

**MELATONIN HORMONE IN HUMAN BODY**

**Shaik Kareemulla\*, Mohammed Mohiuddin, Mohammed Faqrudin, Syed Aseem,  
Suhaib Imran, Mohammed Mudassir Ahmed**

Department of Pharmacy Practice, Deccan School of Pharmacy, Aghapura, Hyderabad, A.P.  
500001.

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**\*Correspondence for  
Author**

**Mr. Shaik Kareemulla**  
Department of Pharmacy  
Practice, Deccan School of  
Pharmacy, Aghapura,  
Hyderabad, A.P.

**ABSTRACT**

Melatonin is a hormone produced naturally by the pineal gland a pea sized gland located just beneath the center of the brain-- in response to darkness. It is known that *endogenous* Melatonin, which occurs naturally in the body, affects Circadian rhythm patterns. Melatonin helps in safeguarding irreplaceable neurons from free-radical attack. Melatonin helps to prevent cataracts. Melatonin reduces risk of ulcers. Melatonin is the most potent, versatile antioxidant.” melatonin produces a remarkable and highly significant improvement of thyroid function, positive changes of gonadotropins and lessening of menopause-related depression. The ulcer healing effects of melatonin in the stomach are also considered to be receptor specific because of

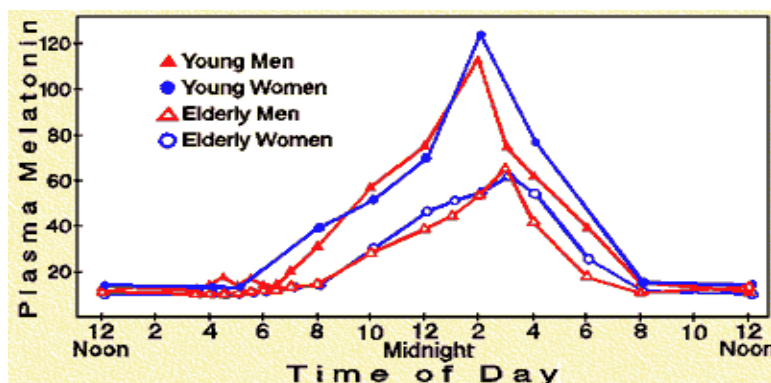
melatonin-induced gastroprotection and an acceleration of ulcer healing with an accompanying rise in the GBF in the ulcer area. Melatonin appears to work as an anti-estrogen on tumor cells. Low levels of melatonin have been associated with breast cancer occurrence and development. Some recent studies have found that people who work night shifts may be at increased risk for cancer, which could be linked to melatonin levels in the body.

**Key Words:** melatonin, anti-oxidant, meno-pause related depression, luzindole, anti-estrogen.

**INTRODUCTION**

Melatonin is a hormone produced naturally by the pineal gland-- a pea-sized gland located just beneath the center of the brain-- in response to darkness. It is known that *endogenous* Melatonin, which occurs naturally in the body, affects Circadian rhythm

patterns. These patterns work like internal clocks to regulate the schedules of bodily functions such as the sleep-wake cycle. Multiple factors can affect how the body produces this neurohormone, including underexposure to bright light and dramatic time-zone shifts. When the body's ability to produce Melatonin is compromised, exogenous Melatonin can help by imitating the action of naturally occurring Melatonin to regulate sleep.



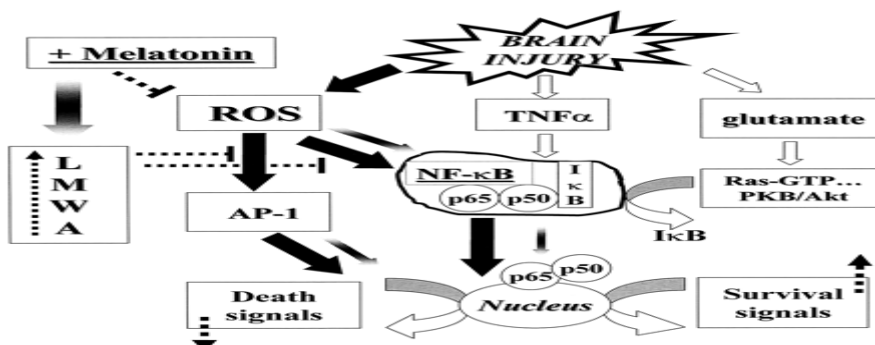
Times of day for natural Melatonin production.

