

Wake UP Energized

THE NATURAL SOLUTION FOR STRESS, FATIGUE & INSOMNIA

*A system of researched herbs & nutrients
designed to break the vicious cycle of
stress-caused fatigue and insomnia.*

Learn How You Can Use Natural Remedies To

- Restore healthy sleep
- Revitalize the adrenal (stress) system
- Promote a higher level of energy and vitality

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For more updates to the information in this e-book visit

<http://natural-insomnia-remedies.com/>

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Wake Up Energized...

Can you think back to a time when you awoke rested and full of energy?

My memory takes me back to my childhood. I must have been about age 5.



I remember waking one morning at about 7 AM and hearing the ocean pounding on the sea wall in front of our home. With a leap of joy, I bounded out of bed and ran through the house to the large living room window.

There I stood and gazed with awe at the magnificent scene of ocean waves crashing into the sea wall. The ocean spray rose ten to fifteen feet, almost touching the leaves of the tall palm trees leaning over the wall's edge. At that moment my energy soared and I experienced the full vitality of life.

Remember an experience like this in your own life.

Remember when you had lots of energy. Remember the energy that you had then and contrast it to your energy level now. You probably don't have the energy you used to have.

Why is that? While there are many causes of fatigue, the most frequent cause is simple, yet not always obvious.

A not-so-obvious cycle of stress and less than optimal (revitalizing) sleep begins to wear us down.

Over time this vicious cycle begins to take its toll.

We begin to forget what it felt like to be full of energy, to wake up each morning with a sense of health and vitality. It is natural and normal to experience stress. Our body has a complex system that mounts a response to stress.

While stresses do normally take a toll on our body, our body normally rejuvenates itself during sleep. If our sleep is not optimal we lose the rejuvenating benefits



of sleep. Then our body gradually begins to deteriorate, and we feel it as a loss of energy and vitality. That sense of being healthy and vital gradually slips away.

Too much stress over a long period of time gradually shifts our body chemistry. Our body chemistry is disrupted with an imbalance of stress hormones.

Over time the adrenal glands, which produce stress hormones become exhausted. The result is fatigue. You step on your body's accelerator (the adrenal glands) but nothing happens. You've lost your ability to get up and go.

Then you drag yourself through the day. You look for hits of energy in things like coffee, soda pop and sweets. You look forward to getting to bed at night for some much needed rest. But then you lie there exhausted and (strangely) wired at the same time.

You may lie awake for some time before eventually dozing off. Or if you do fall asleep quickly, you wake up in the middle of the night and aren't able to get back to sleep quickly.

You know that something's wrong. But what's doing it? Your doctor says that all of your tests are normal.

Researchers are also finding that the most common cause of fatigue and insomnia is stress. As a result of chronic stress our hormones go out of whack. In the day time when we need them, they're not there to give us the energy kick we want. At night time a higher than normal level of stress hormones keeps us revved up and awake. The rhythm and timing of the brain-pituitary-adrenal stress system is off.

Stress is what most frequently underlies both fatigue and insomnia.

It is the hidden cause. Once our stress and the issue of chemical imbalance of stress hormones is addressed we can remedy both fatigue and insomnia.

This is not to say that there are not other causes of fatigue and insomnia. Certainly you should consult your medical doctor if you are experiencing severe fatigue.

The Solution in a Nutshell

But for most of us, a very effective way to restore our energy and vitality is to:

1. Restore healthy sleep
2. Minimize stress and the impact of stress on your body



3. Make sure to get the key vitamins that optimize energy production (discussed later)

By doing so, you too can find yourself jumping out of bed in the morning, full of life and vitality.

In the remainder of this ebook you will first learn...

about sleep and the health benefits of sleep, why we are losing so much sleep, how insomnia is stress related, the normal sleep cycle, a self-test to see whether you are sleep deprived, the kinds of sleep drug remedies being used and their side effects, and herbs that can help to safely restore healthy sleep;

about stress, the body's stress response, the adrenal glands and the stress hormones, signs of symptoms of stress and adrenal exhaustion, how energy levels are related to stress, and herbs that can dramatically reduce the impact of stress while restoring your energy levels;

about key vitamins that are essential for energy production in the body.

So lets get started by first taking a look at the benefits of sleep.

Healthy sleep is as important as diet and exercise for health and vitality.

Many American's fail to make the effort to get healthy sleep, believing that sleep is expendable. Research is beginning to show us that this is not true. We lose sleep at our own risk.

"There is plenty of compelling evidence supporting the argument that sleep is the most important predictor of how long you will live, perhaps more important than whether you smoke, exercise, or have high blood pressure or cholesterol levels."(1)



The Benefits of Sleep:

Believe it or not, getting healthy sleep...

- Can increase your ability to think clearly and function at your highest level
- Can boost athletic performance by 30%
- Improves your skin and appearance
- Helps you lose weight
- Improves your memory and ability to learn
- Decreases your risk of diabetes
- Helps to protect your heart and decrease your risk of heart disease
- Improves your ability to fight off infections
- Decreases your risk of accidents(2-4)

“We are not healthy unless our sleep is healthy.” writes sleep research pioneer, William Dement, MD(1).

Intuitively, we’ve always known that sleep is important. “There’s nothing better than a good night’s sleep” is a common expression of this understanding. But for some reason we don’t listen to our own wisdom.

As children most of us had bedtimes that were the law of the household. Our parent’s made sure that we got enough sleep. They knew what was good for us.

As we got older most of us seem to have forgotten or just ignore the value of sleep. We live in a culture that values industriousness, work and productivity, and that frowns on lethargy.

Within just the past year there has been a surge of media attention on healthy sleep and the need to remedy insomnia. This is largely a result of more research coming out on the ill effects of insomnia for previously unsuspected conditions like heart disease, diabetes, cancer, obesity and weight gain. Researchers now suggest that insomnia is a major risk factor for these diseases.

Why are we losing so much healthy sleep?

A major cause of lost sleep is stress and overwork. In stressful times in our life a common reaction is to rev ourselves up to meet the demands placed upon us. Stresses may come and go in our individual lives. But now our entire society seems to be stressed. Almost no one would argue that we are now experiencing stress of historic proportions (circa 2009).

One of the first casualties of stress is healthy sleep. We Americans are struggling with insomnia more than ever. In 2005 a poll by the National Sleep Foundation reported that less than half of all Americans feel they get healthy sleep either every night or every other night(5).

Our nation's lack of healthy sleep is reflected by our use of sleep medications. Forty-nine million prescriptions for sleep medications were written in 2006(3). This was a 53% increase over the previous five years. The leading sleep drug is Ambien which accounted for 60% of sleep prescriptions in 2006, or \$2,800,000,000 (2.8 billion) in sales. In 2006 drug companies spent \$600,000,000 on advertising. The primary focus of all the advertising has been “destigmatizing sleeping pill use”(5).

Our sleeplessness is usually stress related, yet our modern environment also discourages sleep.

Artificial light and man made technologies give us many reasons to stay awake at night. Remember that for most of mankind’s history the darkness of night put a real damper on staying awake to the wee hours.

Our grandparents slept 1 1/2 hours more than we do each night according to Dr. Christopher Gillin, a psychiatrist and professor at the University of San Diego(6). He reports that one in three Americans complain of a bout of insomnia within the past year, and one in six consider their insomnia serious.



Thomas Edison himself, inventor of the electric light bulb, believed that too much sleep was a bad thing. “The person who sleeps eight or ten hours a night is never fully asleep and never fully awake—he has only different degrees of doze through the 24 hours”, said Edison. He felt that people got twice as much sleep as needed. Excess sleep caused them to be “unhealthy and inefficient”(1).

While Edison is known to have frequently slept only four hours a night, it is reported that he also took frequent daytime naps. His total sleep time seems to have been close to 8 hours each 24 hours.

Given Edison’s personal philosophy it follows that he invented the electric light bulb. No single invention has so disrupted the human sleep cycle as electric lights.

The rhythm of healthy sleep and our biological clock

Our **biological clock** keeps time for our body’s natural rhythm of sleep and awakening. It sets the timing of healthy sleep. Our body’s clock can be upset by artificial light. Our body follows the day-night cycle by registering light through the eyes. This daily rhythm is called the circadian rhythm.

Circadian is defined as “A daily cycle of biological activity based on a 24-hour period and influenced by regular variations in the environment, such as the alternation of night and day. Circadian rhythms include sleeping and waking in animals, flower closing and opening in angiosperms, and tissue growth and differentiation in fungi”(7).

The darkness of night stimulates our brain to release melatonin, the body’s sleep hormone. Melatonin helps to induce sleep. Artificial lighting lowers melatonin secretion and can interfere with our ability to get to sleep.

The downside of our 24/7 Society

When our ancestors “burned the mid night oil” the light’s intensity (from candles, fires and oil lamps) was not enough to disrupt our body’s circadian rhythm.

Light intensity is measured in luxes. One lux is the amount of light given off by one candle. Researchers have shown that just 180 lux can reset or disrupt our biological clock.

A 100 watt bulb at 10 feet distance emits 190 lux, which is enough to reset your biological clock. Candles, oil lamps and fires fail to do so.

With darkness our eyes register less light. This signals our brain to release melatonin, the body’s sleep hormone. Melatonin levels rise higher at night and drop in the daytime, all in response to the light coming into our eyes. This is how mankind experienced the day-night cycle for 1000’s of years.

A glaring bright light at midnight tells your body that the sun is shining and as a result your brain lowers melatonin levels. This disruption of melatonin can impact your sleep cycle.

Melatonin has been shown to have many health benefits of its own. Lowering its levels in the body may impact health in more ways than just sleep.

In our modern society we are exposed to lot’s of stress and 24/7 activity. The combination of the two is seriously affecting our sleep. For most of us, our sleep is no longer healthy.

What is healthy sleep?

Healthy sleep means you’re getting enough sleep and that you are experiencing all of the stages of sleep in their proper amounts.



How much sleep is enough? The consensus among sleep researchers is that adults need about eight hours a night.

Sleep researcher, Dr. William Dement puts it this way— “Generally people need to sleep one hour for every two hours awake, which means that most need around eight hours sleep a night. Of course some people need more and some need less, and a few people seem to need a great deal more or less.”(1)

Before you begin to justify your chronic lapse of sleep, consider this powerful statement by Dr. Dement:

“Although sleep needs vary, people who sleep about eight hours, on average, tend to live longer”.(1)

Other than counting the number of hours you get, how can you tell if you’re getting enough sleep?

The best way to test for sleep deprivation is to see how quickly you can fall asleep during the day if you’re given a chance. This is how researchers measure sleep deprivation. The Multiple Sleep Latency Test is used by scientists to assess the level of an individual’s sleep deprivation.



Research subjects are given a place to lie down comfortably in a quiet, dark room in the middle of the day. The volunteer’s brain waves are monitored to see if and when they go to sleep. The test lasts just 20 minutes.

If a the subject falls asleep in under 5 minutes this represents a severe sleep deficiency. These subject’s “physical and mental reactions are often very impaired”(1). Falling asleep in between 5 and 10 minutes is considered being “borderline” sleep deprived. Falling asleep between 10 and 15 minutes indicates an acceptable amount of sleep need. Falling asleep in 15 to 20 minutes or not at all suggests that the subject has an excellent level of alertness and is getting enough sleep.



Another way to see how sleep deprived you are is to observe how sleepy you are. The sleepier you are the more you need sleep, right? This evaluation, called the

Epworth sleepiness scale(8) is accurate whether you're someone who needs more or less than eight hours per night. If you're sleepy, you're just not getting enough sleep.

Sleep deprivation self-test

How likely are you to doze off or fall asleep in the following situations, in contrast to feeling just tired?

This refers to your usual way of life in recent times. Even if you have not done some of these things recently try to work out how they would have affected you. Use the following scale to choose the most appropriate number for each situation:

- 0 = no chance of dozing
- 1 = slight chance of dozing
- 2 = moderate chance of dozing
- 3 = high chance of dozing

Rate each of these situations:

- Sitting and reading _____
- Watching TV _____
- Sitting inactive in a public place (e.g. a theater or a meeting) _____
- As a passenger in a car for an hour without a break _____
- Lying down to rest in the afternoon when circumstances permit _____
- Sitting and talking to someone _____
- Sitting quietly after a lunch without alcohol _____
- In a car, while stopped for a few minutes in traffic _____

Evaluate your score: _____

- 0-5 Slight or no sleep debt
- 6-10 Moderate sleep debt
- 11-20 Heavy sleep debt
- 21-25 Extreme sleep debt

A score of 6 or more suggests that you are sleep deprived. It's time for you to start getting more sleep. Is your getting enough healthy sleep more than an issue of simply making enough time to sleep? If so, then spend some time learning about the causes of insomnia so that you can begin to get the sleep that you need.

The normal sleep cycle.

The other part of getting healthy sleep is having a normal sleep cycle. This means that you go through all of the stages of sleep and experience each of them for a sufficient amount of time.

Sleep is divided into two categories—REM and non-REM. REM refers to the Rapid Eye Movement which occurs during this type of sleep. In all there are four stages of non-REM sleep in addition to REM sleep.

In non-REM sleep, stages 1 through 4 are a progression from falling asleep (stage 1), to light sleep (stage 2) and then deep sleep (stages 3 and 4). During deep sleep the body is in a profoundly relaxed state. Muscle tension is relaxed, blood pressure slows, heart rate and breathing are diminished. During deep sleep the body secretes pulses of human growth hormone.

Human growth hormone is sometimes called the hormonal fountain of youth because of its rejuvenating qualities. Each night your body repairs and restores itself under the direction of human growth hormone. After going into deep sleep one emerges into REM sleep. During REM sleep there is Rapid Eye Movement and this is when we dream.

Researchers have found that REM sleep seems to help us remember what we learned the day before.

Getting Deeper Into The Stages Of Sleep.

Because they are unconscious, we don't really appreciate the stages of sleep. Dreaming (the stage of REM) is the only one that we can remember. Yet the stages of sleep are just as vital for us as the many states of mind that we experience while awake.

Our best reference point for describing sleep is our waking state. By comparing wakefulness and sleep, the nature of each becomes clearer. Think of your different states of awareness or arousal while you are awake. Each of us experiences numerous levels of energy, arousal and alertness through the waking day.



