



Order: SAMPLE REPORT



Client #: 12345

Doctor: John Smith, MD

Doctors Data Inc

3755 Illinois Ave

St. Charles, 60175 IL

Patient: Sample Patient

Age: 34 DOB: 01/01/1983

Sex: Female

Sample Collection Date/Time

Date Collected 01/01/2017

Morning 01/01/2017 0800

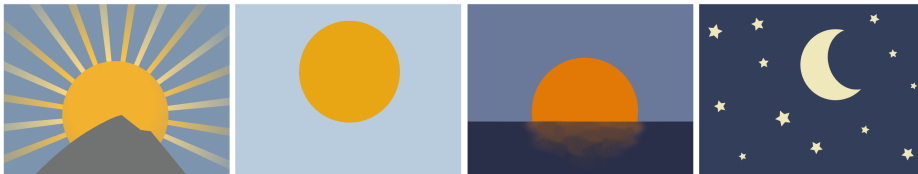
Evening 01/01/2017 1700

Night 01/01/2017 2100

Date Received 01/04/2017

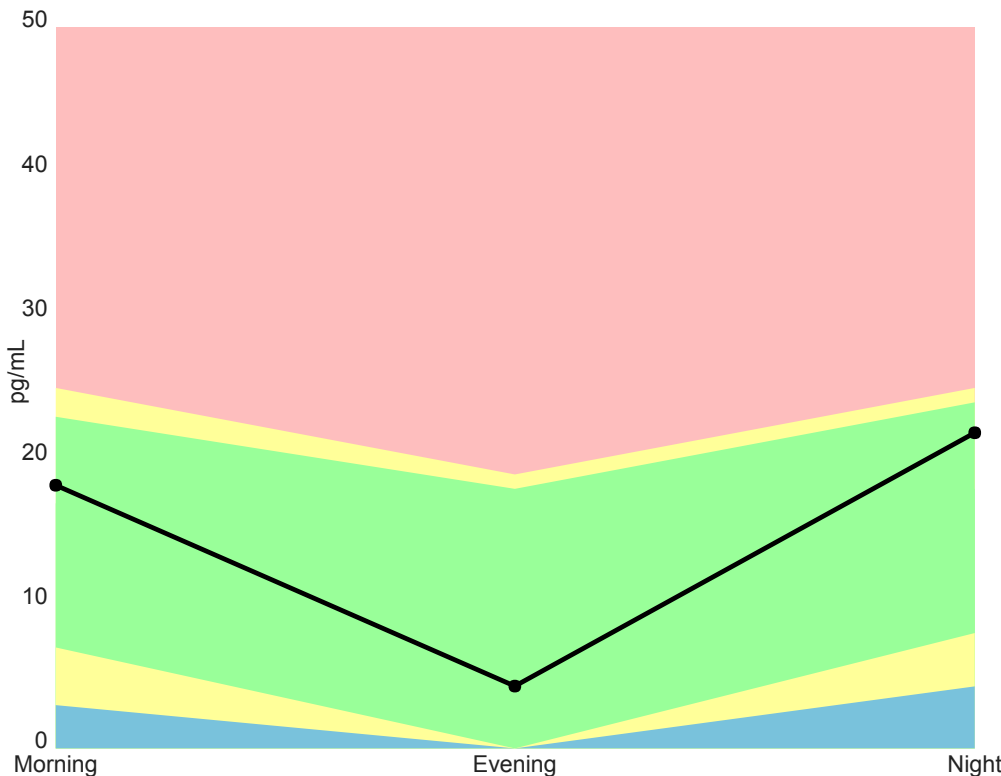
Date Reported 01/06/2017

Analyte	Result	Unit	L	WR	H	Reference Interval
Melatonin Morning*	18.25	pg/mL				3.0 - 25
Melatonin Evening*	4.32	pg/mL				≤ 19
Melatonin Night*	21.89	pg/mL				4.3 - 25



Melatonin Comments

Melatonin levels follow a diurnal rhythm in response to the light-dark cycle, with highest levels produced at night during times of darkness. Melatonin and cortisol levels have an inverse relationship. Whereas optimal cortisol levels are highest 30 minutes after waking with a gradual decline throughout the waking day and continued decline to lower night-time levels, melatonin levels are lower during the daytime and gradually rise later in the evening when light is dim, beginning approximately 2 hours before bed time. Disruptions in expected melatonin and/or cortisol pattern(s) may result in sleep disturbances.



