



In addition to sleeping and waking, melatonin also influences intestinal movement regulation, immune and reproductive systems.

The potential effects of melatonin

on symptoms and co-morbidities associated with autism.

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Melatonin is routinely used to improve sleep in autistic children, but there is increasing evidence that melatonin could also have a therapeutic effect on other health problems. This article will summarize a recent literature review that reports on the potential effects of melatonin on the various symptoms associated with autism.

What is melatonin?

Melatonin is an hormone secreted at night by a gland located in the center of the brain. It is known to regulate the internal biological clock, including the sleep/wake cycle. The internal biological clock is influenced by two environmental factors: 1) the light / dark cycle (e.g., sunlight) and 2) social rhythms (social interactions, exercise, meal times).

The brain is not the only structure to secrete melatonin. In fact, the digestive system, lungs, kidneys and retina

also secrete this neurohormone. Therefore, in addition to sleeping and waking, melatonin also influences intestinal movement regulation, immune and reproductive systems.

Sleep problems

Autistic individuals frequently have sleep issues. Some estimates report up to 80% of autistic youth will experience sleep disturbance. The most common problems include short sleep duration and symptoms related to insomnia, like resisting bedtime, frequent awakenings during the night and taking longer to fall asleep. The causes of sleep problems in autism are multifactorial, and include biological, psychological, and social factors. Although melatonin is safely used to improve sleep in autistic people, the specific mechanisms by which melatonin improves sleep problems remain unclear.



Anxiety

Anxiety is a common co-morbidity in autism, and it is known to contribute to sleep disturbances in both autistic and neurotypical individuals. A large study including autistic children and typically developing adolescents showed that anxiety symptoms are associated with several types of sleep problems, such as bedtime resistance, sleep-onset delay, sleep-related anxiety, and night awakenings.

There is a growing interest in using melatonin to decrease anxiety symptoms. Animal studies on chronic stress have shown that melatonin can significantly reduce anxiety-like behaviours in rodents. Human clinical trials have investigated the efficacy of melatonin compared to commonly used sedatives to reduce anxiety pre- and post- medical operations. They found that melatonin could be as effective as a sedative in reducing anxiety of children and adults. Despite these promising results, research has yet to investigate the effect of melatonin on anxiety in autism.

Sensory modulation

Sensory processing disorder is very common in autistic individuals. Sensory symptoms can have a major impact on daily functioning, including sleep. Although there have been no examinations on the effect of melatonin on sensory processing disorder, studies suggest that it may influence sensory modulation (organizing sensory information). Interestingly, rodent research on pain sensation has shown that melatonin has pain-relieving and anti-inflammatory properties.

In humans, studies on melatonin and pain show mixed results. Some researchers have found a decrease in pain sensation when using melatonin, while others observed no effect. This range of results could in part be explained by the different research methods used, for example, different populations, medical interventions, and measures of pain.

Melatonin seems to be a good candidate to improve sensory processing disorders, especially when it comes to hypersensitivity. However, more studies are needed to validate this hypothesis.

Gastrointestinal dysfunction

Up to 97% of autistic people have gastrointestinal dysfunction. Types of gastrointestinal problems vary from one autistic individual to the other, but the most common are constipation, diarrhea, and abdominal pain. The presence of gastrointestinal problems in autistic individuals is a risk factor for poor sleep.

Causes of gastrointestinal dysfunction in autism remain understudied. Some authors have suggested that inflammatory processes may be involved in the problem, while others believe that a significant proportion of autistic people have irritable bowel syndrome. More recently, researchers have studied the gut microbiota of autistic individuals. It was found that autistic people had abnormal concentrations of some bacteria in their digestive tract that could be related to gastrointestinal problems.

High concentrations of melatonin are found in the digestive tract. Melatonin could influence intestinal movement, modulate inflammatory responses, and pain. A randomized study has shown that the use of melatonin can improve quality of life and reduce the pain associated with irritable bowel syndrome. Further studies are needed to investigate the effect of melatonin on gastrointestinal dysfunction in autism.

Conclusion

Melatonin is often used to improve sleep problems in autism. However, this neurohormone also seems to provide promising improvements for other health problems that are associated with autism, such as anxiety, pain, sensory processing, and gastrointestinal dysfunction. Despite encouraging preliminary evidence, greater studies with autistic individuals are needed to investigate its potential therapeutic applications. Therefore, we hope this article will stimulate research on the subject and give a solid overview of the field. Consult your health care professional if considering use of melatonin. 🌿



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