If you've gotten bad news—like losing a ton of money in your retirement account, your energy level is likely to be down. You may even be depressed. Your outlook on life is colored by your mood. Even your perceptions of your immediate environment are affected. A beautiful summer day doesn't thrill you when you have a cloud over your head.

Hallucinating Without Drugs

In our waking state our senses are constantly receiving input from our body and the outside world. Our brain filters out most of what our sense organs actually pick up. If it didn't we would be so bombarded by incoming signals we wouldn't be able to function.

Our brain also imposes structure on what we pick up through our senses. The raw data of light entering the lens of our eyes has no inherent meaning. But our eyes and brain impose patterns and meaning on what we see.

An interesting example of this is documented in drawings made by 16th century European explorers who sailed to the Americas, and by the Indians they met there. One encounter is depicted in an anonymous engraving by a European artist.

The European artist drew “a sailing vessel anchored offshore with a landing party of elegantly dressed gentlemen disembarking while regal, Europeanized Indians look on - one of the Indians in the engraving held a 'peace pipe' expressly for this festive occasion.”

A companion drawing, made by an American Indian at the same event “records a totally different scene: Indians gasping in amazement as a floating island, covered with tall defoliated trees and odd creatures with hairy faces, approaches.” (1)

One of the problems that we face when we begin to look at sleep is our tendency to want absolute and definite answers. If our waking state and even our perceptions are so relative (as evidenced by the European explorers and American Indians), is it realistic to look for absolutes in the world of sleep?

What Is Sleep?

Simply put, from the point of view of our experience, sleep is turning off the outside world. But sleep is also quite complicated. Let's look at how we fall asleep and move through the different stages of sleep.

Your body begins to prepare for sleep the moment the sun goes down. As the levels of light diminish the pineal gland begins to secrete more and more melatonin. Melatonin is often referred to as the body's primary sleep hormone.

The rising level of melatonin has a calming and soothing effect.

Recall a time when you went camping. You may have sat in the dark in front of a fire with thousands of stars overhead. The crackling and warmth of the fire has an entrancing effect, taking your mind off your worries. The darkness (the melatonin) coaxes you to sleep.



Falling Asleep

Once in you are in your warm sleeping bag, your mind begins to drift and you begin to forget about the outside world. You are now entering Stage 1 sleep. The faster alpha waves of the full waking state are replaced by slower theta waves. At the same time your body eases into a more relaxed state. Your breathing begins to slow, your heart beat becomes more regular and your blood pressure begins to decrease. The blood flow to your brain and your brain's temperature also start to decline. At this stage you can be awakened easily, and you may even feel that you never really got to sleep.

Light Sleep

Over the next 15 to 20 minutes, you descend into Stage 2 sleep. If your brain were monitored, it would now show a new set of characteristic brain waves. Your senses continue to disengage from the external environment and at this stage you would not awaken as easily. If someone were to push back an eyelid, you would be oblivious to the outside world, seeing nothing. But a sound in the room might still awaken you. Most of your body organ systems continue to slow down (lowered blood pressure, heart rate, muscle tension, body secretions).

Deep Sleep

About 30-45 minutes after falling asleep, your brain wave patterns change again, and for the first time the delta waves of deep sleep emerge. You are now moving into Stages 3 and 4 of deep sleep. (Stage 3 and 4 are distinguished from each other only by the amount of Delta wave activity measured in the brain. Together they are called deep sleep.) At this point it would take a lot more effort to wake you up—only loud noises and some jostling could awaken you. If you are awakened from sleep at this stage you may be groggy, even confused or disoriented, as if drunk from sleep. You may not be able to function normally for some time. Sleep walking, sleep talking or bed wetting usually occur during deep sleep. At this stage of sleep your body's systems have slowed to the deepest state of physical rest.



Rejuvenating Deep Sleep

While in deep sleep your body replenishes and repairs itself. At this stage the hypothalamus (part of the brain) signals the anterior pituitary gland at the base of the brain to increase secretion of human growth hormone (HGH). (HGH is sometimes referred to as the hormonal “fountain of youth” because of its ability to restore adult bodies to a more youthful state. In children it promotes tissue building and growth.) As your body cycles in and out of deep sleep through the rest of the night, additional spurts of HGH are released. During deep sleep the overall metabolic activity of the brain decreases.

Rapid Eye Movement Sleep (REM)

After a period of deep sleep, your brain waves shift again and your eyes begin to flutter back and forth under closed eyelids. You are now dreaming, having moved into what is referred to as REM sleep (for Rapid Eye Movement). REM sleep has been shown to be essential for integrating recent experiences into memory. During REM sleep there is an increase in blood flow to certain areas of the brain. These areas include the areas that process visual stimuli, and information from our senses. This may explain the vivid nature of the dreams we often experience. Blood flow to the prefrontal cortex which governs our ability to evaluate and analyze experience remains decreased during REM sleep. This could explain why when we're dreaming we accept the most bizarre dream content.

Sleep Cycling

Through the rest of the night you continue to cycle through stages II, III and IV of unconscious sleep, then back into dreaming with Rapid Eye Movement three to four more times. With each cycle of sleep, as you move into deeper sleep your brain releases surges of human growth hormone to restore and repair my body. This is followed by more dreaming, helping your brain to integrate your recent experiences into memory and knowledge.

Preparing For Daytime Activity

As the light of the dawn begins to reveal that morning is approaching, your brain stops producing as much melatonin. But how is that possible? After all your eyes are closed.

Researchers have found that the brain responds to light on the skin. When researchers shined light on the back of the knee of volunteers they were able to measure significant changes in the circadian rhythm of the brain. That is the light stimulated changes in our brains biological clock.(2)

Numerous other hormonal changes occur in early morning hours before we awaken. One of the key shifts is the rise in cortisol. The brain begins to signal the pituitary gland which in turn instructs the adrenal glands to release cortisol.

Cortisol mobilizes our energy stores and raises blood sugar. This increased supply of blood sugar is the fuel our brain, our internal organs and our muscles need to get us going when we wake up.

The Main Cause of Insomnia Today Is...Stress

While there are many causes of insomnia, high levels of stress hormones in the brain is the most common.

Of all causes of insomnia, stress is the most common. This fact is supported by research and by sleep experts.

Consider what Dr. Meir Kryger, a former president of the American Academy of Sleep Medicine has to say about the connection between stress and sleep:



"One of the big causes of insomnia is stress. Right now in the United States, there is a lot of stress for various reasons: the election, the war in Iraq, the economy. People are watching the news constantly, and most of it is bad.(1)"

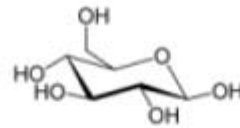
When you are experiencing lots of stress, the level of stress hormones in your body rises. Researchers find that higher levels of stress hormones cause insomnia(2). Stress related insomnia is more common than any other type of sleeplessness.

With stress, several organs secrete hormones. It is really a sequence of hormone releases, one signaling the other. First the brain signals the pituitary gland (the body's master gland). The pituitary in turn signals the adrenal glands.

The adrenal glands are the body's "stress glands".

One of the major adrenal stress hormones is cortisol.

Release of cortisol stimulates a rise in blood sugar (glucose). During stress it is the body's wisdom to increase blood sugar levels so that there is more fuel for the brain and the muscles. That way you can think better and act quickly.



Teaspoon of sugar and glucose molecule

Cortisol also wakes up the brain. If cortisol levels are high

because of constant feelings of stress, your brain resists sleeping at night.

This is experienced as difficulty getting to sleep or waking up at night and not being able to get back to sleep.

Both stress and insomnia are "silent killers".

We often hear how stress is bad for our health. Stress wears the body down. Chronic stress has been implicated in most major diseases of our day. Heart disease, high blood pressure, strokes, cancer and even chronic infections (from depleted immune function) are just a few.

"75% of diseases prevalent in western society today are... related to the stress mechanisms of the body"(3).

The ill effect of insomnia on our health is not so well appreciated. Yet researchers have recently sounded the alarm.

Sleep is a time of rejuvenation for the mind and emotions and a time of self repair for the body. During the night all body systems except the brain slow down. During deep sleep the brain secretes human growth hormone. Human growth hormone has been called the fountain of youth by some. It stimulates self repair.

By lessening the amount of deep sleep that we get each night, insomnia decreases the overall secretion of human growth hormone. The result is deterioration in our health.

The level of stress hormones in your body can be reduced by managing your stress. This will help you to get better sleep.

One key tool is herbs that have been shown to protect the body from chronic stress. These herbs are called adaptogenic herbs because they help the body to “adapt” to stress. Some well known adaptogenic herbs are ginseng and licorice root.

Another way to help restore normal cortisol levels and the normal rhythmic cycle of cortisol is through your diet.

Research shows insomnia is caused by stress.

Often, folk wisdom understands what science later proves. In the case of insomnia, one folk remedy is to drink a warm glass of milk with honey. This has a calming effect, helping us to let go of the day's stress and nod off to sleep. Researchers have found that when blood sugar rises (after eating something sweet), the amino acid tryptophan enters the brain more readily. Once in the brain, tryptophan is converted to the neurotransmitter serotonin. Serotonin is sometimes called the “tranquilizing” neurotransmitter for its calming effect. Serotonin's calming effect helps one to relax for sleep.



Serotonin is in turn converted by the brain, into melatonin—the brain's neurotransmitter that signals sleep. So we have gone from eating something

sweet at bedtime, to more serotonin and then more melatonin in the brain. We now know how our warm glass of milk and honey helps us to get to sleep.

Researchers continue to confirm that the most common form of insomnia, referred to as primary insomnia, is stress related. Let's look at some of the research that bears this out.

Study #1: Corticotropin-releasing hormone impairs sleep.

A study conducted at the Max Planck Institute of Psychiatry in Munich, Germany showed a reciprocal relationship between "growth hormone-releasing hormone (GHRH) and sleep-impairing corticotropin-releasing hormone (CRH)".

Growth hormone-releasing hormone is a hormone that is secreted in the brain to signal the pituitary gland to release growth hormone. Growth hormone is normally secreted during Stage 4 deep sleep.

Corticotropin-releasing hormone is another hormone that is released in the brain in response to stress. It signals the pituitary gland to release ACTH (adrenocortical stimulating hormone) which in turn stimulates the adrenal cortex to release its stress hormones. Predominant among the stress hormones secreted is cortisol. Cortisol is an arousal hormone, increasing our state of arousal.

The electroencephalogram was used to measure the brain waves of animals and humans in sleep. At the same time the levels of the above mentioned hormones and other brain chemicals were measured.

The ratio between stress promoting CRH and growth hormone stimulating GHRH was shown to be important with regard to sleep patterns. A higher proportion of CRH is associated with insomnia or poor sleep.(1)

Study #2: Corticotropin-releasing hormone inhibits deep sleep.

"Growth hormone (GH)-releasing hormone (GHRH) stimulates GH and slow wave sleep (SWS) and inhibits cortisol, whereas corticotropin-releasing hormone (CRH) exerts opposite effects."(2)



This study was also done at the Max Planck Institute of Psychiatry and revealed similar findings to the one mentioned above. Subjects were injected with GHRH or CRH, changing the ratio of these hormones in the brain.

Injecting the stress related brain hormone CRH inhibited deep sleep. Injecting GHRH (growth hormone-releasing hormone) promoted deep sleep (slow wave sleep). Raising GHRH in proportion to CRH also inhibited cortisol secretion.

Study #3: Lower than normal morning cortisol is associated with primary insomnia.

Disruption of the normal rhythmic day-night cycle of the stress hormone cortisol also causes insomnia. Normally the body's secretion of cortisol rises in the morning. The corresponding rise in blood sugar provides cells the fuel they need to get you going at the beginning of the day.

"Cortisol after awakening was significantly decreased in primary insomnia. Salivary cortisol at the time of awakening correlated negatively with the subjective estimation of sleep quality, i.e. a low salivary cortisol level directly after awakening correlated with a higher frequency of nightly awakenings."(3)

This study measured the level of cortisol in subjects upon waking in the morning. 14 of the subjects had a history of primary insomnia whereas another 15 subjects had healthy sleep.

The subjects with a history of insomnia had significantly lower cortisol upon rising in the morning than those with normal sleep. This suggests that disruption of the diurnal cortisol rhythm (regulated by the hypothalamic-pituitary-adrenal axis) is causal to primary insomnia.

Study #4: The difference between night owls and early birds found in the levels of cortisol.

"The present data support the idea that morning relative to evening chronotypes might show higher cortisol levels in the first hour after awakening. In sum, individual chronotype should be acknowledged as one further possible source of interindividual variability in the cortisol rise after awakening."(4)

In this study subjects natural sleep patterns were assessed by Horne and Ostberg's Owl-and-Lark-Questionnaire. Owl's like to stay up late whereas larks go to bed early and wake up early.

A "chronotype" is someone who by this questionnaire is distinctly either a morning or late night person. 112 healthy, active young men were tested and of these 9 were clearly identified as morning chronotypes and 29 as evening chronotypes.

The cortisol levels of the 38 individuals identified as either larks or owls were measured in the morning upon awaking. The morning chronotypes had significantly higher levels of cortisol upon waking.

This supports the contention that the normal spike of cortisol in the morning serves as an arousal mechanism. It concurs with other research which shows that disruption of the normal cortisol rhythm is associated with disruptions of the normal sleep pattern.

Study #5: Insomnia associated with an overall increase of stress hormones. (5)

Whenever we experience stress the brain signals the pituitary gland to release a hormone—ACTH. ACTH is released into the bloodstream and upon reaching the adrenal glands, signals them to release stress hormones (including cortisol).

The following study found that insomnia is due to “hyperarousal” of the central nervous system by the stress hormones ACTH and cortisol.

