

Melatonin raises in the middle of the night and its level is low during the day.



MELATONIN



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Sleep Studies pamphlet/Version 1/Author A.Ambrogetti/Sleep Medicine/May 2018



MELATONIN

Melatonin is a natural hormone produced by a small gland (pineal gland) in the brain (figure 1). Its main action is to synchronise body functions (body temperature, hormone secretion as well as sleep and wake pattern) with the 24 hour dark and light cycle due to the earth rotation.

Melatonin is present in all animals with similar function. As shown in Figure 1 at dusk the melatonin level rises in the body and stays up through the night. The level drops at daybreak. As the melatonin level rises, the temperature drops and the body gets the 'signal' that, in the absence of stressful situations, sleep can start.

The level of melatonin changes through the lifetime with very high levels in young children and progressively lower levels as we get older which may explain some of the difficulty in maintaining sleep that we see in elderly people.

Other functions of Melatonin

There are many other functions that melatonin has been claimed to provide such as antioxidant activity, anti-depressant, anti-aging and anti-cancer actions.

Melatonin is available without prescription as it is classified worldwide as a natural substance rather than a medication as such. Although this makes melatonin widely available it also makes the formulation of melatonin much less reliable. North America surveys reveal that up to 70% of preparations of melatonin have problems with either dosage or formulation. Therefore the best option is to have the melatonin prepared on purpose by a pharmacist.

How is melatonin produced

Because melatonin is not under the strict regulation of the Food and Drug Administration the strength and purity of the melatonin preparation is variable. The data sheet of melatonin compound available locally through pharmacies reports 97% melatonin and 3% other substances.

Side effects

Melatonin is considered safe at the recommended doses, with adverse effects not being significantly different from placebo (a 'dummy' capsule). However in individual case reports a variety of symptoms have been reported (fatigue, 'dizziness', headache and irritability, nausea).

The following group of patients need particular attention:

Epilepsy- some reports suggest increased risk of seizures, others reduced risk.

Warfarin- melatonin may increase the activity of warfarin (increasing the risk of bleeding).

Diabetes (on insulin)- melatonin may increase the sensitivity to insulin increasing the risk of hypoglycaemia

Blood pressure- melatonin may cause drop in blood pressure, which may be particularly relevant in the elderly and in patients on blood pressure medications.

Pregnancy- because of its action in the reproductive system of certain animals, the use in melatonin in pregnancy and in women planning pregnancy should be avoided.

Children- the use of melatonin in children before puberty should also be undertaken only if necessary but seems safe.

Dose of melatonin

The effect of melatonin does not depend on the dose. Specifically amounts between 1-5mg are sufficient and increase the body melatonin level up to 20 times the normal level. There are no indications for higher doses.

Timing of melatonin administration

It has been claimed that melatonin has a sleeping tablet like effect, and therefore could be given

just before going to bed. However the best use of melatonin is to be taken about 3 hours before intended bedtime. The main activity of melatonin is of synchronising the body function in order to favour sleep onset rather than inducing sleep. This is to say that if the person is under stress or is unable to switch off his/her thinking, melatonin is unlikely to put that person to sleep.

Taking the melatonin at the wrong time of the day may actually have a negative effect. Melatonin taken in the morning, rather than in the evening, may delay sleep onset. **We recommend short acting Melatonin** rather than slow release.

When do we use melatonin?

Melatonin is used in timing sleep disorders. There are groups of people whose body clock seems to be set well past midnight and these patients have difficulty falling asleep sooner than 1-2 am and sometimes later (this condition is called delayed sleep phase syndrome).

Melatonin is also used in some elderly people who have difficulty initiating and maintaining sleep. As mentioned above as we get older melatonin levels become progressively lower and increasing the level by administering melatonin in the evening seems to improve the continuity and quality of sleep.

Melatonin has also been used in the treatment of jet lag (for example 3mg at bed time for 4 days after arrival at the new destination).

Review- comprehensive (well referenced) reviews of melatonin can be found at;

<http://www.mayoclinic.com/>
(search 'melatonin')

<http://www.endocrine-source.com/neuroendo/neuroendo15/neuroendo15.htm>