

# SLEEP REFRESH

Product Education

# NUTRITIONAL SUPPORT FOR SLEEP

According to the U. S. Centers for Disease Control an estimated 83.6 million adults in the U.S. are sleep deprived and getting less than 7 hours of sleep. Seven hours is the minimum length of time that an adult should sleep in order to reduce health risks and early death. In addition, National Health and Nutrition Examination Survey reports that prescriptions for sleeping pills has risen from 2% in 1999 to 3.5% in 2010. These reports show the prevalence of sleep deprivation and the need for sleep. But how does sleep occur? What is the process? What happens when we do not get enough sleep?

# **HOW SLEEP OCCURS**

All mammals have an internal biological clock that regulates sleep and wakefulness cycles. The cycle follows a circadian rhythm. Circadian comes from the Latin words for 'about a day'. The circadian rhythm tells our bodDies when to sleep, rise, eat and regulates many physiological processes. This internal body clock is affected by environmental cues, like sunlight and temperature. When one's circadian rhythm is disrupted, sleeping and eating patterns are thrown off course. Yet, when we do fall sleep we go through stages of sleep that help maintain our mental and physical health. These sleep stages are outlined below.

# BENEFITS

• Enhances your body's natural defense mechanisms, improving overall immunity.

PLEMENT I 60 CAPSULES

- Improves memory, attention span, and mental clarity for better cognitive performance.
- Promotes cardiovascular and brain function for longterm health benefits.
- Re-balances an overactive central nervous system to restore normal sleep patterns.
- Helps you achieve seven to eight hours of restorative sleep for better physical and mental health.



# THE BIOLOGY AND STAGES OF SLEEP

There are four main stages of sleep and researchers indicate that each cycle is between 90-120 minutes. Each stage provides benefits to our mind and body. Sleep is measured by **Electroencephalogram (EEG)** recordings of brain waves with electrodes attached to scalp and around eyes.

In the **waking state:** EEG recordings indicate we alternate between beta waves and alpha wave patterns of brain activity. **Beta** activity is characterized by highly desynchronized, rapid (15 to 20 cycles per second), irregular, low amplitude waves. During beta activity, a person will be actively thinking and be very alert. **Alpha waves** are slightly more synchronized, slower, larger, and more regular than beta waves, with a frequency of 9 to 12 cycles per second. A person showing alpha waves is awake but quite relaxed. Alpha and beta wave activity alternate throughout periods of wakefulness.

Brain activity during sleep consists of **Slow Wave Sleep (SWS)** and **Rapid Eye Movement (REM)** sleep. There are four stages and sleep start when a person enters **Stage 1 of SWS**. In Stage 1 some **Theta wave** (4 to 7 cycles per second) activity may be observed. Heart rate and muscle tension begin to decrease. During this time people are not always aware they are asleep. This is when we experience muscle jerks of the arm or leg, known as **myoclonia**.

After 10 to 15 minutes, **Stage 2 of SWS** occurs, there is further reductions in heart rate and muscle tension occurs. There are sleep spindles on the EEG, short bursts of 12 to 14 cycles per second waves that last about half a second. Spindles also occur in other stages of sleep. After, about 15 minutes, we enter **Stage 3 and 4** sleep. Both stages have delta wave activity, the largest, slowest (1 to 4 cycles per second), most synchronized waveform of the sleeping state. Stages 3 and 4 differ in the proportion of the delta waves that occur before a person becomes fully awake.

After 90 minutes of SWS, the first period of **REM** sleep occurs. This stage is called **paradoxical sleep**; the combination of brain activity that resembles wakefulness with the external appearance of deep sleep. Vivid dreaming occurs in this state.

The transition between Stage 4 and REM is abrupt, and usually involves brief passages through Stage 3 and Stage 2 sleep. Periods of REM sleep occur at approximately 90-minute intervals. In 8 hours of sleep a person probably experiences five periods of REM. The 90-minute intervals between REM cycles appear to continue the ultradian cycles that occur during wakefulness.



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#### What is Melatonin?

