

Melatonin for Weight Loss and Blood Sugar Regulation

James P. Meschino, DC, MS

An important review article published in the *Journal of Pineal Research* provides compelling evidence that the [hormone melatonin](#) can help to prevent and reverse weight gain and improve blood sugar levels in adults. Melatonin is a hormone made by the pineal gland in the brain. It is typically secreted in the evening upon darkness, and it functions to help us get to sleep and reach a deep level of renewing sleep.¹

Natural Decline in Melatonin With Age and the Health Consequences

Emerging research also shows that one of the reasons people tend to gain weight (body fat) as they get older (even when not eating more calories) is linked to the age-related decline in melatonin secretion. As we get older, the pineal gland secretes less and less melatonin. This is a major reason why insomnia and sleep disturbance problems increase with age, and why our immune system becomes weaker and less efficient – and is also associated with an increased risk of Alzheimer's disease, breast and prostate cancer, according to many published studies.¹⁻⁶

The decline in melatonin as we age also makes us more prone to weight gain and higher blood sugar (glucose) levels, both of which increase risk of diabetes. There is now conclusive evidence from animal studies to show this, and human studies indicate that individuals with lower melatonin levels tend to gain weight more easily and have a harder time shedding the excess weight.

The Research-Supported Value of Supplementation

The good news is that experimental studies suggest melatonin supplementation reverses weight gain and improves blood sugar (glucose) levels in older animals, even when no changes are made to diet or exercise. Researchers think the same thing happens in humans for the following reasons:

1. Melatonin supplementation has been shown to increase the ability of blood sugar to enter cells of the body, which decreases blood sugar. This is known as increased insulin sensitivity and occurs because melatonin increases synthesis of the GLUT-4 transporter on cells, which allows blood sugar to enter cells. As a result, blood glucose regulation improves in the presence of adequate melatonin.
2. Melatonin supplementation increases the activity of the body's [brown fat](#), which burns off excess calories consumed during the day and releases it as heat to the environment, especially while we are sleeping.

Melatonin also stimulates the conversion of white fat (which stores body fat) into brown fat, which burns excess fat, thereby increasing our metabolism and enabling us to burn more fat each day. In turn, this helps to reduce body fat, even when no changes are made to a person's diet and exercise routine.

Thus, if an overweight person cuts back on some calories, adds 30 minutes of light endurance activity to their daily routine, and adds an evening dose of melatonin to their supplementation

program - it is the best of all worlds coming together to help reduce body fat, regulate blood sugar and improve a variety of health parameters.

Here is what the authors of the study in the *Journal of Pineal Research* state:⁸ "The absence or reduction in melatonin production, as during aging, shift-work or illuminated environments during the night, induces insulin resistance, glucose intolerance, sleep disturbance, and metabolic circadian disorganization ... constituting a vicious cycle aggravating overall health and leading to obesity. The available evidence supports the suggestion that melatonin replacement therapy (supplementation), if adequately carried out (in terms of dose, formulation, and time of the day of administration), might prevent and/or contribute to the elimination of the above pathologies and restore a more healthy state to the organism."

Other Benefits of Melatonin

In recent years, we have seen that melatonin also acts as an important brain antioxidant, helping to prevent the build-up of amyloid plaque linked to Alzheimer's disease; supports immune system function; and has some direct anti-cancer effects, especially on breast and prostate tissues.¹⁻⁴ Melatonin has also been shown to be helpful for jet lag, and demonstrates anti-hypertensive, nephroprotective effects and cholesterol- and triglyceride-lowering effects in human studies.⁵⁻⁶ It may also be beneficial as an adjunctive treatment in pulmonary hypertension.⁶

Note: On the other hand, some evidence suggests melatonin's effect on up-regulating the release of various immune system cytokines and the erythrocyte sedimentation rate (EST) makes melatonin a contraindication for patients with rheumatoid arthritis.⁷

Practical Relevance

I think melatonin supplementation is something to consider with respect to patient education, as we are now recognizing melatonin may be of particular benefit to patients who need to reduce their body fat, and improve their glucose, lipid and blood pressure values. For patients who report that their metabolism has slowed down, even though thyroid blood tests are normal, melatonin supplementation may be the missing link to up-regulate function and synthesis of their brown fat, and help them lose excess body fat more easily.

Remember that as we age, we naturally make less melatonin. Therefore, putting some melatonin back into your body via supplementation appears to be a prudent health-promoting strategy to consider on many levels.

As for melatonin dosing and timing, a person would typically take 1-3 mg of a melatonin supplement about 60-90 minutes before bedtime to get the intended benefit. Taking melatonin through the day would make one too sleepy and disrupt the body's natural circadian rhythm of the sleep-wake cycle.

References

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