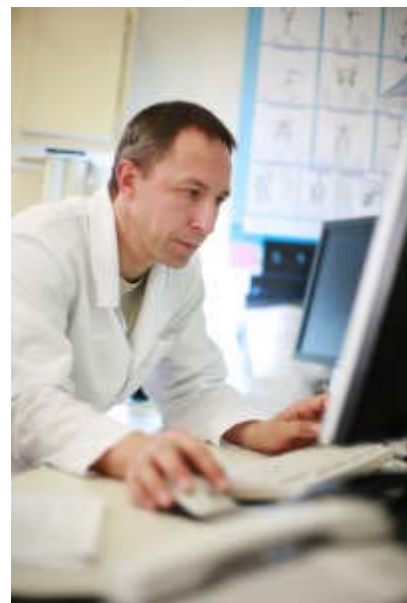
“We conclude that insomnia is associated with an overall increase of ACTH and cortisol secretion, which, however, retains a normal circadian pattern. These findings are consistent with a disorder of central nervous system hyperarousal rather than one of sleep loss, which is usually associated with no change or decrease in cortisol secretion or a circadian disturbance. Chronic activation of the hypothalamic-pituitary-adrenal axis in insomnia suggests that insomniacs are at risk not only for mental disorders, i.e. chronic anxiety and depression, but also for significant medical morbidity associated with such activation.”(5)

This study compared the levels of two stress hormones in insomniacs versus persons with healthy sleep. The two hormones, ACTH and cortisol are secreted in response to stress and are a part of the body’s overall stress response. They cause hyperarousal of the nervous system.

Levels of ACTH and cortisol were measured in eleven young insomniacs and thirteen healthy sleepers. Levels of ACTH and cortisol were significantly higher in all of the insomniacs.

The authors of the study conclude “activation of the hypothalamic-pituitary-adrenal axis leads to arousal and sleeplessness in animals and humans”. Said simply, stress causes insomnia.

The authors go on to say that insomniacs have increased risk not only for mental disorders (chronic anxiety and depression) but also other medical problems associated with chronic stress. This is why stress is called the silent killer.



Study #6: There are higher levels of the stress hormone cortisol during the night, in patients with insomnia. (6)

The higher the blood cortisol levels in patients, the more often they awakened at night.

“We found increased evening and nocturnal plasma cortisol concentrations in patients with primary insomnia. Considering that both ageing and psychiatric disorders are commonly associated with sleep disturbances, our results implicate that elevated cortisol concentrations are a rather unspecific feature of disturbed sleep. Furthermore, our data revealed a strong positive correlation between evening cortisol secretion and the number of nocturnal awakenings in both insomniac patients and controls. Since nocturnal exposure to increased HPA activity promotes sleep fragmentation even in healthy controls, increased evening cortisol levels may be a crucial factor in inducing and maintaining sleep disturbances. We therefore propose a model of HPA dysregulation in insomnia. This model is based on the arousal theory of insomnia and the strong correlation between evening cortisol secretion and sleep fragmentation as a pathophysiological mechanism of a vicious cycle of insomnia.”(6)

These researchers found that higher levels of cortisol in the evening and at night in patients with insomnia. They found that higher levels of cortisol (stress hormones) in the body were associated with waking up more frequently at night.

They propose that insomnia is a result of nervous system arousal by the hypothalamic-pituitary-adrenal axis (stress response system of the body).

Study #7: Severe chronic insomnia is associated with higher cortisol levels. (7)

This study evaluated the level of the stress hormone cortisol in seven male insomniacs and healthy sleepers during the evening and at night. The study found that cortisol levels in the men with insomnia were significantly higher.

“Recent research provides evidence for an interaction between sleep and the activation of the hypothalamic-pituitary-adrenal (HPA)-axis, but detailed studies in patients are still missing. We investigated hourly evening and nocturnal plasma cortisol secretion and sleep in seven male patients with severe chronic primary insomnia and age- and gender-matched controls. Evening and nocturnal cortisol levels were significantly increased in patients. Evening cortisol correlated with the number of nocturnal awakenings in patients and controls.”(7)

The level of their cortisol during the evening hours was correlated to (predicted) the number of times they awakened at night.

Study #8: Night time noise disrupts cortisol and sleep.

In this study subjects were subjected to low frequency noise (LFN) designed to reproduce the effect of being subjected to traffic noise while sleeping. Levels of cortisol (stress hormone) were measured each morning after either a quiet night or a night of traffic noise (LFN).

“This study thus showed that night time exposure to LFN may affect the cortisol response upon wake up and that lower cortisol levels after awakening were associated with subjective reports of lower sleep quality and mood.”(8)

It was found that subjects took longer to fall asleep when exposed to traffic noise. On the nights that subjects were subjected to traffic noise, in addition to having higher measured cortisol, they reported in the morning that they didn't sleep as well and were in a poorer mood.

The study underscores the benefit of good sleep hygiene which includes a quiet sleep environment.

Study #9: Hypothalamic-pituitary-adrenal system plays important role in insomnia. (9)

Here is another study in which researchers confirm the connection between stress and insomnia.

“The hypothalamic-pituitary-adrenal (HPA) axis plays important roles in maintaining alertness and modulating sleep. Dysfunction of this axis at any level (CRH receptor, glucocorticoid receptor, or mineralocorticoid receptor) can disrupt sleep.”(9)

These authors investigate the role of stress in two sleep disorders, primary insomnia and sleep apnea. They particularly investigate the role of CRH (corticotrophin-releasing hormone) in arousal (awakening) and insomnia.

They state that disruption of the body's stress system (hypothalamic-pituitary-adrenal or HPA axis) plays a role in primary insomnia and sleep apnea. They state that this disruption involves hyperactivation of the body's stress system.

Our Body's Natural Daily Energy Cycle (and how stress affects it)

The body has evolved an energy cycle that is in sync with the light-dark cycle of day and night. During the day our hormones shift to provide us energy for day time activities. Hormones also help to keep us more awake or aroused during daylight hours.

At night hormones shift again to facilitate slowing down, resting and sleeping. One of the primary hormones involved is the stress hormone cortisol.

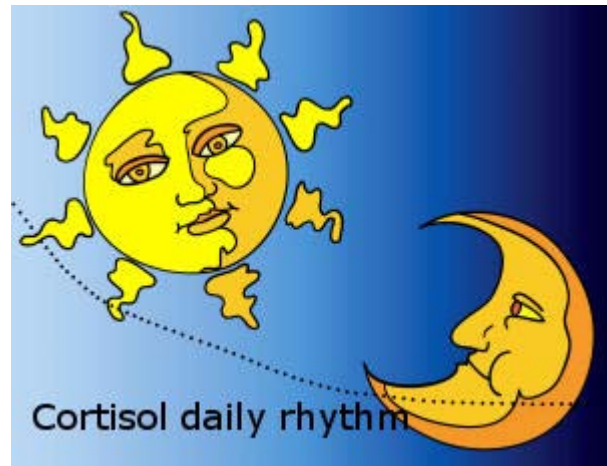
This rhythm of cortisol serves our energy needs. When we start the day and need energy cortisol is high. At night when we would normally be resting or sleeping, cortisol levels are low.

In the early morning hours (from 5 AM to 7 AM) the brain signals the adrenal glands to release cortisol. Cortisol levels rise, signaling the body to convert stored fuel into sugar. And blood sugar rises as a result.

The early morning rise of cortisol stimulates the release of fuel so that the cells have the energy supplies they need to function.

Normally, cortisol secretion surges to a peak at dawn...then drops through the rest of the day and during the night.

Remember that cortisol raises blood sugar levels to provide more fuel for all of the cells of the body, but particularly the brain and muscles (including the heart).



After a long night's sleep you haven't eaten (in most cases) for 10-12 hours. During the day eating every 4-5 hours provides fuel. Food is digested and provides protein, fat and carbohydrate which is burned immediately or stored.

At night during sleep our fuel needs are much less. Cellular activity of most organs slows down dramatically. But still, after a long night's sleep (with no fuel coming in from food) blood sugar tends to drop.

Muscle cells need energy to contract and move your limbs as you get out of bed. Brain cells need energy to think as you begin to plan your day. Stomach,

pancreas and intestinal cells need energy to digest your breakfast. Liver cells need energy to process digested food streaming in from the intestines.

In its wisdom, the brain stimulates cortisol release to its highest peak early in the morning. Through the rest of the day cortisol levels drop. During the evening and at night cortisol drops to its lowest levels.



Imagine yourself as a car. The adrenal glands and cortisol are your accelerator. When you step on the gas pedal you send more fuel to your engine (in this case the millions of cells in your body).

In the morning and through the day you keep your foot on the gas pedal to keep moving. At night you take your foot off the gas so that you can slow down and park (sleep).

If you are under lots of stress your cortisol levels are higher than normal. This is like having your foot on the gas pedal night and day. At night your adrenal (stress) glands are telling your body to “WAKE UP”. The adrenals are sounding a constant alarm.

Other parts of you are saying “TIME TO SLEEP”. At night time, in response to darkness, the brain also releases melatonin. Melatonin brings on sleep.

High stress hormone levels cause a tug of war at night. Cortisol says stay awake and melatonin says go to sleep. The result is poor sleep. Going back to the car analogy--at night, when you want to turn off your engine you can't.



How often have you heard “I’ve got to have my coffee to get going in the morning.”

Coffee (caffeine) stimulates secretion of cortisol by the adrenal glands. Needing coffee in the morning to get going is a sign that the adrenal glands are overworked. They are not able to produce an adequate surge of cortisol in the morning to mobilize fuel reserves when needed.

What is stress?

Stress is unique to each of us. Yet the stress experience is one we can all relate to and which has shared qualities.

Stress is the tension that we feel within us whenever we feel threatened. When we see something outside of us that is threatening, we tense up in reaction.

Imagine yourself as a spring. When everything is going well and you feel safe and secure, your spring is relaxed. But if something unexpected happens that weren't counting on, you react by tensing up your spring. This creates a tense feeling within.

A tense reaction occurs both in our mind and in our emotions. In our mind where we observe what is happening, we interpret what we see as threatening. Our perception of a threat triggers an emotional reaction. The emotion that we often feel is fear.

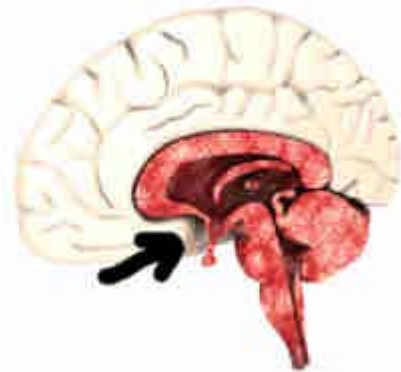
But it doesn't stop there. The emotional reaction initiates an alarm reaction in our body. This alarm reaction within our physical body is programmed in. Whenever we experience anything stressful, our body runs the same program.

Our body's physical responses to stress are often referred to by researchers as the "stress response".

The body's stress response.

The stress response—our body's programmed response to any experience of a threat—starts in the brain. Within the brain is an area called the hypothalamus. The hypothalamus controls all of the body functions that we are not aware of. Things like blood pressure, heart rate, blood flow, secretion of stomach acids, kidney filtration of urine, liver secretion of bile, back ground muscle tension, and so forth.

When we perceive something threatening and react, our brain (hypothalamus) goes into action. It's alarm spreads throughout our body in two ways. One is directly through the nervous system and the other is through hormones secreted into the blood stream.



The hypothalamus
above the pituitary
gland.

The hypothalamus stimulates nerves throughout the body that rev things up. These nerves stimulate the heart to beat faster and blood vessels to constrict. As a result blood pressure rises and blood circulates through the body faster. Blood is routed away from the digestive organs and to the muscles.

Why? When we experience feelings of stress we are telling our body that we are in danger. Our body reacts in a logical way. It immediately mobilizes its resources. It knows that we are going to have to fight off the threat or run like the dickens to escape. For this we need our muscles to be tense and ready to act. Our muscles need to be well fueled with oxygen and sugar from the blood. All blood that can be spared is routed to the muscles and the brain. This way we'll be able to think and move quickly in the face of the danger.

The hypothalamus also signals the alarm to the master gland of the body, the pituitary. The pituitary spreads the alarm through the blood.

It secretes a hormone (ACTH) which travels in seconds to the stress glands of the body—the adrenal glands.

The body's accelerator - the adrenal glands.

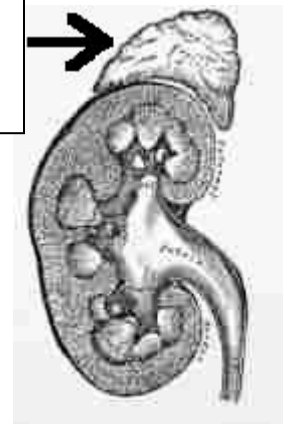
The stress alarm tells the adrenal glands to rev up production of its hormones. Cortisol is a key stress hormone. When secreted from the adrenals it raises blood sugar so that the muscles and brain have the fuel that they need.

If we undergo stress for long periods of time the adrenal glands begin to show the effects of chronic overwork. At first the daily rhythm of the adrenal glands is thrown off. This often results in highs and lows of energy during the day and at night. If depleted further, the adrenals no longer secrete sufficient amounts of key hormones when they are needed. The resulting adrenal exhaustion can result in chronic fatigue.

Increased levels of cortisol from the adrenals help reduce inflammation in case we are injured. If we are injured, we want to control the pain and inflammation. This way, even though we're injured we can still focus on what is important—handling the threat. We don't want to be distracted by pain while we are still in danger.

All of our reactions—from our perception of danger, to our emotional reactions, to our body's physical changes, are parts of the stress response. Psychologists focus on our perceptions and feelings in relation to stress and on learning to cope with stress. Doctors and biologists focus on the physical changes which occur during the

The adrenal glands sit on top of the kidneys.



stress response. Beyond a doubt, researchers have demonstrated that chronic stress causes deterioration of health.

Traditional medicine recognizes the ill effects of chronic stress and its contribution to many diseases. Yet traditional medicine has done little to develop ways to combat stress. Tools to alleviate the impact of stress are found more in alternative medicine.

More often than not we suppress our stressful feelings. Often when we are experiencing stress we are unaware of it. Modern stresses are quite different from those that our body was designed to deal with. Yet our body's programmed response to perceived threats is the same whether we see a lion who wants to eat us or hear that we may lose our job. In either case our pre-programmed stress response revs us up to either fight or run.