Melatonin is a hormone primarily synthesized in the pineal gland, a small gland in the brain. Melatonin helps control your sleep and wake cycles. Very small amounts of it are found in foods such as meats, grains, fruits, and vegetables. Through the body's circadian rhythm it controls your natural cycle of sleeping and waking hours. In part, your body clock controls how much melatonin your body makes. Normally, melatonin levels begin to rise in the mid- to late evening, remain high for most of the night, and then drop in the early morning hours. Light affects how much melatonin either earlier or later in the day than usual. This change can lead to symptoms of seasonal affective disorder (SAD), or winter depression. Natural melatonin levels slowly drop with age. Some older adults make very small amounts of it or none at all. Sleep Refresh includes 1.5 milligrams of melatonin per capsules and can be used to treat jet lag or insomnia.

#### **L-Theanine**

is an amino acid. L-Theanine is found to have a calming relaxing effect on the brain and it was included in Sleep Refresh to prepare a person for sleep. It relieves anxiety in part because it resembles the brain signaling chemical glutamate. While glutamate is an excitatory neurotransmitter, L-Theanine binds to the same brain cell receptors and blocks them to the glutamate's effects. L-Theanine proEduces the opposite effect and becomes an inhibitory to the glutamate's effects, providing a calming and relaxing effect. L-Theanine also increases production of the inhibitory, relaxing neurotransmitter GABA, increasing the calming and anti-anxiety effects. (1,2)

#### Valerian root

is a natural sleep aid. Historically, Valerian was used as a sedative-hypnotic agent for over 1000 years. It contains chemical compounds of arginine, glutamine, alanine, and GABA. (3) Valerian root is widely used and respected by the general population and physicians for its sedative effects and anti-anxiety capabilities. Valerian extract can cause sedation by increasing your brain's GABA level. GABA is an inhibitory neurotransmitter and in large enough quantities it can cause a sedative effect. (5,6) Results from an in vitro study suggest that valerian extract may cause GABA to be released from brain nerve endings and then block GABA from being taken back into nerve cells. In addition, valerian's valerianic acid inhibits an enzyme that destroys GABA. (4) Studies indicate that valerian reduces the time it takes to fall asleep and improves the quality of sleep.

### Chamomile flower (6)

Chamomile is found in Europe and temperate regions of Asia. It has a long tradition as an herbal remedy to promote relaxation and calmuness. Chamomile is often made into a tea and used in aromatherapy. Sedative effects are attributed to the flavonoids, including apigenin, which acts as a ligand for the central benzodiazepine receptors. (7) Chamomile extract modulates GABA receptors and monoamine neuroDtransmissions. (8) A study investigating its effect on insomnia showed a small to moderate effect on sleep latency, night time awakenings, and fatigue severity scores. (9) Overall, Chamomile is a safe herb with minimal side effects with a long history of use.



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#### **Passion flower**

is a plant and studies have shown that it may be just as effective as synthetic drugs for generalized anxiety disorder. It has been used as a folk remedy for anxiety and insomnia since ancient times. The mechanism of action if thoughts to be related to the medication of the GABAergic system (6). In Sleep Refresh we have combined Passion flower with calming herbs such as valerian root and chamomile flowers.

### Potential Health Effects from Lack of Sleep

A growing body of research is examining the adverse health effects a disrupted circadian rhythm can have on the body, such as increasing the chances of cardiovascular events, obesity, diabetes, and a correlation with mental distress.

Other issues that may arise from lack of sleep are:

- Lack of energy & fatigue
- Inability to concentrate.
- Increased stress & nervousness
- Increased use of caffeine.
- Increased inflammatory response
- Learning and memory difficulties.
- Alzheimer's disease
- Weight gain & weight maintenance
- Short term memory loss.
- An increased stress hormone profile
- Disruption of thyroid metabolism
- Shortened life span

#### Take Sleep Refresh nightly to enhance your sleep quality and overall health.



†These statements have not been evaluated by the FDA. Information contained in this bulletin is for informational purposes only and is not intended to diagnose, treat, cure, or prevent any disease. In all cases, its is recommended that you consult with your healthcare professional before initiating a supplement program.