



**Sleep has an incredibly important role to play in health. If you're not sleeping well, there is a very high chance your hormonal health is being affected on many levels.**

Read on to discover how to get a good night's sleep.

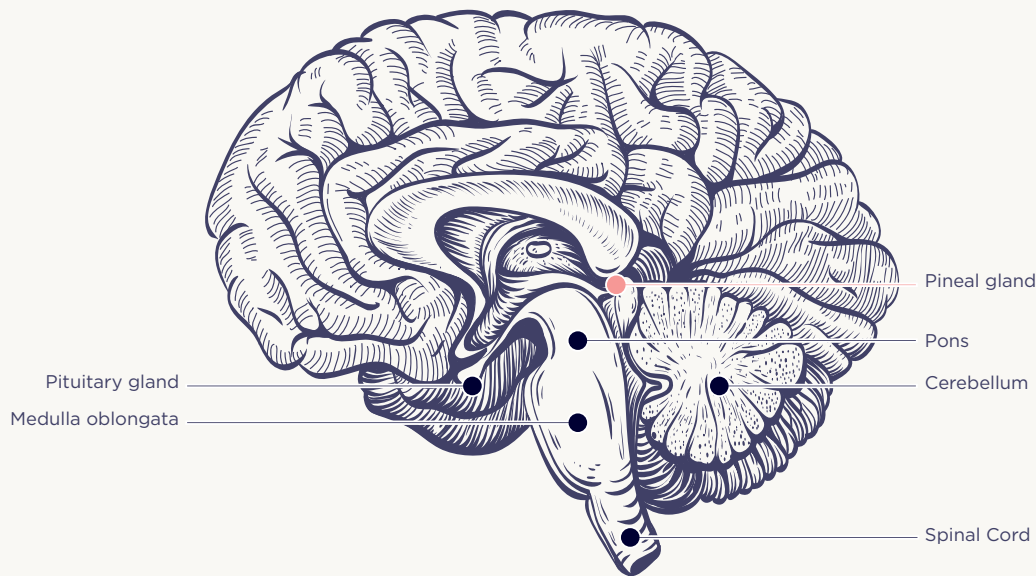


SYMPTOMS LINKED TO POOR SLEEP	
Weight gain	Headaches
Low energy	Immune suppression
Hyperinsulinemia	Poor concentration
Irritability	Brain fog
Hormonal imbalance	Blood pressure and cardiovascular disease
Dark circles under eyes	Diabetes

The gland that controls our circadian rhythm (sleep cycle) is called the pineal gland. The **pineal gland** is the master controlling gland and regulates Follicle-stimulating hormone (FSH) and Luteinising hormone (LH) via the pituitary gland, which are two very important hormones in regulating female hormonal cycles.

The pineal is a very small gland in the brain, yet very vascular, receiving vast amounts of blood only second to the kidneys - which shows how it regulates the balance of hormones circulating in the blood supply.

### Location of the Pineal Gland in the Human Brain



**Now here is the key.** The pineal gland also regulates sleep via melatonin and serotonin (both feel-good hormones). When there is poor sleep or insufficient sleep the levels of these hormones drop, which influences the reproductive hormonal balance.

Interestingly during the first 6 months after childbirth, these hormones are elevated to assist mothers to go back to sleep while breastfeeding.

Sleep is the most important trigger for maintaining healthy biorhythms. The sleep-wake cycle, or circadian rhythm, triggers every other biorhythm to function correctly. Long-term disruption in the amount of sleep or the times of sleep will disrupt the circadian rhythm and hence a whole range of biorhythms, including the glandular system and consequently, hormonal levels.



**The most profound effect from sleep is healing and repair.** Daily activity creates a wealth of metabolic toxins, as well as from normal wear and tear. We accumulate stress and emotions in our muscles. Our bodies need to eliminate the physical and emotional toxins as well as repair any damaged tissues.

The reason we sleep is to conserve energy to be distributed into healing biochemical reactions such as repair and detoxification. When there is inadequate sleep, the body does not have the time or sufficient energy to perform these functions.

During sleep, a hormone is produced by the pineal gland called **melatonin**. Melatonin levels increase during sleep and are responsible for the sleep cycles.