In olden times we ran like the dickens from the lion, and if we escaped we heaved a huge sigh of relief and relaxed up in a tree. Now-a-days we may have the threat of losing our job hanging over our head for months or years. What's worse is we often feel that we can't do anything about it. It may have nothing to do with our job performance—something that we can control. It may be due to the economy, or the whim of the company president, etc. In the latter case we remain under constant stress for weeks, months or years.

The realities of modern stress.

Modern day stress is chronic. It is with us day in and day out. This type of stress takes its toll on our physical health. Stress is often referred to as the silent killer. We may or may not be aware of how our stress is impacting our health. But the negative effects of stress on our health can be severe.

Of all our organs, the first casualty of stress is usually the adrenal glands. Under the demands of chronic stress, the ability of the adrenal glands to respond can gradually decline. This is referred to as adrenal fatigue or adrenal exhaustion by clinicians.

I have seen many patients who are obviously under stress. Yet when asked many of them say that they don't have much stress. Since we can't change something that we aren't aware of, it is often helpful to see what the common symptoms of stress are.

The symptoms of stress are signs of deterioration of adrenal function.

Some common symptoms of stress are anxiety, fatigue, depression and insomnia. The connection between stress, anxiety, fatigue depression and

insomnia arises from the complex interactions of hormone systems in the body and brain.

With ongoing stress the function of our stress organs (brain, pituitary, adrenal glands, etc.) frequently deteriorates. This wearing down of our system is seen mostly in the adrenal glands. Their secretion of the necessary stress hormones declines and we feel the effects through symptoms such as fatigue.

As the deterioration of our adrenal function progresses symptoms such as fatigue, which use to be an occasional thing, become more frequent. The severity can also increase. Whereas we used to feel tired only on occasion, now we are tired every single day.

The breakdown of the body's stress system can be evaluated clinically by doctors. The health of your stress response system can be tested through laboratory tests which measure the levels of hormones being secreted by the adrenal glands.



Healthy Adrenal Function versus Exhaustion

This gentleman's adrenal glands are working hard to keep him climbing

When our body is challenged by a sudden stress such as an aerobic work out or weight training, our adrenal glands give us the surge of energy that allows our muscles to contract strongly.

Adrenal hormones have stimulated his heart to beat faster to move blood faster. The hormones have routed blood away from the digestive tract and other internal organs so that most blood goes to the brain and the muscles. They raise blood sugar so that the muscles and brain have plenty of fuel to handle this stressful situation--climbing the wall.

Adrenal hormones also route blood and fuel to the brain to allow critical thinking in stressful situations.



When the “stress” is an intellectual challenge—like needing to take an hour long examination, adrenal hormones raise our blood sugar so that the brain has the fuel it needs to function optimally.

The “stress” can also be an emotional. Whenever we experience intense emotions, our body also experiences stress. If you are angry, your muscles tighten, your heart beats faster and your blood pressure goes up. These body reactions are produced largely by the adrenal hormones.

The First Wave of the Adrenal Response -- Adrenalin

There are two parts of the adrenal gland—the medulla or inner part and the cortex or outer part. These two parts of the adrenal glands both react to stress, but in different ways.



The inner part of the adrenal gland secretes adrenaline and noradrenaline, hormones which help you mobilize for immediate action. These two hormones act quickly to increase the flow of oxygen and glucose to the muscles and brain, increase heart rate, blood pressure and muscle tension.

They also direct blood away from the digestive tract and skin. (This is why you don't feel hungry when you're under stress, and why some people turn very pale when stressed).

These adrenal hormones also suppress the immune system. Why do you think you are more likely to get sick when you are stressed?

The short term adrenal response allows you to get out of harms way. You may have to run from a mugger or fight off an attacking lion. The surge of adrenaline makes it possible.

I remember reading of a mother who lifted the front end of a car off the ground to free their infant pinned under the front wheel. This is the work of adrenaline. Climbing the face of a wall straight up would be another adrenaline feat. Wall climbing is a modern version of tree climbing, something you had to be good at in prehistoric times to get away from bears and other meat eaters.

Football coaches are skilled at stimulating adrenaline before the game with their pep talks. Can you imagine a football coach leading his team through a calming yoga session before the game? Winning players have a lot of adrenaline pumping through their arteries.

The Second Wave of the Adrenal Response — Cortisol

Another wave of adrenal hormones is secreted by the outer part of the adrenal gland. These are longer acting than adrenaline and noradrenaline. They help the body deal with the demands of ongoing stress.



They also help us to recover from acute stress. Running and escaping from a tiger takes its toll on us (even if the tiger doesn't catch us). After the stressful event, our body must replenish and repair itself. This recovery is also orchestrated by adrenal hormones.

Two of the major hormones secreted from the adrenal gland (cortex or outer part) are cortisol and DHEA.

Cortisol regulates energy storage in the body. When secreted by the adrenal glands, cortisol raises blood sugar, making energy available to cells of the body. If that tiger chasing us is persistent and won't give up, we're going to need an ongoing supply of fuel (blood sugar) to keep running.

A drop in blood sugar is a crisis for the body. Over night we may go ten to twelve hours without eating. As a result our blood sugar can drop too low. An alert is sounded by the brain which signals the adrenal glands to raise cortisol levels. The elevated cortisol raises blood sugar and averts the crisis.

This "alarm" reaction in the brain may also cause us to awaken from sleep. One of the causes of awakening from sleep in the middle of the night is hypoglycemia or a tendency to have low blood sugar.

Cortisol levels normally rise upon waking in the morning, helping to mobilize our energy stores after our long night's fast. Outside of the stress response, cortisol secretion rises and falls in a 24-hour rhythm. In an unstressed state, cortisol secretion is highest in the morning upon waking and declines through the rest of the day and night. Cortisol levels are lowest in the early hours of the morning.

But cortisol does more than regulate blood sugar in the body. Because of this, the disruption of cortisol levels (due to stress) affects many body functions. DHEA is another primary hormone secreted by the adrenal cortex. It has been called the "mother of all hormones" because it serves as a building block for the many other hormones secreted by the adrenal cortex (pregnenalone, estrogens, progesterone, testosterone, aldosterone).

In chronic stress the body maintains levels of cortisol at the expense of DHEA. This is called the “cortisol steal”. Cortisol steals resources at the expense of DHEA. This is the first stage of measurable dysfunction of adrenal gland function in adrenal fatigue—a drop in DHEA levels.

What Is Adrenal Exhaustion?

Adrenal fatigue and eventually exhaustion is extremely common. It is a result of acute and/or chronic stress which beats the body down until we are unable to recover from it. In these stressful times (2009), it makes sense that many people are experiencing a weakening of their body’s stress response.



In my clinical experience chronic stress and the resultant weakening of the body’s stress response it is one of the top three causes of fatigue. Others are poor nutrition and the build up of toxins in the body.

What is meant by adrenal exhaustion? It means less than optimal function of the adrenal glands.

We depend on our adrenal glands to give us acceleration. Think of it as pushing your foot down on the gas pedal when you want power. When our adrenal glands are fatigued we don’t have the power we want when we need it. Adrenal fatigue is not hard to identify once you know what to look for. If you get up in the morning feeling tired, if you need a cup of coffee in the morning to get going, if your energy sags in the mid afternoon, if you’re exhausted after work and then get a second wind in the evening—these are all typical of adrenal fatigue.

The symptoms of stress and the symptoms of adrenal fatigue are almost inseparable. If your adrenal glands are working well, your body responds adequately to the many varieties of stressful events that you experience. Your system revs up to handle the stress and then relaxes.

Stress is only a problem when the adrenal glands lose the ability to respond to it adequately. When your adrenal glands become depleted you begin to experience stress symptoms.

If you aren't full of energy and feeling a zest for life, it is probable that you suffer from some degree of adrenal fatigue.

If adrenal fatigue is such a common cause of fatigue and insomnia, why don't medical doctors treat it?

The trouble is that often when people present to their medical doctor at this stage, the doctor doesn't know to consider adrenal fatigue. He or she usually runs standard blood tests which check for anemia or immune system irregularities (altered white cell counts).



These blood tests are generally "normal" and the doctor tells you that everything is fine. He may say something like "There's nothing wrong with you" or "You're getting old" or "Maybe you're depressed". Much adrenal fatigue is misdiagnosed as depression.

If your adrenal hormones are checked through standard medical testing, patients with adrenal fatigue will often still come back "normal". Why? Because modern medicine looks only for diseases. By definition a disease is a serious (often life threatening) condition.

From a medical standpoint, adrenal hormones must be extremely low to the point of being life threatening, for a treatable condition to exist.

When the adrenal glands fail to function completely, it is termed Addison's disease. Short of failing completely adrenal function can be so low that it disrupts the function of other organ systems. In this case medicine calls the condition "adrenal insufficiency". Both Addison's disease and "adrenal insufficiency" are diseases(1) that are typically not caused by stress.

Adrenal fatigue and adrenal exhaustion are not life threatening, but they are life debilitating. They cripple people's enjoyment and productivity in life.

Modern medicine usually has no treatment for vague symptoms like fatigue, malaise, low energy, irritability. etc.

Medicine is generally not concerned with feeling good, having energy or being able to function optimally in your life. Medicine searches for a disease and if it doesn't find one, by definition you're healthy.

When speaking of adrenal fatigue or exhaustion we refer to the low function of the adrenal glands that frequently occurs in the absence of a recognized disease.

Test Yourself For Stress Symptoms and Adrenal Fatigue

You may ask “How much stress do you have?” Do I have "stress symptoms"?

Most people understate their stress level. We may not even know that we are stressed. We often don't make the connection between what ails us and stress. This is why stress is often called the "silent killer".



Here is a list of common stress related symptoms.*

For each issue or complaint, rate yourself on a scale from “0” to “3”. Give yourself a “0” if the item doesn't pertain to you. Give yourself a “1” if the item occurs occasionally or is a slight problem in your life. Give yourself a “2” if the item occurs frequently or is a definite problem in your life. Give yourself a “3” if the item occurs constantly or is a serious problem in your life.

- Frequent headaches
- Neck aches, chronic back pain
- Light headedness, faintness
- Frequent blushing, sweating
- Cold, sweaty hands or feet
- Dry mouth, problems swallowing
- Frequent colds and other infections
- Addictive behaviors such as smoking, alcohol
- Impulsive behaviors—shopping, gambling
- Weight gain and emotional eating
- Light headedness, faintness or dizziness
- Rashes, itches and hives
- Frequent allergies
- Nervous habits such as foot tapping, and fidgeting
- Over reacting to situations
- Frequent auto accidents or other injuries
- Decreased efficiency or productivity at work
- Light headedness, faintness or dizziness
- Heartburn, stomach cramping or nausea
- Belching or flatulence (passing gas)

- Constipation and diarrhea
- Having to urinate frequently
- Frequent sighing or difficulty breathing
- Chest pain and/or palpitations
- Panic attacks
- Jaw (TMJ) pain, gritting or grinding your teeth
- Insomnia
- Difficulty concentrating, thoughts racing
- Difficulty learning new information, skills and tasks
- Forgetting things frequently, or often being confused
- Having a hard time making decisions
- Feeling overwhelmed and hopeless
- Crying frequently without resolution of the problem
- Having suicidal thoughts
- Feelings of loneliness and low self esteem
- Being irritable or on edge
- Being worried or anxious
- Getting angry or frustrated
- Feeling that others are hostile or judgmental
- Lack of sexual desire
- Problems with sexual performance
- Difficulty communicating and not feeling understood
- Feeling tired and fatigued
- Frequent use of over-the-counter drugs
- Feeling depressed or down
- Feeling emotional or having mood swings

If you scored 0-10 you have a low level of stress.

If you scored 11-30 you have a moderate level of stress.

If you scored 31 or above you are experiencing severe stress.

*While stress can be the cause of or contribute to any or all of the foregoing complaints, some of the above can also be due to serious medical conditions. It is always advisable to rule out serious illness by seeing a medical doctor.

The secret to natural stress relief -- a two pronged approach.

#1 Through the body.

The first of the natural stress release approaches is through the body, which chemically registers the stresses we feel.

Stress is experienced in your mind and your emotions and the result is evidenced in your body. Chemicals secreted when you experience stress affect your whole system. Their impact continues day and night when stress is ongoing.

You may have heard the phrase “Stress is a silent killer”. The chemicals secreted during stress are meant to help us deal with the stressful event. But when the stress is ongoing, as it is for most of us during these stressful times, these chemicals wear our system out.

The result can be illnesses such as heart disease, immune depletion and chronic infections, allergies, fatigue, exhaustion, weight gain, and more.



Herbs for stress

A powerful way to neutralize the impact that stress has on our system is found in a group of herbs called adaptogens. Various authors have defined adaptogens in slightly different ways.

Wikipedia defines adaptogens as natural substances that help increase the body's resistance to stress, trauma, anxiety and fatigue.¹

The author's of “Herbs of Choice” define an adaptogen as “an agent that increases resistance to physical, chemical, and biological stress and builds up general vitality, including the physical and mental capacity for work”.²



Adaptogens include ginseng, ashwaganda, licorice root, schizandra and rhodiola. Ginseng is shown in the picture.

Adaptogenic herbs reduce the impact of stress on the body. They are non-toxic (have no ill effects), yet help to balance or normalize the body's physiology. When a body system is weakened from stress, adaptogens strengthen it. When a body system is over active as a result of stress, adaptogens tone it down.¹

Adaptogens also help insomnia

The most common cause of insomnia is stress. Higher levels of stress related hormones such as cortisol (released from the adrenal glands), ACTH (released from the pituitary) and CRH (released in the brain) are associated with insomnia.

Adaptogens buffer the stress response and reduce the body's release of stress related hormones. Adaptogenic herbs both reduce the impact of stress on the body and relieve insomnia by lowering the level of these stress hormones.

Taking adaptogenic herbs to reduce stress and sedating sleep herbs to induce sleep can be a very effective combination remedy for insomnia.

#2 Through the mind.

The second of the natural stress release approaches is through the mind and emotions.

The easiest way to fight stress is to not get stressed out. Remember, stress is based on perception. What stresses you out may not even bother someone else, or maybe not as much. And vice versa.

So the crux of stress relief is to first, recognize that you are stressed. And second do something about it.

What to do is often confusing for people. When asked how to manage stress, the common response is something along the line of "relax", "let go", "stop dwelling on it".