### History

The existence of the pineal gland has been known for thousands of years, although its function remained a mystery until the late 20th century. In the 1600s, the French philosopher René Descartes called the pineal gland "the seat of the soul," because many people believed emotions originated there.

### A Powerful Antioxidant

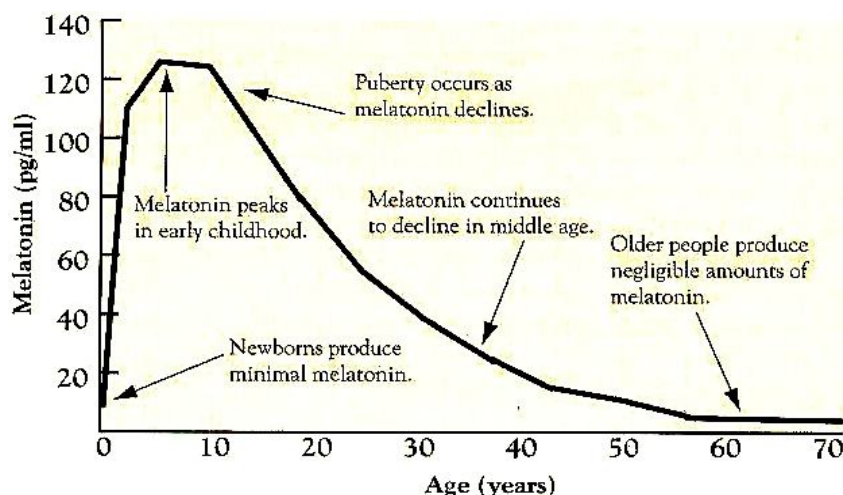
The decades-long research of Dr. Russel Reiter found that melatonin is much more than a sleep enhancer and an unequalled remedy for jet lag. He states: "Right now...melatonin in your blood is preventing the oxidation of LDL cholesterol, the "bad" cholesterol that can clog your arteries. Melatonin in brain is safeguarding irreplaceable neurons from free-radical attack. Melatonin in the fluid within eyes is helping to prevent ...cataracts. Melatonin in the lining of gut is reducing risk of ulcers. Melatonin is the most potent, versatile antioxidant."



A schematic diagram showing basic cellular mechanisms induced by traumatic brain Injury and their proposed modification by exogenous melatonin.

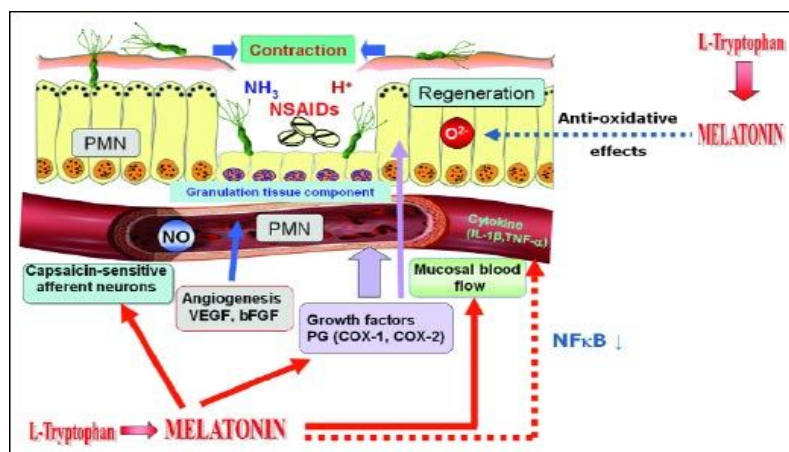
## MENOPAUSE

A six-month study of melatonin and menopausal women was carried out at a clinic in Rome, Italy. There were no side effects reported in the use of melatonin in this study. They asserted that “the six-month treatment with melatonin produced a remarkable and highly significant improvement of thyroid function, positive changes of gonadotropins towards more juvenile levels, and lessening of menopause-related depression.”