Interestingly melatonin is a potent **antioxidant**. Antioxidants protect the body and assist in the healing and detoxification process. In a study of 82,000 nurses, it was found those who had six hours or less of sleep each night had a significantly increased risk of breast cancer. In separate research, low levels of melatonin have also been linked to breast cancer.

When we wake in the morning our level of wellbeing and feeling of being refreshed depends upon our overall vitality. The more toxins which need eliminating, the worse you will feel in the morning.

Often you will not feel like eating until the body has fully eliminated the toxins released the night before. The word 'breakfast' comes from the root of 'breaking the fast'. This is why lemon juice in water is a great start to the day.

The quality of sleep is also an important issue. You may be getting eight hours, yet the sleep is disturbed and irritable. The level of mental or emotional stress plays a role here. The body can be likened to a piece of rope. During the day it gets twisted and twisted with mental and emotional stress.

Unless this stress is released through exercise or relaxation, the piece of rope slowly unwinds during the night leading to a disturbed sleep.

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The quality of sleep is also related to the level of toxicity in the body and/or reactive foods. If there are high levels of toxins that need to be eliminated or reactive foods are being consumed, the body often has a restless or disturbed sleep.

The reason is the release of these toxins during the night has an irritating effect on the nervous system. This leads to disturbed sleep.

Most people eating a diet high in refined sugars, stimulants and junk food will recognise this phenomenon. Children who wet the bed, commonly have food intolerances or consume junk food & soft drinks during the day.

Recent research has discovered a lack of sleep increases stress hormone levels. Elevated stress hormones have multiple detrimental effects on the body. Heightened stress hormones reduce the output of sex hormones, which lessens communication with reproductive tissues, so they can no longer adequately maintain a healthy monthly cycle.

**It is interesting to note that lack of sleep increases stress hormones, and increased stress reduces the ability to sleep well.**

Long-term elevated stress hormones also reduce metabolism. Research has shown people who sleep less than 6 hours per night are more likely to be obese. Long-term elevation of stress hormones also disrupts blood sugar balance, which explains the increase of diabetes in people who sleep less than 6 hours a night.

Disrupted blood sugar levels is a contributing factor to obesity, and is a contributing factor to diabetes. Disrupted blood sugar levels and reduced thyroid function are both factors in hormonal imbalance.

It is interesting to note lack of sleep increases stress hormones and increased stress reduces sleep. It can be a vicious cycle and stress management is a key element in restoring balance.

The end result of poor sleep is reduced detoxification and repair, dysregulation of blood sugar, and elevation of stress hormones.

These biochemical reactions lead to increased levels of inflammatory mediators. And increased long-term inflammation is the major precursor to all chronic disease, particularly cancer!



