in the long term.

## **Limitations**

The limitations from this study should be noted however. Along the way, assumptions were made to connect pieces of evidence together, meaning there is a possibility that some of the connections I created, may end up being wrong. Each study had their own goal, meaning to come to my own conclusion, I had to pick information from each study, which in some instances would have been incorrectly gathered as each piece of information I used, came from its own individual background, and may have not shared many common factors from where their data was collected. Another thing to consider is the scope of what evidence I looked at. Although I took all sources which I found which related to my study, I did not take a look at all the sources available, meaning I may be missing out on some information which could completely change the outcome I get in my results. A future direction for this study would be comparing melatonin to other drugs in the long term, and seeing what negative effects other drugs bring in the long term, and see if there are any drugs out there that do offer benefit in the long term.

## Bibliography

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