This approach to stress is very effective. Your mind is perhaps the greatest leverage point for stress relief. The hosts of this website have a lifetime of experience in mind-body techniques. However, teaching mind-body techniques is not the focus of this page.



(We do suggest that you seek out a mind-body technique, one appropriate for you. If you would like some suggestions, please contact us through the contact us button on this site.)

Natural Stress Relief Through Adaptogenic Herbs

Adaptogens help us to maintain health and vitality in spite of stress. They help buffer the negative impact of stress. By normalizing levels of stress hormones they also relieve stress related insomnia.

Many of the adaptogenic herbs are well researched and/or have a history of long use in traditional medicine systems. Some of the best known and most researched are ginseng, ashwaganda, licorice root, schizandra and rhodiola.

Ginseng is the king of adaptogens.

Ginseng is perhaps the best known of all adaptogenic herbs, having been used in Chinese medicine for over 2000 years. Chinese medicine holds that ginseng energizes the five yin organs (heart, lungs, liver, spleen and kidneys). While ginseng has gained a lot of exposure in the western world, the public has barely begun to appreciate its health benefits.

As an adaptogen, ginseng helps the body better cope with stress. Through the body-mind connection, adaptogens such as ginseng also relieve the mental and emotional impact of stress.

“The Book of Ginseng” summarizes the broad benefits of ginseng as an adaptogen: “Siberian and Asiatic ginseng enable the body to fight stress without suffering the degenerative effects that usually occur when the body’s response to stress is prolonged.”¹

How does this increased resistance to the “degenerative effects” of stress translate into human experience? Research studies show that ginseng provides...



- Relief of fatigue
- Increased physical performance
- Increased cognitive function
- Improved immunity
- Increased feeling of general well being
- And many more health benefits

The different types of “Ginseng”.

In Chinese “gin-seng” can be translated as “containing much nourishment” (shen) “to man” (ren). Asian, Chinese, Korean and Oriental ginseng all refer to Panax ginseng, the true ginseng of Chinese medicine. Panax ginseng naturally grows in China, Korea, eastern Russia and Japan. A cousin of panax ginseng grows naturally in the United States and is thus called American ginseng (Panax quinquefolium). Chinese and American ginseng have many similar but also unique health benefits. In the mid 1900’s Russian scientists familiar with the many health benefits of panax ginseng, began looking for an alternate form of the adaptogen because of its scarcity. They discovered another root that grows naturally in some provinces of Siberia, Eleutherococcus senticosus. It is often referred to as Siberian ginseng because it is also an adaptogen with tremendous health benefits, and it grows in Siberia.



Relief of fatigue and enhanced performance.

Numerous experiments in both animals and humans have shown that the ginsengs reduce feelings of fatigue and enhance physical and mental performance.

A major study illustrating this fact involved 501 male and female volunteers. The goal of the study was to assess the benefit of ginseng in coping with the stress of living in a large city. The volunteers were randomly divided into two groups. The first was given a multiple vitamin and ginseng (40 mg daily), the second just the multiple vitamin. The volunteers quality of life was assessed monthly with a questionnaire that queried the following issues: sleep, sex life, energy levels, depression, personal satisfaction, pain and perceived well being. The ginseng/multiple vitamin group showed a significant improvement in quality of life while the multiple vitamin only group showed only slight improvement.²

Another study of 232 patients who complained of suffering fatigue, supplemented them with 40 mg of ginseng extract plus a multiple vitamin taken over a 42 day period. The reported result was significant relief of their complaints of fatigue.³

One such study evaluated mental fatigue in 27 healthy young adults who performed a battery of “cognitive demand” tests (repetitive arithmetic and rapid visual information processing). Some were given ginseng and others were not. The researchers concluded that ginseng “enhanced performance of a mental arithmetic task” and decreased “subjective feelings of mental fatigue”.⁴

In another study “commonly used therapies for unexplained chronic fatigue” were investigated with regard to their benefit. More than half of 18 subjects reported that ginseng was helpful in alleviating fatigue. The doses and types of ginseng were not reported.⁵

Ginseng even works for mice.

This mouse successfully eluded the cat and later attributed his escape to having found a cache of ginseng in the house three weeks previously. The mouse said, “I was really enjoying that ginseng every day, but I had no idea it would save my life”.

While the above is a joke, you can read below about how the physical stamina of mice is improved by ginseng.

Researchers evaluated the ability of mice to perform during a “forced swim” after being given or denied ginseng. They concluded “In the fatigue stress of forced swim test, ginseng treatment provided effective adaptation to fatigue and increased endurance in both male and female mice.”⁶



Fatigue is a frequent complaint in the elderly, so much so that they often need help in accomplishing tasks associated with daily life. This lack of energy is also reflected in their tendency to isolate themselves socially. The benefit of Siberian ginseng was studied in the elderly and was found to be effective, “safely” improving “mental health and social functioning” after four weeks of treatment.⁷

Researchers in Iowa ran an ad for volunteers suffering fatigue. They found additional candidates in a support group for chronic fatigue syndrome. The

volunteers were divided into two groups, one group receiving Siberian ginseng, the other a placebo. In those receiving ginseng, fatigue “was substantially reduced”.⁸

The German Commission E is a governmental regulatory agency composed of scientists, toxicologists, physicians and pharmacists. It has evaluated the usefulness of 300 herbs by reviewing relevant scientific and clinical studies. The commission has approved ginseng “As tonic for invigoration and fortification in times of fatigue and debility, for declining capacity for work and concentration, also during convalescence.”⁹

Another group of 35 clinical studies measured physical and mental performance at work under stressful conditions. This study of 2100 healthy subjects found that supplementation with Siberian ginseng improved performance and diminished the incidence of illness.¹⁰

Many other health benefits of the ginsengs.

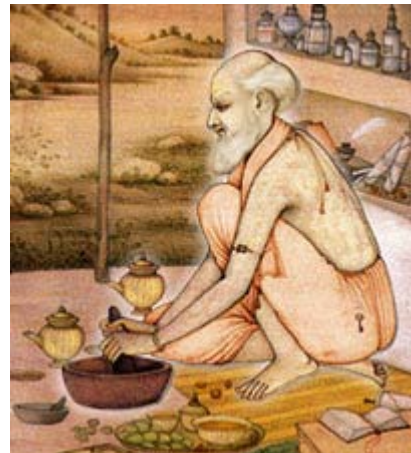
A recent search on “ginseng” at Pub Med, a free online search engine of for scientific and medical research studies, found 3564 studies either on or referencing ginseng.¹¹ There are many additional health benefits reported for the ginsengs.



In a review article of the health benefits of Chinese (panax) ginseng in the journal American Family Physician, the authors stated that ginsenosides (a component of ginseng) “...have been shown to have a variety of beneficial effects, including anti-inflammatory, antioxidant, and anticancer effects. Results of clinical research studies demonstrate that Panax ginseng may improve psychological function, immune function, and conditions associated with diabetes.”¹²

Ashwagandha, the Ayurvedic adaptogen in use for over 3000 years.

The ancient medical system of India, Ayurveda has known the value of ashwagandha root for over three thousand of years.¹ In Ayurveda it is known as an adaptogen or vitalizer.² The ancients knew that adaptogens protect the body from stress. Modern scientists continue to document this and many other health benefits of ashwagandha.



Ashwagandha is a small shrub (*Withania somnifera*) native to India, Africa and the Mediterranean area. Only the root is used therapeutically. The plant is sometimes referred to as winter cherry because it produces a bright red fruit which ripens in the fall. Because it is an adaptogen like ginseng, it has also been called Indian ginseng.

Chemical compounds discovered in the root protect against stress.

Many therapeutically beneficial chemical compounds have been identified in the roots of ashwagandha. One class of compounds are the withanolides.



An important subclass of the withanolides are the steroidal lactones. These molecules help regulate and balance important steroid hormone functions associated with stress. The primary organ in the body which responds to stress, the adrenal cortex, secretes steroid hormones such as cortisol, DHEA, aldosterone, testosterone, estrogen, progesterone, etc.

Other compounds within ashwagandha root have been documented for their health benefit as well. Since the focus of this page is stress relief, these additional health benefits are not expanded on here. See the bottom of this page for a list of these.

Researchers are fond of assessing physical endurance to stress by forcing mice to swim. How long they can swim before exhaustion—before they sink—reflects how well their body's hold up to the physical stress of swimming.

Study #1: Ashwagandha almost triples the swimming time for mice.

Mice were given ashwagandha, ginseng or nothing for seven days, and forced to swim as long as they could on the eighth day. Mice given ashwagandha swam 474.1 minutes on average, those given ginseng swam 536.6 minutes on average, while the mice given nothing swam 163.3 minutes. The ashwagandha and ginseng increased swimming time by a factor of 2.9 and 3.3, respectively.³

Study #2: Mice double their swim time after an injection of ashwagandha extract.

Before a swimming test, some mice were injected with an ashwagandha extract while others were not. Those who received the ashwagandha doubled their swim time.⁴



Study #3: Adrenal glands protected against impact of stress.

In humans and animals one effect of prolonged stress is enlargement of the adrenal glands and depletion of vitamin C within the adrenals. (Vitamin C is essential to adrenal function). In this experiment mice given ashwagandha before a swim test prevented adrenal enlargement and vitamin C depletion of mice adrenal glands.⁴

Study #4: Ashwagandha relieves anxiety and depression as well as prescriptive drugs.

In another animal study, ashwagandha was compared with two pharmaceutical drugs commonly prescribed for the treatment of anxiety and depression. Mice were given ashwagandha, lorazepam or imipramine for five days before they were stressed in a forced swim. Mice given ashwagandha or lorazepam both showed a decrease in brain chemicals associated with anxiety. Ashwagandha was also comparable to imipramine in its relieving behavioral markers of depression in the



stressed mice.⁵ Several other studies support the conclusion that ashwagandha is an effective antistress adaptogen. 6-9

Many other health benefits attributed to ashwagandha root.

Researchers have also found that ashwagandha is also beneficial in the following ways:

- Anti-Aging. Healthy 50-59 year olds showed “significant improvement” in blood, hair and stature. SED rate and sexual performance also improved.⁴
- Immune boosting. Increase in white cells responsible for killing tumor cells and infected body cells.¹⁰
- Enhanced total white cell count. White cell count increased favorably in mice. Also inhibited delayed hypersensitivities (delayed sensitivity reactions) while increasing activity level of macrophages (beneficial white cells).¹¹
- Anti-inflammatory properties. Numerous animal studies have demonstrated the anti-inflammatory capacity of ashwagandha.¹¹⁻¹³ In one study of paw swelling in rats, the anti-inflammatory effect of ashwagandha was greater than that of hydrocortisone.¹⁴
- Favorably stimulates thyroid activity. Mice given ashwagandha root extract had significantly increased levels of important thyroid hormones T3 and T4. The ashwagandha mice had much higher levels of superoxide dismutase, a key protective antioxidant.

As an adaptogen and more, licorice root benefits many body systems.

The root of the licorice plant has been used in the Chinese and Ayurvedic medicine, and in Europe and Arabia for thousands of years. In America it was used by the Sioux Indians to relieve pain.

One of many components of licorice root is glycyrrhizin. Glycyrrhizin gives licorice root its sweetness, being much sweeter than sugar. The unique flavor of licorice root comes from another sweet tasting compound called anethole. Anethole also gives other herbs such as anise and fennel their licorice-like taste.

Licorice root is consumed throughout Europe and Asia in the form of candies, drinks, teas and in China as a flavoring for food. In Egypt it is the major ingredient in a popular drink called “erk-soos”.¹

In natural medicine liquid extracts of the root or powdered root are used. Chemical components of licorice root have been shown to have steroid like anti-inflammatory action, to protect the liver, to be strongly anti-viral, to protect against cancer, and to heal peptic ulcers.

Glycyrrhizin is major active ingredient in licorice root that supports adrenal function.

In Ayurvedic, Chinese and natural medicine, licorice root is considered to be an adaptogen. Adaptogens are natural products which help the body “adapt” to the demands of stress.

A major component of licorice root is glycyrrhizin or glycyrrhizic acid. When consumed glycyrrhizic acid is transformed



by bacteria in the gut into a related compound, glycyrrhetic acid.

Glycyrrhetic acid has a structure similar to the body's own steroid hormones which are secreted by the adrenal glands. In the body glycyrrhetic acid (a metabolite of glycyrrhizin) has been shown to bind with "mineralocorticoid and glucocorticoid receptors".² These are the same receptors that hormones such as aldosterone and cortisol normally bind, and through which licorice root helps regulate body functions.

Licorice root is anti-inflammatory.

Licorice root has been used in traditional medicine systems around the world for the treatment of gastric ulcers, bronchial asthma and inflammation.³ Researchers have shown that several chemicals in licorice root, called Licochalcone's have the ability to inhibit a key player in inflammatory processes.



This kingpin of the inflammatory process is called NF-kappaB. It is a protein that regulates when and how our cells read information in the cells genetic material or DNA. NF-kappaB initiates a signal process that results in more inflammation.

After investigating the mechanism of the anti-inflammatory benefits of components of licorice root, researchers concluded that "the anti-inflammatory effect of Glycyrrhiza inflata [licorice root] is ascribable to the potent inhibition of NF-kappaB".³

Other benefits of licorice root.

Many other health benefits are attributed to licorice root. Researchers have found that Glycyrrhizin and glycyrrhizic acid inhibit the growth and infection of many viruses including hepatitis A, (4) and C, (5-6) herpes zoster,(7) HIV, (8-9) herpes simplex, (10-11) and CMV (12).

Clinical studies in Japan have also shown that Glycyrrhizin is beneficial in the treatment of Hepatitis C. Researchers find that Glycyrrhizin lowers several liver enzymes (ALT, AST, GGT) that are markers of liver damage.(5-6,13-14)

Numerous additional research studies demonstrate the benefits of the compounds within licorice root as an antioxidant and for healing of peptic ulcers, eczema and many more.

Schisandra berries were suited for royalty in ancient China.