## How to get a good night's sleep

- 1 Exercise is the simplest and most effective way you can get a sound night's sleep. If you have a lot of mental activity or emotional stress during the day, exercise is essential to release this tension. Make certain you are exercising regularly. Exercising for at least 30 minutes every day can help you fall asleep. Don't exercise too close to bedtime, or it may keep you awake.
- 2 Stress is one of the biggest inhibitors of a healthy night's sleep. Music or meditation is effective for relaxation and stress management.
- 3 Avoid television before bed, and even better, remove the television from the bedroom. Television is too stimulating and disturbs the pineal gland function, which is needed to produce enough melatonin for a good night's sleep.
- 4 Avoid eating your evening meal too late. Sleep may come quickly, however, if your blood sugar falls too low, you may wake up and have difficulty getting back to sleep. Avoid bedtime snacks for the same reason.
- 5 Sleep in a room which is as dark as possible. Even small amounts of light can reduce the production of serotonin and melatonin. Also keep the light off when you use the bathroom.
- 6 Avoid loud alarm clocks. It is stressful to be woken up suddenly. Ideally, you should wake slowly with the sun rising. If this is not possible, there are alarm clocks called sun alarms which slowly increase the amount of light in the room, allowing the circadian rhythm to adjust.
- 7 Avoid caffeine. Caffeine and other stimulants obviously can keep you awake. Some people, however, do not metabolise caffeine until up to six hours later; so be aware an afternoon coffee may be keeping you awake.
- 8 Try and go to sleep at a similar time each day. As you have learnt, the body is a creature of habit. If you go to sleep every night at 10 pm, your body will naturally produce serotonin and melatonin at this time, even if you may not have done all the right things beforehand.
- 9 Wear socks to bed in a cooler climate. This prevents the body getting too cold and prevents waking up at night. Also, try and keep the temperature constant in the room to avoid overheating or cooling.
- 10 Keep a journal. Recording the day's events can help to eliminate any stressors and help you plan for the next day's activities, rather than thinking about them when going to sleep or when you wake up.
- 11 Increase exposure to bright light and sunshine during the day. This does not mean go out in the midday sun; rather in the mornings and afternoons, make sure you stand in the sun for a while. The natural sunlight enhances melatonin production in the evening; and vitamin D levels, which have been associated with insomnia and mood disorders when deficient.
- 12 Avoid electromagnetic stress (EMS). This means keep alarm clocks away from the bed; avoid heated blankets; check cabling and transformer location. EMS can affect glandular function, and hence melatonin and serotonin levels.
- 13 Avoid alcohol and drugs. The body needs to get into a sleep cycle naturally. Drugs and alcohol induce an unnatural sleep and become addictive. Alcohol often causes people to wake up later and not get back to sleep. Also, alcohol and drugs prevent much of the healing potential of sleep, as the body is dealing with the chemicals, rather than detoxifying.
- 14 Don't drink fluids within two hours of going to bed. This will avoid the chances of waking up to use the bathroom.
- 15 Take a hot bath or shower. Water has a relaxing effect and washes away the day's stresses.
- 16 Keep the bed for sleeping. Avoid work and discussions which may increase your awareness.
- 17 Buy a new mattress. Studies show approximately 60% people with mattresses 1-4 years old are likely to exercise the next day; whilst only 6-8% of people with a mattress 8-10 years old. Also, more people with newer mattresses were likely to get 7.5 hours or more sleep.



When it comes to that time of night when we contemplate sleep, we don't usually think about how our hormones will help us to drift into peaceful slumber. But it is during this time when our body is inactive that our hormones replenish and reorganise themselves after battling the daytime highs and lows.

Every activity we do during the day affects our hormone levels and ultimately, the quality of our sleep. Whether we have an argument with a friend, spend three hours watching TV or are busy with shift work, our body needs the time to regulate itself again whilst we sleep.

Understanding the connection between hormones and sleep may help improve your **sleep quality** and general well-being.

For both men and women, changes in our sex hormone levels can affect how well we sleep. The circadian rhythm which controls the sleep cycle is intimately connected with the endocrine system. In fact, the hypothalamus which controls the endocrine system also controls the circadian rhythm.

