Melatonin, Sleep, Circadian Rhythms and Health

March 8, 2018

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Melatonin is a hormone “of darkness”

- A few hours before usual bedtime, the body (circadian) clock triggers the pineal gland to secrete melatonin
What is Melatonin?

Melatonin is a hormone “of darkness”

- Melatonin levels remain high during the night
- Melatonin enters the circulation, and signals to the rest of the body that it is now the “biological night”
What are the benefits of exogenous melatonin?

1. Melatonin can improve sleep
   - ~2% of adult population use melatonin as a sleep aid
   - 3-5 mg taken ~30 min before desired sleep
   - Melatonin helps you fall asleep faster
   - Melatonin can improve sleep quality and increase sleep duration
   - These effects are largest when endogenous melatonin levels are low
   - Light exposure, alcohol and some medications (e.g. NSAIDs, beta-blockers) are known to partially suppress melatonin
What are the benefits of exogenous melatonin?

2. Melatonin can shift the timing of the body (circadian) clock

- WHEN you take melatonin is critical
- If you take melatonin (pill, liquid) in the afternoon, your clock thinks night has started early – rhythms shift to be earlier
- If you take melatonin in the morning, your clock thinks night is still occurring – rhythms shift later
What are the benefits of exogenous melatonin?

2. Melatonin can shift the timing of the body (circadian) clock
   - Many of us need to shift our circadian rhythms a little earlier:
     - Our clocks have a natural tendency (>24 h) to run late
     - We tend to get a lot of evening light, and not a lot of morning light
What are the benefits of exogenous melatonin?

3. Melatonin is a potent antioxidant
   - More effective against oxygen free radicals than vitamin E
   - Lab studies show human breast cancer cells grow more slowly in blood with melatonin vs. without melatonin
   - Large prospective research studies indicate that people with lower levels of endogenous melatonin are more likely to develop:
     - Breast cancer
     - Hypertension
     - Type 2 diabetes
   - Light exposure, alcohol and some medications (e.g. NSAIDs, beta-blockers) are known to partially suppress melatonin

10 mg of melatonin before bedtime can increase antioxidant capacity and may have beneficial health effects, but more research is needed
CONCLUSIONS

- Exogenous melatonin can help to: Improve our sleep Sync our body clock (circadian) time with the timing of our social world

- Thereby improving our mental and physical health, making us more resilient to life’s challenges

- Exogenous melatonin may also improve our health as an antioxidant…more research on this is needed
Thank You!

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