For centuries the berries of a shrub found in the far east (China, Siberia, North Korea, Japan) have been valued as a tonic that invigorates the Qi (vital energy) of five key organs—the liver, heart, spleen, lung and kidneys. Schisandra chinensis (magnolia vine) is the woody vine that produces these wonderful berries.



Schisandra (also spelled Schizandra) berries are an adaptogen. They protect the body and help it to adapt to stress and achieve internal balance (or homeostasis). In traditional Chinese medicine it is revered for its ability to prolong youth, increase stamina, and prevent fatigue.

“Good scientific evidence has been documented in trials in which Schisandra chinensis... increased endurance and mental performance in patients with mild fatigue and weakness.”¹

Schisandra increases energy and relieves fatigue. At the same time it can function as a sedative, calming the nervous system in the face of stress. This is where it reveals itself as a true adaptogen—it restores internal balance (homeostasis) depending on what is needed at the time.

Researchers find that this dual action of schisandra stems from its favorable effect on our body’s stress system. “The beneficial stress-protective effect of adaptogens is related to regulation of homeostasis via several mechanisms of action associated with the hypothalamic-pituitary-adrenal axis.”¹

Would you like to be subjected to “experimental chronic psychological stress, navigation [stress] and strenuous exercise”? This is what researchers did to rats. Researchers divided the rats into groups, giving only some of the rats Schizandra. The Schizandra supplemented rats had lowered levels of corticosterone (a stress hormone) and blood glucose. These are favorable results demonstrating the adaptogenic character of Schizandra. They also found that Schizandra “protect[s] the structure of the adrenal cortex”, our body’s major stress organ.²

Another group of researchers gave mice a combination of three adaptogenic herbs (Eleutherococcus senticosus, Schisandra chinensis and Rhodiola rosea) before forcing them to swim “to exhaustion”³ They concluded that the

“adaptogens ...increase tolerance to stress (in our model combination of physical and emotional stresses).”³

Other reported benefits of Schisandra include

detoxification...

Researchers found that schisandra promotes detoxification within our body in such a way that it could protect against cancer of the liver and the entire body.⁴ In a study with mice they found that chemical components of schisandra called lignans increased what is called Phase II detoxification. They state that “the upregulation of phase II detoxification genes is believed to play an important role in cancer prevention.”⁴

hair growth...

An extract of Schisandra nigra, another member of the Schisandra family was found to stimulate hair growth in rats. The researchers concluded “These results suggest that S. nigra extract has the potential to promote hair growth via down regulation of TGF-beta2 and the proliferation of dermal papilla.”⁵

antioxidant protection...

In Japan the term “mibyuu” means “sub-healthy condition” and is considered “the critical target for disease prevention including age-related diseases and cancer although the Mibyou condition is not yet pathologically defined.”⁶ An underlying cause of “sub-healthy condition” and of aging is oxidative stress. Oxidative stress results in slow progressive damage to our cells and is thought to be the primary mechanism by which we age. In experiments the blood flow to the brains of mice was temporarily restricted. Normally this would cause severe oxidative stress in the brain and damage to brain tissue. When the mice were given a combination of Panax ginseng, Ophiopogon japonicus and Schisandra chinensis (“a traditional herbal medicine formula having a long history of use as a remedy and clinical prescription to treat coronal heart diseases”⁶) the oxidative stress was prevented.⁶

and more...

Research studies have also demonstrated that the lignans found in Schisandra stimulate osteoblasts (the cells that build bone) and suggest that it may be helpful against osteoporosis.⁷ Schisandra has been valued by the Chinese for its enhancement of sexual stamina. It is well known that hypertension is a common cause of male sexual dysfunction. Researchers found that when hypertensive

male rats were given Schisandra, that it “enhances intracavernous pressure and NO-cGMP activity in penile tissues of SHR male rats.”⁸ This translates to greater engorgement of the penis.

and more...

Schizandra “gained recognition as an adaptogen in the official medicine of the USSR in the early 1960s, principally as a result of the large number of pharmacological and clinical studies carried out by Russian scientists in the preceding two decades.”⁹

“The phytoadaptogen exerts an effect on the central nervous, sympathetic, endocrine, immune, respiratory, cardiovascular, gastrointestinal systems, on the development of experimental atherosclerosis, on blood sugar and acid-base balance, and on uterus myotonic activity. Studies on isolated organs, tissues, cells and enzymes have revealed that Schizandra preparations exhibit strong antioxidant activities and affect smooth muscles, arachidonic acid release, biosynthesis of leukotriene B(4) in leukocytes, platelet activating factor activity, carbohydrate-phosphorus metabolism, the formation of heat shock protein and polyamines, tissue respiration and oxygen consumption, and the tolerance of an organism to oxygen intoxication. In healthy subjects, Schizandra increases endurance and accuracy of movement, mental performance and working capacity, and generates alterations in the basal levels of nitric oxide and cortisol in blood and saliva with subsequent effects on the blood cells, vessels and CNS. Numerous clinical trials have demonstrated the efficiency of Schizandra in asthenia, neuralgic and psychiatric (neurosis, psychogenic depression, asthenodepressive states, schizophrenia and alcoholism) disorders, in impaired visual function, hypotension and cardiotoxic disorders, in epidemic waves of influenza, in chronic sinusitis, otitis, neuritis and otosclerosis, in pneumonia, radioprotection of the fetoplacental system of pregnant women, allergic dermatitis, acute gastrointestinal diseases, gastric hyper- and hypo-secretion, chronic gastritis, stomach and duodenal ulcers, wound healing and trophic ulcers.”⁹

The action of Rhodiola is unique among adaptogens for stress relief.

Rhodiola is a unique adaptogen with a different mechanism of action than some other adaptogens such as ginseng, eleuthero and ashwagandha.



Research suggests that rhodiola favorably influences levels of key neurotransmitters within the central nervous system, including serotonin, dopamine and norepinephrine in the cerebral cortex, brain stem and hypothalamus.¹

Rhodiola has also been shown to reduce the level of key stress hormones found in the heart during stress.² These stress hormones, called catecholamines are released by the adrenal glands during stress and travel to different organs as part of the stress response.

They are sometimes referred to as “fight of flight” hormones.³ Their job is to rev our body up during stress so that we can fight back against or flee the danger. (The trouble is that in modern times where stress is ongoing, the stress hormones released can cause damage to our organs.

Rhodiola helps prevent physical and mental deterioration when under chronic stress.

Authors of the book **Arctic Root (Rhodiola rosea): The Powerful New Ginseng Alternative** declare rhodiola useful for all of the following conditions when they are the result of “intense physical or intellectual strain, influenza and other viral exposures, and other illness.”⁴:

- Sleep disturbances
- Fatigue
- Decline in work performance
- Poor appetite
- Irritability
- Hypertension
- Headaches

Rhodiola relieves fatigue and improves mental performance in physicians.

In this experiment on the possible benefits of a rhodiola rosea extract 56 male and female physicians on night duty (ages 24-35) were given either rhodiola or a placebo. Their mental performance after two weeks was evaluated using a variety of tests (speed of visual and auditory perception, attention capacity, short term memory). Each of their scores on all of the tests were compiled to create an overall “fatigue index” score. The group receiving rhodiola had significantly lower fatigue index scores.⁵



Rhodiola helps medical students get a better grade.

In another study male medical students were given rhodiola during one of their exam periods. Compared to students who did not receive rhodiola, those who did showed significantly improved physical fitness, psychomotor function (physical coordination), mental performance and general well being.

The medical students who took rhodiola also had less mental fatigue, had improved sleep patterns, less need for sleep, more stable moods and greater motivation to study.

Finally, the medical students who took the rhodiola scored better on their exams. Those who took rhodiola averaged 3.47 while those who did not averaged 3.20.⁶

Natural sleep aids found to be effective remedies for insomnia

Natural sleep aids like valerian root, passion flower, jujube seed, L-theanine, melatonin, hops, L-tryptophan and 5-HTP are effective alternatives to prescriptive sleep medications. Sleep remedies that combine a number of these natural products and that use quality ingredients are particularly effective.

The value of natural sleep aids is especially apparent when considering the side effects of sleep drugs.

Why take natural sleep remedies instead of drugs?

Natural insomnia remedies “are less likely to have the drawbacks of conventional drugs”.¹

Previously unreported side effects of prescriptive sleep medications are now coming to light.

Side effects among prescriptive drugs vary depending on the drug. Side effects of benzodiazepines include anterograde amnesia [memory loss] and daytime drowsiness.² Side

effects of tricyclic antidepressants and antihistamines include urinary retention, dry mouth, constipation, cardiac toxicity, orthostatic hypotension [low blood pressure which can cause dizziness, weakness] and sexual dysfunction.³

Since March 2007 the FDA has required a stronger warning of the risks of prescriptive sleep drugs: “severe allergic reaction, severe facial swelling, complex sleep-related behaviors, memory lapses, and hallucinations. Sleep behaviors may include sleep-driving, driving while not fully awake after ingestion of a sedative-hypnotic product, with no memory of the event”.⁴



Sleeping pills depress the central nervous system.

The various classes of drugs used to treat insomnia generally act to depress the central nervous system. Anxiety drugs have a similar action to sleep drugs, and in fact many of the drugs that are used to treat insomnia are also used for anxiety. The only difference is the strength of the dose, with higher doses used for insomnia.

These different chemical agents used in sleeping pills go by a variety of names: sedatives, hypnotics, soporifics, antianxiety agents, anxiolytics, calmatives and tranquilizers. "All of these terms are more or less synonymous, although, as noted, the degree of response obtained is dose-dependent."¹

The primary action of most sleeping pills is on a neurotransmitter in the brain called GABA. "GABA is the major inhibitory neurotransmitter in the CNS [central nervous system]".¹

While the specific mode of action of the different classes of sleep drugs is different, the end result is often the same--depression of the brain and central nervous system via the action of GABA.

For example, the "benzodiazepines, an important chemical group of drugs for treating anxiety and insomnia, potentiate GABAergic neurotransmission at all levels of the CNS."¹ Some benzodiazepines are Librium and Valium.²

Barbituates "also facilitate the actions of GABA".¹ Luminal, Mebaral and Phenobarbital are among the barbituates.³

The imidazopyridine's are another class of sleep drugs developed more recently. Like the benzodiazepines, they potentiate the action of GABA by binding GABA receptors at the same sites as do the benzodiazepines. Drugs in this class include Ambien, Edluar, Damixan, Hypnogen, Ivedal and Nytamel.⁴

Another class of sleep drugs are the eszopiclone's, which also act on the same receptors as do the benzodiazepines. These are receptors for the neurotransmitter GABA. The drug Lunesta is an eszopiclone.⁵



The FDA has recently required the manufacturers of many prescriptive sleep medications to warn more strongly of the potentially dangerous side effects of these drugs.

Types of natural sleep remedies

The different natural remedies for sleep have different actions in the body and on the brain.

Herbs such as passion flower, valerian root, hops and jujube seed have a sedating effect. As mild sedatives, they allow one to relax and fall asleep more easily.

Melatonin is a hormone that is normally secreted by the pineal gland in the brain in response to darkness. For more information on the daily sleep cycle, [click here](#).

L-tryptophan and 5-HTP are amino acids that feed a series of chemical reactions in the body and brain, resulting in increased production of serotonin and melatonin. When taken as a nutritional supplement they force feed the body's production of these brain neurotransmitters.

Serotonin is referred to as the body's tranquilizing neurotransmitter, and melatonin the body's sleep hormone.

Deficiencies of calcium, magnesium and the B vitamins may be associated with insomnia. Calcium and magnesium are essential for muscle relaxation. Chromium (a component of the insulin molecule) deficiency may cause unstable blood sugar during the night, which can in turn cause one to wake during the night.

Don't forget sleep hygiene

Healthy sleep also depends on good sleep hygiene. Good sleep habits include:

- Sleep in a dark room
- Keep it cool (65-70 degrees F)
- Be regular. That is, get to bed at the same time every night. Before 11 PM is best.
- Reserve the bedroom for sleeping. Don't watch television in bed.



- Exercise daily (another stress reliever).
- Eliminate caffeine and sugar from your diet as much as possible. Both of these raise stress hormones in the body.
- Don't smoke. Smoker's are more likely to have insomnia.

Valerian root is for calming nerves and sleep.

Valerian root has been used as a natural remedy for nervousness and anxiety since the time of ancient Rome. Its medicinal benefits have also been confirmed by modern scientific research.

Valerian root was mentioned by Pliny the Elder (ancient Rome) as a cure for nervousness, while other Greek and Roman physicians used it to cure insomnia and to treat coughs and asthma.¹ "Valerian officinalis [has] enjoyed a considerable reputation as an anxiolytic agent [anti-anxiety] and sleep aid for more than 1,000 years".²

The calming effects of valerian was appreciated by European soldiers and civilians during World War I, who used it to treat "overwrought nerves" attributed to artillery shelling. ³

Valerian was part of the United States Pharmacopeia until 1942, and part of the National Formulary until 1950. It is still part of many official pharmacopeias in Europe today, and is widely used there as a sedative.

How valerian works.

The benefits of valerian root have been documented over and over again. It relieves anxiety and insomnia both.



“A number of clinical investigations have demonstrated the sedative effect of valerian and its effectiveness as an anxiolytic [relieves anxiety] and mild hypnotic [induces sleep] in the treatment of insomnia.”⁴

In 1966 a group of chemicals called valepotriates were isolated from valerian and later found, like modern sleep drugs, to have a depressive effect on the central nervous system. In later animal research with these compounds, these findings were thrown into doubt. As yet, the exact mechanism by which valerian helps induce sleep is not known. It is thought that the “site for valerian action may be the same or near the barbiturate recognition site” and that valerian potentiates the neurotransmitter GABA, as do the barbiturates.⁵ GABA has also been found in the valerian plant. But it is unlikely that this GABA is responsible for valerian root’s sleep enhancing abilities. GABA absorbed into the blood stream from the gut is not likely to pass through the blood-brain barrier which protects the brain.⁸



Benefits of Valerian.

Valerian benefits a number of aspects of sleep, called sleep parameters. These sleep parameters are used by researchers to assess the overall quality of someone’s sleep. Some of the sleep parameters that are improved with valerian are:

- Decrease in sleep latency: how long it takes to get to sleep after turning out the lights. Valerian shortens the time it takes to get to sleep.
- Final wake time after sleep: what time you finally wake up after going to bed. This is a measure of how long you sleep from lights out to finally getting up in the morning. Valerian increases how long you sleep.
- Frequency of waking: how many times you wake up during the night. Valerian decreases the number of times you wake up during the night.