## Sleep & our body clock

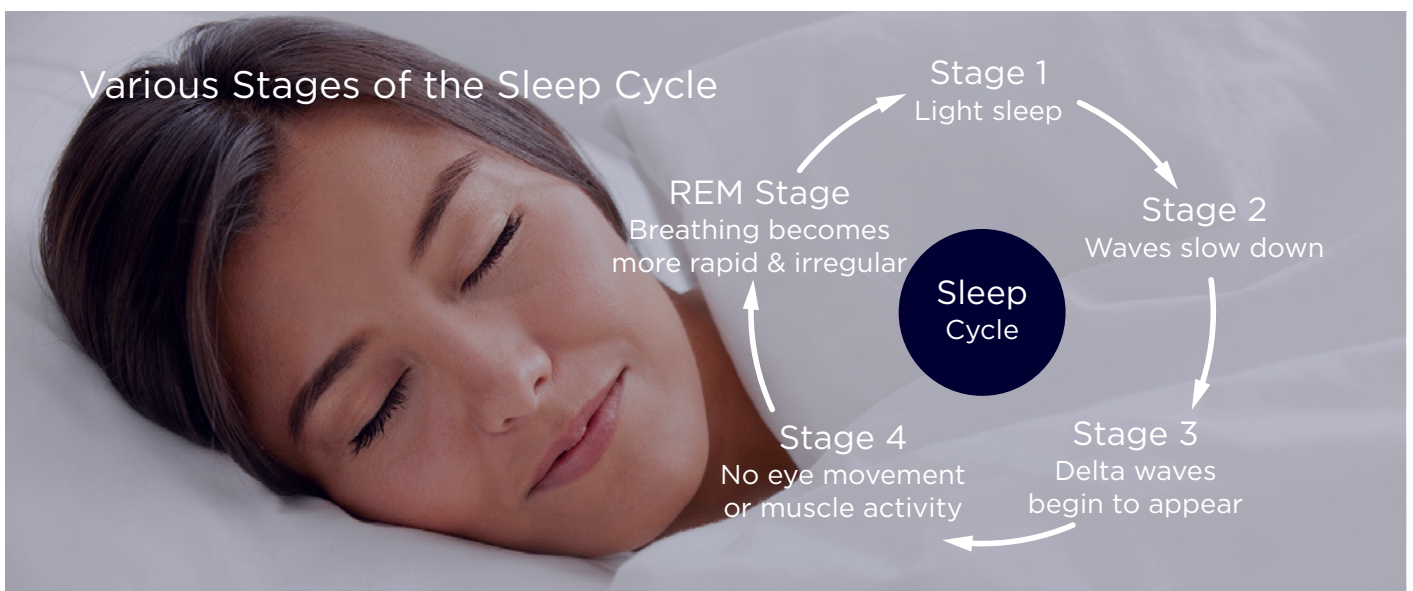
Our circadian rhythm (frequently referred to as our body clock) is essentially our **24-hour sleep-wake cycle**. With the onset of darkness at sunset, the pineal gland senses this change in light and melatonin is released to start preparing the body for the sleep process. This is the reason why bright and flashing lights, as well as flickering television or computer screens, are not conducive for initiating a healthy sleep phase.

Several hormones are released into the bloodstream as we sleep, including those which are essential for the repair and growth of the body. Some studies have shown that people who get less than seven hours sleep are more likely to be **obese or overweight**, have imbalanced blood sugar levels, are resistant to insulin, and have thyroid issues. It is no wonder that shift workers, mothers who wake often at night, insomniacs and the like, have trouble establishing a sensitive and effective endocrine system.

Our body is not made up of independent pieces working on their own - everything is interconnected. The sooner we understand this, the better we are able to address and manage a whole range of diseases linked to endocrine imbalances. Among these are **hormonal disorders**.

Hormones such as adrenaline make us feel more alert and prepared for action. Increased adrenaline levels towards the end of the day, however, can make it hard for us to go to sleep. To prevent this, it's best to do relaxing activities before bedtime and avoid stressful tasks or intense exercise.

When stress is long-lasting, adrenocorticotrophic hormones within the pituitary gland trigger the release of cortisone and cortisol from the adrenal glands. A clear example is athletes or fitness buffs having sleep problems related to higher levels of cortisol produced during their training regime days. It takes time for the effects of cortisol to wear off and if you don't practice coping skills such as **meditation and relaxation**, it takes longer for the nervous system to release and rest in the sleep phase.





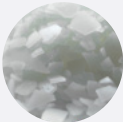



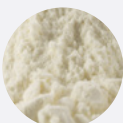
## Simple reasons why sleep is important to our health

- **Sleep helps balance appetite** by maintaining optimal levels of the hormones ghrelin and leptin. When we get less sleep than normal, we may feel an urge to eat more.
- **Sleep also controls levels of the hormones insulin and cortisol** so that we wake up hungry, prompting us to eat breakfast to get the needed nourishment to face the day ahead.
- **If we get less sleep than normal, our levels of prolactin may get out of balance.** As a result, we have difficulty concentrating and may crave for carbs during the day. We could also end up with a weakened immune system.

### OTHER INTERESTING FACTS ABOUT THE SLEEP CYCLE

- **Levels of the hormone cortisol dip at bedtime** and increase during the night, peaking just before waking. This acts as an alarm or wake-up signal, turning on our appetite and energy. If your cortisol levels are high during the day, melatonin does not activate, and this insomnia leaves you feeling fatigued in the morning.
- **There is a specific relationship between sleep and the female menstrual cycle.** Hormonal changes which occur just prior to menstruation (sudden drop in progesterone), affect the body's temperature control system which can reduce the amount of deep, REM sleep that a woman experiences.
- **Low levels of oestrogen during menopause may contribute to sleep problems.** Changes in hormone levels mean that body temperature is less stable and there may be increases in adrenaline levels, both of which can affect sleep.  
**For men, low levels of testosterone have been shown to be a causative factor towards insomnia.**