## DIGESTIVE FUNCTION

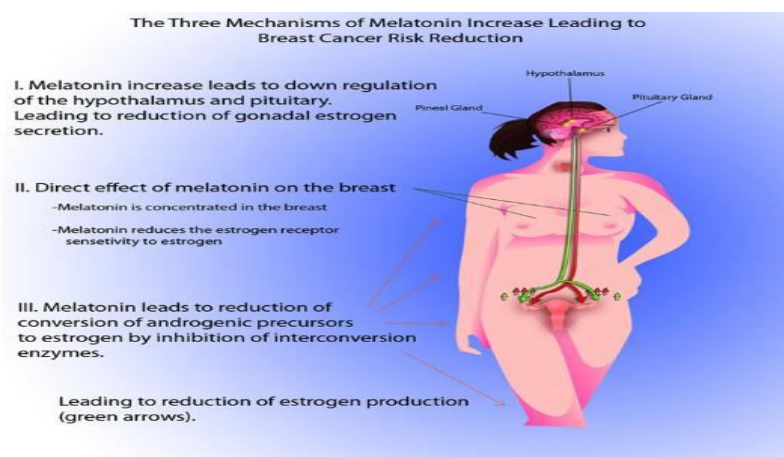
Both the protective and ulcer healing effects of melatonin in the stomach were considered to be receptor specific because centrally (i.c.v) or topically (i.g.) applied melatonin- or L-tryptophan markedly attenuated stress-damage and these effects were abolished by luzindole, a specific antagonist of melatonin MT2 receptors. Since melatonin receptors were found in the vascular beds of different systems an attempt was made to determine whether systemic administration of luzindole can influence melatonin-induced protection against WRS-induced gastric lesions and found that the gastroprotective effects of central and peripheral melatonin appear to be specifically mediated by melatonin MT2 receptors because the antagonism of these receptors with luzindole attenuated the gastroprotective and hyperemic effect of this indole. Luzindole was also found to counteract the protective and hyperemic effects of exogenous melatonin administered to pinealectomized animals. The ulcer healing effects of melatonin in the stomach are also considered to be receptor specific because not only melatonin-induced gastroprotection but also an acceleration of ulcer healing with an accompanying rise in the GBF in the ulcer area, were abolished by luzindole, a specific antagonist of the membrane melatonin MT2-receptors (MT2-R)



**Scheme of melatonin contribution to the mechanism of gastric mucosal defense. Gastrointestinal melatonin derived from amino acid L-tryptophan increases the gastric microcirculation, and inhibits the activation of neutrophils**

## CANCER

- A high number of women with estrogen receptor positive tumors have low levels of melatonin in their blood.
- Melatonin appears to work as an anti-estrogen on tumor cells. Although differently than Tamoxifen. When the two are combined, the result is better than Tamoxifen alone. A 2006 study showed Melatonin may work as a kind of aromatase inhibitor.
- Low levels of melatonin have been associated with breast cancer occurrence and development. Women who work predominantly at night and are exposed to light, which inhibits melatonin production and alters the circadian rhythm, have an increased risk of breast cancer development.
- The circadian rhythm alone is a significant predictor of survival time for breast cancer patients.



## CONCLUSION

Many Research studies suggest that the melatonin made by the body plays a large role in the daily rhythms of sleeping and waking. Some recent studies have found that people who work night shifts may be at increased risk for cancer, which could be linked to melatonin levels in the body. Some recent research has suggested that low melatonin levels in the body may be linked to a higher risk of certain types of cancer. For example, a few studies have found that women who work night shifts for many years (and therefore would be expected to have lower levels of melatonin) seem to have a slightly higher risk of breast and colorectal cancer.

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