□ Nighttime motor activity: how restless you are during sleep. Valerian has muscle relaxing effects and decreases movement in bed at night.

□ Quality of sleep: how normal is your sleep structure or your pattern of sleep? Do you go through all of the cycles of sleep normally? Valerian increases the quality of sleep.^{6, 9-11}

Another author summarizes this way: “Valerian extracts are an excellent option in the treatment of sleep disorders.”¹⁵

Valerian was approved by the German Commission E as a calmativ and sleep-promoting agent, finding it “useful in the treatment of unrest and anxiety-produced sleep disturbances.”⁷



Sleep studies with valerian...

Study #1 found valerian as effective as a prescriptive sleep aide, but without the side effects.

In this study 80 healthy volunteers were divided into four groups and given one of four sleep aides before bed: 1) a valerian-hops combination 2) a valerian syrup 3) the sleep drug flunitrazepam (a benzodiazepine derivative) or 4) a placebo. All three of the groups that received an actual sleep medication reported an improvement in the quality of their sleep compared to the placebo group. Upon waking the following morning however, the valerian only and valerian-hops groups were more alert, more active and feeling better. Reported side effects for the valerian groups was 10% compared to 50% in the sleep drug flunitrazepam group.¹²

Study #2 found that valerian helped subjects to get to sleep faster and significantly improved the quality of sleep.

128 subjects were randomly given one of three medicines on nine different nights: 1) valerian extract 2) a valerian-hops combination or 3) placebo. Each night the subjects did not know which of the above they received. Their sleep was observed and their subjective experience measured with questionnaires each morning. The results showed that valerian significantly decreased how long it took to get to sleep and improved the quality of sleep.¹⁰

Study #3 found that in subjects with a history of sleep problems, 89% reported better sleep after taking valerian.

27 subjects with a history of sleep problems were given one of two herbal combinations on consecutive nights: 1) a combination of valerian (400 mg), hops (375 mg) and lemon balm (160 mg) or 2) a combination of hops (375 mg) and lemon balm (160 mg) with a trace amount of valerian (4 mg). Only the first combination had enough valerian to show its effect. Subjects did not know which of the two combinations they were taking on each of two consecutive nights, but received one the first night and the other the second night. They reported their sleep experience the following morning. The participants reported better results with the product that had more than a trace amount of valerian.¹⁴

Does valerian have side effects?

One of the most common complaints of those taking sleep aides is a groggy feeling the next morning.

One author comments “notable is the fact that valerian does not cause morning-after impairment of function”.

Study #1 above showed that those who took valerian felt more alert, more active and feeling better the next morning, compared to those who took the sleep drug.

Overall, valerian has been shown to have the benefits of prescriptive sleep medications with virtually no side effects. According to researchers, “valerian, by itself or in combination with other compounds, has sedative effects comparable to those seen with benzodiazepines but with fewer side effects.^{10, 12, 13}

Some sleep medications disrupt the stages of sleep, but valerian does not. As described above, valerian has been shown to increase sleep quality.

Passion flower for relief of anxiety and calming of nerves.

Like passion flower, most prescriptive sleep medications available today work in some way to increase the action of GABA in the brain. By increasing the action of GABA, they have a sedating effect on the central nervous system.

Research suggests that compounds within of the Passion flower act on the



same brain neuron receptors as a type of sleep medication. The flowers, leaves and stems of the *Passiflora incarnate* contain a group of compounds called flavanoids, and specifically a chemical called chrysin.

A group of sleep drugs called benzodiazepines, are also known to act on a brain nerve cell receptor site called the GABA(A) receptor. GABA is a neurotransmitter in the brain that inhibits (suppresses or slows down) brain activity.

Researchers concluded that “the anxiolytic [anti-anxiety] effect of chrysin, ...could be linked to an activation of the GABA(A) receptor unit.”¹

Sedating drugs and herbs are helpful in relieving anxiety and promoting sleep.

A long history of use in North America and Europe.

A survey conducted in Britain in 1986 found that Passion flower was the most popular herbal sedative in use. This was based on the number of times it was included in an herbal formula.²



Passion flower is often combined with other herbs as part of sleep remedies and for relief of anxiety.

This is how it was used traditionally in South America, where it is found naturally. In the 1700's when Spaniard explorers discovered it, the flower reminded them of the passion of Christ. It is now widely used in Europe. The German Commission E, a governmentally mandated evaluation of herbal medicines, recommends passion flower to treat nervous restlessness and exhaustion.

Some Passion flower research findings.

Study #1: Revved up rats get better sleep with Passion flower.

In this study rats were revved up (my words) with injections of either amphetamine or barbiturate. They were then given extracts of Passion flower or kava kava, or a combination of the two. In all cases the herbs calmed down the rat's “hypermotility” (excessive movement) and increased their sleep time.³

Study #2: Passion flower extract does not interfere with memory and learning in mice (unlike not affected by.

This experiment with mice compared the effect of Passion flower extract and diazepam (Valium) on learning in mice. Diazepam is a benzodiazepine class drug used as an anti-anxiety medication. One of the side effects of diazepam is that it can interfere with learning and memory. Passion flower extract did not disrupt learning and memory as did diazepam.⁴



Study #3: Passion flower shown to be effective for treatment of general anxiety disorder.

These researchers compared Passion flower with the drug oxazepam. Oxazepam “is a benzodiazepine used extensively since the 1960s for the treatment of anxiety and insomnia”.⁵ Many benzodiazepine class drugs are used to treat insomnia.

The scientists found that “Passiflora extract is an effective drug for the management of generalized anxiety disorder”.⁶ But the scientists favored passion flower saying “the low incidence of impairment of job performance with Passiflora extract compared to oxazepam is an advantage.”⁶

Jujube seed for mild anxiety, nervousness and insomnia.

Jujube seed “has a history of use in traditional Asian medicine for mild anxiety, nervousness and sleep-related problems”.¹ Another source claims that jujube has been cultivated and used in China for over 4000 years.⁶ Jujube seeds are from the fruit of the jujube tree which is native



to China and the Far East. The fruit and its seeds are harvested in the fall when the fruit ripens. The tree can grow to 25 feet tall.

Introducing a research study of the jujube seed, one author states that jujube “is one of the herbs widely used in Korea and China due to the CNS calming effect”.² This particular research study found that an extract of jujube seeds could prevent nerve cell damage in the presence of a toxin.²

How jujube seed works.

Researcher’s identified a chemical compound in jujube seeds which has a sedative effect, Jujuboside A. In a paper reporting their research, they state that jujuboside A “is a main component...extracted from the...[jujube seed]...which is widely used in Chinese traditional medicine for the treatment of insomnia and anxiety.”³



The same authors identified the hippocampus as a part of the brain that responded to jujube seed. Specifically, jujube seed seemed to inhibit a “Glu-mediated excitatory signal pathway in [the] hippocampus.”³

In yet another study, an extract of jujube seed was also found to influence the hippocampus of the brain. The authors of this study also identified jujube seed as “a Chinese herbal medicine, which has long been known as a sedative-hypnotic drug.”⁴

Jujube seed extracts help anxiety and insomnia.

Many prescriptive sleep medications are used to treat both anxiety and insomnia. That is to say, the same drug is used for both conditions. The only difference is the dose. Smaller doses are used to treat anxiety and



larger doses to treat insomnia.

Anti-anxiety drugs are called anxiolytic. Insomnia drugs are called sedatives (sedating). Researchers found that jujube seed extract could also be used to treat both anxiety and insomnia, depending on the dose used.⁵

Lower doses of jujube seed extract relieved anxiety in mice, while higher doses had a sedating effect, increasing sleep time in the animals.⁵

L-theanine induces an alpha state of relaxation.

Students given L-theanine report a sense of relaxation as their brains go into an alpha state.

The alpha state reflects a state of “waking relaxation with the eyes closed”.¹

The primary source of L-theanine is the *Camellia sinensis* plant, from which green, white, oolong and black tea is made. (How the leaves of this plant are processed determines which tea results). With tea being the second most consumed beverage in the world, large amounts of theanine are consumed by the world’s population. Theanine is said to give green tea its unique taste.



Once absorbed through the intestine and in the blood, L-theanine directly enters the brain (crossing the blood brain barrier). In the brain theanine has been shown to increase production of the neurotransmitters serotonin, dopamine and GABA.^{2,12}

It is in this way that it seems to induce the alpha state—a state of relaxed awareness.³



L-theanine reduces the stress response.

A study by researchers in Japan concluded that taking before and during a stressful task diminished activation of the sympathetic nervous system.⁴ This part of the nervous system revs us up (increasing heart rate and blood pressure, increasing muscle tension). The researchers required subjects to perform a “mental arithmetic task as an acute stressor”. They were given L-theanine before or during the task, or it was withheld all together. When given L-theanine the subjects heart rates were lowered and their bodies had lower levels of immune proteins associated with stress.⁴ Another study suggests that L-theanine helps to lower blood pressure.^{5,6} L-theanine was administered to two genetically unique groups of rats who were bred to develop high blood pressure spontaneously. In one of the two groups there was a significant drop in their blood pressure. Like the research above, this experiment also suggests that L-theanine favorably decreases sympathetic nervous system activity.



L-theanine's other health benefits.

Numerous other health benefits of L-theanine are documented. L-theanine seems to potentiate the effects of chemotherapeutic agents against tumors while protecting healthy cells at the same time.⁶⁻⁹

L-theanine seems to lessen the stimulating effect of caffeine. This ability of L-theanine was confirmed with brain wave studies of rats given both caffeine and L-theanine.

Energy supplements for health and vitality.

Good energy supplements use vitamins and adaptogenic herbs to support energy metabolism and reduce the impact of stress.

Think of your body as a car. In a car the fuel pump, carburetor and spark plug are all necessary for burning fuel. If any of these three were to break down, your car would grind to a halt.



Like wise, in your body there are many components of energy production. A breakdown in any of them can cause “energy problems” or fatigue.

Energy problems can occur on the cellular level and/or the organ level.

Cellular Energy Production... By cellular level I mean energy production within the cell itself. Within cells are furnaces that burn fuel to generate useful energy. The furnaces are called mitochondria. This is where fuel molecules such as glucose and fat are broken apart in the presence of oxygen, in the end forming carbon dioxide and water. In the process energy is released and captured in the energy rich chemical bonds of a molecule called ATP. Just as the dollar is the currency of the US economy, ATP is the energy currency of the cell's economy.

Energy regulation by organs and organ systems

Specific organs and whole organ systems also regulate energy functions within the body. Here are some examples...

The **pancreas** has two energy production roles. Enzymes secreted by the pancreas into the digestive tract help us to digest and absorb fuel and nutrients that we need to burn the fuel food. Insulin secreted by the pancreas into the blood stream lowers blood sugar and drives glucose into cells for burning. Insulin also stimulates the liver to convert blood glucose into fat for storage.

The **body's stress system** (brain, pituitary gland and adrenal glands) is another major player in energy control. One of the major stress hormones, cortisol is secreted by the adrenal glands in response to messages from the brain during stress. While cortisol has numerous functions in the body, a major one is to raise blood sugar. During times of stress the body needs plenty of fuel (glucose) in the blood so that the brain has fuel to think clearly and the muscles have fuel to exert themselves fully.

An example of how vitamins can affect your energy level.

One example of lowered energy production because of cellular level problems is anemia.

Anemia is a condition of lack of red blood cells or of the hemoglobin within red blood cells. Red blood cells use hemoglobin to carry oxygen to our cells. Oxygen is necessary for our cells to burn fuel. If there is a problem with red blood cells or hemoglobin carrying oxygen, a problem with fuel burning in our cells also develops down the line.

Anemia can be caused by lack of key nutrients such as iron, folic acid and vitamin B12. Without this mineral and these vitamins our body cannot make red blood cells and hemoglobin.

Deficiencies of B vitamins and minerals are common in our society in spite of our plentiful food supply. This is due to the poor nutrient quality of the foods that we eat.¹



Which vitamins will help your energy?

All vitamins are essential for health, and one of the major signs of optimal health is lots of energy or vitality. Having said that, some vitamins have specific energy related functions in the body and can be used effectively to help boost your energy. These are the vitamin B complex, vitamin C, vitamin E and vitamin A..

Vitamin B complex is for energy.

How the Vitamin B complex vitamins work.

The first vitamin most people think of when thinking of energy or stress is Vitamin B. Vitamin B is a group of vitamins that are related to each other by their function in the body and the fact that they are commonly found together in foods.

The B vitamins are an indispensable part of enzymes involved in energy production within all cells. Enzymes are molecules that facilitate chemical reactions that occur in cells. An entire group of enzymes are part of the process through which our cells burn fuel to generate useful energy.

The B vitamins are often required in combination to achieve the body's goal. A good example of this is the body's production of L-carnitine, a molecule that plays a pivotal role in burning fat for energy. L-carnitine transports fat into the cell's fuel burning furnace's, the mitochondria. Imagine an old locomotive steam engine. In order to keep the steam up, the crew had to constantly throw wood onto the fire. L-carnitine is a member of the crew, constantly throwing fat into your cells locomotive engine.



But...L-carnitine requires vitamins B3 (niacin) and B6 (pyridoxine) to manufacture L-carnitine. (Other nutrients including vitamin C are also required).¹

Niacin, Vitamin B3

Niacin (Vitamin B3), once ingested is converted by the body to niacinamide. Niacinamide functions in "carbohydrate, protein, and fat metabolisms; producing energy in the cells; the breaking down of glucose" and "the synthesis of certain steroid hormones such as estrogen, testosterone, and adrenal hormones".² Dietary sources of niacin include animal products such as liver; fruits and vegetables including avocado, dates, tomato, leafy



vegetables, broccoli, carrots, sweet potato's and asparagus; seeds such as nuts, whole grains and legumes; and in mushrooms and brewers yeast.