### RE-ESTABLISHING A HEALTHY SLEEP CYCLE - COMMON INGREDIENTS

• <b>Magnesium</b> is a natural muscle relaxant. This helps to release stress levels and calm the nervous system.	
• <b>Withania</b> is traditionally used in Ayurvedic medicine as a rejuvenating tonic, helps the body adapt to stress and relieves symptoms of mild anxiety.	
• <b>Rhodiola</b> is traditionally used in Western herbal medicine to help the body adapt to stress, relieve feelings of general debility and supports mental function.	
• <b>Passionflower</b> is traditionally used in Western herbal medicine to relieve sleeplessness, mild anxiety, irritability, reduce nervous tension and calm nerves.	
• <b>Vitamin B6</b> maintains nervous system health and function. <b>Vitamin B5</b> supports energy production.	



## How to boost melatonin naturally

Naturally, you can encourage the precursors of nutrients that assist with melatonin production. Serotonin is a hormone on the ladder before melatonin and over 90% of your body's serotonin is made in your gut.

**It's vital to have healthy gut flora to make sufficient melatonin.**

Prebiotics and probiotics will greatly help. **Happy Greens** before bed has been reported to improve sleep quality. Check for any gut dysbiosis and/or parasites and correct the issue. B6 also aids with melatonin production. Magnesium will relax your muscles and even Epsom salt baths will help.

Another option is to increase your consumption of foods high in melatonin. **Melatonin-rich foods** include:

- Goji berries
- Tart cherries
- Walnuts
- Almonds
- Pineapple
- Tomatoes
- Bananas
- Oranges



Tryptophan, on the other hand, is an essential amino acid and one of the precursors to melatonin production. Increasing your intake of **tryptophan-rich foods** may also boost melatonin levels. Some of the foods with the highest amount of tryptophan are:

- Spirulina
- Soy nuts
- Cottage cheese
- Chicken liver
- Pumpkin seeds
- Turkey
- Chicken
- Tofu
- Watermelon seeds
- Almonds
- Peanuts
- Yoghurt

## Sleep and weight loss

So you think you're doing everything to reach your ideal weight. You're making the right food choices, counting the calories, and getting regular exercise, yet you still feel you're not in the best shape or state of health. Well, you may be missing out on something very important - **SLEEP**.

In this article, I'll show you how sleep can impact your efforts at achieving or maintaining a happy and healthy weight.



## Sleep is an important modulator of neuroendocrine function and glucose metabolism.

What does this mean? It means that without sufficient restorative sleep, our brain function and endocrine (hormonal) system are affected. More specifically we know that our insulin sensitivity, cortisol levels and satiety hormones are impacted, leading to an increased risk of obesity. Various studies have shown that people who get **less than seven hours of sleep a day** are more likely to be overweight, have poor glucose tolerance and suffer **thyroid issues**.

**Sleepy Milk Elixir** By: Tahlia Thomas.

A delicious Anti-inflammatory Healthy Coconut milk.

- Servings - 1
- Prep Time - 5 mins
- Cook Time - 2 mins



### Ingredients

- Almond/Cashew/Coconut milk - 1½ cups
- Medjool date - 1 pc
- Fresh nutmeg - 1 small pinch
- Ground cinnamon - 1 small pinch
- Ground cloves - ⅛ tsp
- Cardamom - 1 small pinch

This is a delicious one to make before bedtime. The beautiful, warming combination of spices is fantastic for activating the parasympathetic nervous system and getting you in a deeper and more restful sleep.

### Method

1. Place all ingredients in a small saucepan and cook over medium heat.
2. Stir constantly and bring to a light simmer.
3. Pour mixture into a cup through a tea strainer and enjoy!

You can also prepare the mixture in a Thermomix® at 100°C (Speed 1). Alternatively, you may use a milk frother so it ends up creamy and delicious.

### Extra Notes

Sleep has an incredibly important role to play in hormonal health. If you're not sleeping well then there is a very high chance your hormonal balance is being affected.

**Find out more here.**



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