Notes:

L (blue)= Low (below range), WR (green)= Within Range (optimal), WR (yellow)= Within Range (not optimal) H (red)= High (above range)

*This test was developed and its performance characteristics determined by Doctor's Data, Inc. The FDA has not approved or cleared this test; however, FDA clearance or approval is not currently required for clinical use. The results are not intended to be used as the sole means for clinical diagnosis or patient management decisions.

Methodology: Enzyme Immunoassay

Melatonin

Melatonin is a hormone that also acts as a neurotransmitter. It is the major indole compound synthesized by the pineal gland and is converted from serotonin. Melatonin levels follow a diurnal rhythm in response to the light/dark cycle (melatonin and light occur at opposite times). Endogenous melatonin production begins approximately 2 hours before bedtime, provided light is dim.

Many people are familiar with melatonin because of its influence on sleep. Healthy melatonin curves help positively influence the initiation and maintenance of quality sleep cycles, and disruptions in melatonin curves, commonly referred to as phase shifts, may present clinically as disordered sleep patterns.

Melatonin seems to be particularly helpful in dealing with sleep onset latency - the length of time it takes to transition from full wakefulness to sleep. Thus, it may be an effective treatment for those patients who report difficulty *falling* asleep. Extended release forms of melatonin may prove helpful in patients who have difficulty *staying* asleep.

Although it is best known for its association with sleep, melatonin holds many other clinically relevant roles. Melatonin is a potent antioxidant found in almost every cell in the body. It stimulates immune function and decreased levels are frequently noted in cancer patients as well as individuals with impaired CNS function. Melatonin may aid in weight loss and mood support, and has been shown to exhibit anti-aging potential. In addition, melatonin's antioxidant activity may be protective to the ovum at ovulation, optimizing progesterone secretion, and has even demonstrated positive effects in the success rate of in vitro fertilization.

Melatonin and cortisol share an inverse relationship – when melatonin levels are low, cortisol levels should be high and vice versa. However, just as it is possible to see disruptions in cortisol curves, disruptions in melatonin curves may be noted and are influenced by several factors. For instance, declines in melatonin levels are seen with age, blue light exposure (as commonly emitted by TV and computer screens), and some medications including benzodiazepines and antihypertensives (beta blockers). Some antidepressants and anti-psychotics may shift melatonin curves, as can strenuous exercise. Melatonin supplementation can be particularly useful for people who engage in shift work or are jet lagged.

Treatment considerations to optimize melatonin levels:

- Keep a regular schedule
- Increase amount of light exposure during daytime hours
- Decrease amount of light exposure (especially blue light) during evening hours
- Melatonin supplementation

Supplementation

Immediate release melatonin may be beneficial for those individuals with difficulty falling asleep and lower night time melatonin levels. Extended release forms are also available, and these typically release melatonin gradually over 5-8 hours and may be more beneficial for those with night-time wakefulness. Thus, it is generally recommended to take melatonin 30-60 minutes before bedtime, with sublingual, liquid and chewable forms likely having an effect more quickly than capsules, and extended release formulations affecting melatonin levels longer than immediate release formulations.

Taking melatonin is not associated with suppression of the body's own ability to produce melatonin. Even at doses as high as 50 mg, melatonin has not demonstrated addictive qualities or suppression of endogenous production.

References

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- Taniguchi K, et al. Melatonin Protects Granulosa Cells for Progesterone Production as an Antioxidant in Human Ovarian Follicles. *Biology of Reproduction*. March 2009.
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- Cipolla-Neto J1, Amaral FG, Afeche SC, Tan DX, Reiter RJ. Melatonin, energy metabolism, and obesity: a review. *J Pineal Res*. 2014 May;56(4):371-81. doi: 10.1111/jpi.12137.
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- Jenwitheesuk A, Nopparat C, Mukda S, Wongchitrat P, Govitrapong P. Melatonin regulates aging and neurodegeneration through energy metabolism, epigenetics, autophagy and circadian rhythm pathways. *Int J Mol Sci*. 2014 Sep 22; 15(9):16848-84.