Pyridoxine, Vitamin B6

In the body Pyridoxine (Vitamin B6) "is essential for energy production from amino acids and "can be considered an energy-releasing vitamin"".3 When blood sugar levels drop (between meals or with fasting) the body can convert certain amino acids (protein fragments) to glucose as an alternative source of fuel. This conversion cannot occur without Vitamin B6.

Vitamin B6 is required in the body's synthesis of key neurotransmitters such as serotonin and norepinephrine, and in the production of the myelin which covers certain nerve fibers. This may be why a deficiency of B6 can cause nervousness, irritability and depression.

Dietary sources of B6 include meats, whole grain products, vegetables and nuts. Spinach, bell peppers and turnip greens are particularly high in B6, followed by garlic, tuna, mustard greens, banana, celery, cabbage, broccoli, kale, collard greens and Brussels sprouts.



Methylcobalamin, Vitamin B12

Vitamin B12 is involved in the energy production of every cell of the body. It is a part of enzymes which help to extract energy from fat and protein fuels as part of cellular energy production.11

Many older people are lacking in B12 and much of the so called dementia of old age is now understood to be a manifestation of vitamin B12 insufficiency.4-5 Lowered vitamin B12 status in the elderly is also associated with higher incidence of Alzheimer's dementia.6

In nature Vitamin B12 is synthesized by bacteria. Animals get their necessary B12 as it is secreted by bacteria living in their guts, or by consumption of other animal products. Good sources of B12 are meat, liver, shellfish, milk and milk products.

Absorption of vitamin B12 is a complicated process in the body. Cells within the stomach secrete a protein which attaches to vitamin B12 released through digestion of food. The (intrinsic factor) protein-B12 complex is then absorbed through the intestine into the body. Otherwise B12 found in food is not absorbed.

Damage to the cells in the stomach which manufacture intrinsic factor can result from an autoimmune condition or as a function of aging.



Crystalline vitamin B12 can be directly absorbed through the mucous membranes of the mouth. This fact has given rise to B12 sprays and sublingual supplements which can be effective.

Pantothenic Acid, Vitamin B5

Pantothenic Acid (Vitamin B5) forms part of Coenzyme A. Coenzyme A facilitates chemical reactions within our cells that produce energy from food macronutrients (sugars, fat and protein).

Pantothenic acid is known as the “anti-stress” vitamin.⁷ Vitamin B5, as coenzyme A is also necessary in the body’s production of steroid hormones (estrogen, progesterone, testosterone, cortisol) and of neurotransmitters such as acetylcholine (functional in memory and learning) and melatonin (functional in sleep).

Dietary sources of pantothenic acid include fish, shellfish, chicken, milk, yogurt, legumes, mushrooms, avocado, yeast, egg yolk, and broccoli. Whole grains can be a good source of pantothenic except that processing and refining grains can result in up to a 75% loss of B5.



One form of B5 is called pantethene. Research shows that pantethene seems to lower cortisol levels. Pantethine was given as a supplement to 20 human subjects who were then injected with ACTH. ACTH (adreno-cortical stimulating hormone) is the hormone secreted by the pituitary gland during stress to

stimulate the adrenal gland's release of stress hormones. Pantethene "buffered" the release of stress hormones.⁸

In the real world (the body) vitamins work together.

Studies show that a surprisingly large proportion of the population is deficient in more than one vitamin. All vitamins work in harmony to maintain health and vitality in our body.

Relying on a single B vitamin or even the complex of B vitamins by themselves as a solution for low energy is therefore a mistake. Taking a combination of vitamins assures that all possible deficiencies are taken care of. Consequently a combination of key vitamins will achieve better results than vitamin B alone.

For example, in one study researchers found that a combination of vitamin C, vitamin B1 and B6 administered intravenously improved the secretion of stress hormones and restored the normal rhythmic secretion of stress hormones.⁹

(The normal rhythmic secretion of stress hormones is necessary to get healthy sleep and to have vitality during the day. With improved and rhythmic secretion of the stress hormones, you have energy when you need it at all times.)

In this case vitamin B1 and B6 were found to work in harmony with vitamin C. Together they achieved the desired result--balance of stress hormone function.

Additional key vitamins for energy are vitamins A, B complex, C and E.

Vitamins are vital for energy because they facilitate critical chemical reactions within our body's billions of cells. Without them your body couldn't burn glucose to generate energy; couldn't build tissues such as muscles and organs; couldn't produce the neurotransmitters that enable our brains to function.



Too often we tend to focus on this or that vitamin as if just one of them is the magic bullet. However, all of the vitamins are required for energy production in the body and for health.

Because the large majority of people are deficient in one or more vitamins, I recommend taking them in combination. This way you are less likely to miss an unsuspected vitamin deficiency that is compromising your health and vitality.

Here is a brief review of some of the key vitamins with regard to their role in energy metabolism and your vitality.

Vitamin A

As do all vitamins, Vitamin A has numerous roles in the body. It is not often included among the “energy” vitamins, yet it plays a key role. Vitamin A promotes immune system function and “is imperative to



maintenance of normal cell metabolism such as

cell respiration”.¹ Cell respiration literally means cell breathing, but refers to cellular energy production using oxygen (which we breathe). Good dietary sources of vitamin A include yellow and green vegetables such as sweet potatoes, broccoli, pumpkin, spinach, turnip greens, carrots, squash; yellow fruits such as apricots and cantaloupe; and animal sources such as liver, milk, butter, cheese, and whole eggs.

Vitamin C

Vitamin C (ascorbate) is a contender for the title of “stress vitamin”. The highest concentration of vitamin C in the body is found in the adrenal glands, the body’s stress glands.



Supplementation with high levels of vitamin C has been shown to support adrenal gland function and lower high cortisol levels. ^{2, 3}

Good dietary sources of vitamin C include fruits such as oranges, kiwi, lemon,

pineapple and strawberries; and vegetables such as broccoli, green and red peppers, collard greens, brussel sprouts, cauliflower, and cabbage.

Vitamin E

Vitamin E has numerous functions in the body. It is necessary for sexual development and reproduction, and in steroid hormone production. It is “essential to the central nervous system, maintenance of mental alertness, to growth and vigor”.⁴

Good sources of Vitamin E are unrefined vegetable and seed oils (wheat germ oil), whole grains, green leafy vegetables, egg yolk, butter, nuts, sunflower seeds, rose hips, dry soybeans, poppy and sesame seeds, peanut butter, prunes, asparagus, broccoli, sweet potatoes, corn, barley, alfalfa and avocado.⁵



A review of the strategy (in a nutshell) for regaining vital energy...

1) **Restore healthy sleep** (you feel rested and refreshed each morning) with sleep promoting herbs.



2) **Reduce the impact of stress** (you feel relaxed, think clearly and have all the energy you need without coffee, etc) with adaptogenic herbs.

3) **Maintain optimal levels of the key energy related vitamins** (by supplementing your diet with a multiple).

Sub-optimal sleep and chronic stress wear down the body's energy.

Less than optimal sleep and even low levels of chronic stress are like an invisible leech sucking the body's resources, weakening the organ systems that keep our energy levels high and vital.

In the beginning only our energy suffers. We don't have the get up and go that we used to and we find ourselves reaching for sweets and stimulants to keep our energy up. Ignoring the underlying problem, our energy system deteriorates into a state of adrenal fatigue.

Now we are really dragging around, sometimes feeling depressed, having lost the joy of living.

Fortunately, no matter what stage your energy levels are at, there are good solutions. They may not be as quick as a stimulant, but you can gradually restore your body's innate health and vitality.

The solution is getting good sleep, reducing the impact of stress on your body and making sure that you are getting optimal levels of energy related vitamins.

The Vitalisom System for relief of stress, fatigue and insomnia.

Too good to be true? Three major complaints--stress, fatigue and insomnia--solved all at once. It can't be real, right? Yes it can.

As explained in this book our research at Nutraceutical Research, Inc. identified a key link between fatigue and insomnia. Knowing this link, we were able to put together two nutraceutical (vitamins, herbs and nutrients) formula's that can address all three of these complaints. What is the link?...

The link is stress. Stress is the underlying cause of most insomnia, and stress and insomnia together disrupt body functions leading to fatigue or low energy levels.

Nutraceutical Research Inc.'s Findings

Stress is the most common cause of insomnia.

Stress raises the levels of stress hormones (cortisol, CRH, ACTH). It also disrupts their normal 24-hour rhythm of secretion. One of the functions of the stress hormones is to induce a state of arousal (awakeness). Normally the level of stress hormones should be low at night. During times of excess stress, their levels are higher during the day and at night.

At night when you try to get to sleep, the stress hormone induced state of arousal prevents you from getting to sleep, and/or keeps waking you up during the night. In either case you don't get healthy, rejuvenating sleep.

Sleep is when your body normally rejuvenates and repairs itself. For instance human growth hormone (sometimes referred to as the hormonal "fountain of youth") is secreted in highest amounts during deep sleep. Less than healthy sleep prevents this nightly rejuvenation. The combination of daytime stress and night time insomnia begins a vicious cycle that takes a toll on your health.

Often clients report feeling "wired" and "tired" (fatigued) at the same time. It seems contradictory. But this is a result of the stress hormones acting in opposition to your natural sleep cycle.

At first your energy system still responds to your demands and you can get yourself in gear in the morning with a cup of coffee, some other stimulant, or by just pushing yourself.

If allowed to progress too far you can reach a stage of "burnout" or adrenal exhaustion. At this point you are fatigued day and night, with no energy resources. It feels like putting your foot on the gas pedal, but nothing happens. You have no energy.

But still (paradoxically), because of the action of stress hormones, you have difficulty sleeping, and the disruption of the sleep cycle prevents the body from rejuvenating itself. You can't get your energy back.

Nutraceutical Research, Inc. formulates a nutraceutical system to combat stress, fatigue and insomnia.

Nutraceutical Research, Inc. has devised a strategy to break this vicious cycle of stress, fatigue and insomnia.

It is a system of nutraceuticals designed to

- protect and rejuvenate the stress system
- restore healthy sleep
- revitalize energy levels

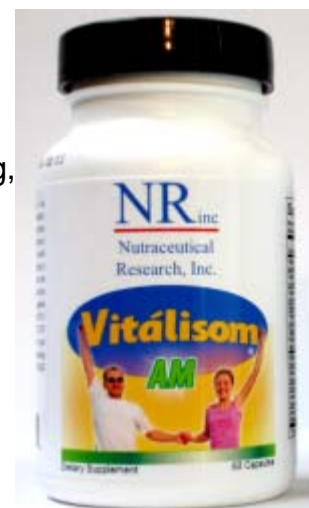
The **stress, fatigue and insomnia rejuvenating nutraceutical system** consists of two products, Vitalisom AM and Vitalisom, PM. (Vitalisom = "vital" for vitality + "som" for sleep. Or "vital energy restored through restful sleep".

Vitalisom AM

Vitalisom AM contains adaptogenic herbs and key vitamins involved in cellular energy production.

Vitalisom AM contains adaptogenic herbs (Siberian ginseng, Ashwagandha, Rhodiola, Schizandra, Licorice root) which reduce the impact of stress on the body. By easing the impact of stress on the body's physiology, they help to maintain a state of balance within the body's stress system. This balanced state supports higher levels of energy and vitality during the day and more restful sleep at night. Adaptogenic herbs have been shown to

- improve sleep
- improve sex life
- increase energy levels



- increase sense of personal satisfaction
- improve perceived sense of well being and quality of life
- and more.

In addition, Vitalisom AM contains key vitamins which are involved in cellular energy production. These are Pyridoxal 5'-Phosphate and Pyridoxine, Methylcobalamin (Vitamin B12), Pantothenic Acid, Niacin, Vitamin E, Vitamin C and Vitamin A. Why these vitamins?

- Many studies show that a large portion of the population is deficient in key vitamins
- Certain vitamins are intricately involved in cellular energy production
- Deficiency of these vitamins has a negative impact on energy metabolism within the body, reducing energy levels

Vitalisom PM

Vitalisom PM contains herbs shown to promote healthy sleep. These are Passion Flower, Valerian Root, L-Theanine and Jujube Seed Extract. These nutraceuticals have been shown to

- relieve anxiety and insomnia
- shorten the time it takes to get to sleep
- increase how long you sleep
- decrease the number of times you wake up each night
- increase the quality of sleep
- not have no side effects



The Vitalisom AM and PM System

Together, **Vitalisom AM and PM** are designed to break the positive feedback loop wherein stress hormones induce insomnia, and... insomnia induces fatigue and more stress.

For success Vitalisom AM is taken each morning with breakfast and Vitalisom PM is taken an hour before going to bed at night. They are taken consistently each morning and each night.



How not to take Vitalisom AM and PM.

- **Vitalisom AM and PM** are not drugs and should not be taken as you would a drug. For instance, don't take Vitalisom AM only on the mornings that you need a boost. Vitalisom AM does not contain stimulants and consequently won't give you the shot in the arm that caffeine does.
- **Vitalisom PM** is mildly sedating and will promote healthy sleep. It is not designed to "knock you out" the way a prescriptive sleep medication will. It is designed to return you to a cycle of healthy sleep each and every night, when taken regularly at bedtime.

To Purchase Vitalisom AM and PM...

Go to <http://natural-insomnia-remedies.com/>

About Dr. Harlan Mittag

Harlan Mittag, D.C. has spent the past 24 years in clinical practice utilizing chiropractic, nutrition and acupuncture to treat patients holistically. He graduated from Stanford University with a degree in Human Biology, and from Northwestern College of Chiropractic with his doctorate. He has explored numerous alternative healing modalities including Reiki, Reconnective Healing, Qi Gong and is an avid practitioner of the Release Technique. Harlan's other interests include travel (vacations and eco-travel), cooking, and writing.



As the stresses in our society have increased Dr. Mittag has noticed that patients' healing response is lagging. As a persistent student of clinical nutrition with a focus on the ill effects of stress, he saw the need for remedies to aid his patients under stress. He and his partner Marc Anderson, M.B.A., identified the insidious and vicious cycle of stress, fatigue and insomnia that plagues so many of us. Together they devised a combination of nutraceuticals that would address the issue and hopefully help many people to regain their energy and enjoy life more so. They formed Nutraceutical Research, Inc. as a vehicle for their work.

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