Insomnia Options; Natural Medicine Choices
by Jason Barker, ND and Chris D. Meletis, ND

Dr. Barker specializes in sports medicine and is a consultant to the exercise and nutraceutical industry, and is in private practice in Portland, Oregon www.pearlclinic.com. Dr. Meletis is an international author and educator and is in an integrated private practice at the Pearl Clinic in Portland, Oregon www.pearlclinic.com

When supplied with correct and ample amounts of nutritional factors, brain chemistry can be altered in such a way that nutritional treatments for conditions of the mind can be more easily executed. Current and past medical research contains a large amount of evidence showing the use of many different nutritional (vitamin, mineral, herb, and "nutraceutical") factors in the treatment and relief of many different disease conditions that arise in the brain. Employing the use of these factors provides another avenue of treatment for patients who either have, or are prone to developing, certain conditions of the mental/neurological systems. Already well-established knowledge, the proper nourishment of an organism provides it with the greatest chances for success in the form of optimal physiological output even in some cases of underlying genetic obstacles. Even in those with inborn predispositions to certain disease conditions, providing ample treatment in the form of nutritional factors can supply effective and supportive treatment protocols in those patients facing the greatest of odds.

The brain and its function occupy the center of the human experience. And because of the brain's influence over the entire organism, this organ is the source of mental and physical health; especially when we explore the nature of the mind being inseparable from the body. Despite this central role, the brain is of course susceptible to external events, and in times of inadequate nourishment, the brain will begin to show signs of altered function quite early in the process (at the minimum, this altered function can be seen as soon as a few hours following the last meal, manifested by irritability, fatigue and other signs of low blood sugar). Proper function of the brain varies from individual to individual, and is affected differently by variables both internal and external that determine whether a person's brain functions within acceptable norms. Brain chemistry may have different needs depending on the type of variable that may affect it, as well as the individual genetic determinations of a person.

Regardless, the fuel with which it is provided directly affects the brain's highly complex biochemistry. Health is increasingly defined today as something different than purely physiologic survival of the organism. We are at a time when specified nutritive treatment can move the organism from a state of 'survival' function to one of thriving; included in this movement is the treatment of several brain chemistry-related conditions.

Insomnia
Not technically a "disease," insomnia is a symptom of a deeper neurologic dysfunction. Included in its definition is the perception or effects of poor quality and quantity of sleep that arises from problems falling asleep, frequent awakenings and difficulty falling back asleep, and waking too early in the morning. It is thought that on average, adults sleep roughly 7.5 to 8 hours each night.1 Insomnia can be classified as transient (lasting days to weeks), intermittent (clusters of transient insomnia that occur periodically), and chronic (insomnia that occurs nightly for one month or more). Additionally, insomnia may be considered either primary, in which the symptoms are not attributable to any medical, psychiatric or environmental cause or secondary, in which a physical condition or psychological problem such as depression may be the cause. Secondary insomnia is thought to be much more common than the primary form.2

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3) Wakhraw P, Townsend Letter for Doctors & Patients, Nov. 3001: 70-74

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Insomnia

Diagnosis of insomnia can be achieved through medical and sleep history; the diary can be completed by both the patient (subjective) and the patient's bed partner (objective) regarding quality and quantity of sleep. In addition to these strategies, oftentimes more specialized forms of diagnosis are needed in the form of sleep studies to determine the probability of other sleep-related disorders such as sleep apnea (cessation of breathing while sleeping) or narcolepsy (excessive daytime sleepiness, loss of REM sleep, and transient, sleep-like states during the daytime).

Behaviors are a primary non-organic cause of insomnia; curtailment of the following can often dramatically help the person experiencing primary insomnia:
- Smoking cigarettes before bedtime
- Drinking alcohol before bedtime
- Ingesting excessive amounts of caffeine
- Excessive napping in the late afternoon or evening
- Irregular or continually disrupted sleep/wake schedules
- Expecting to have difficulty sleeping and worrying about it
- Anxiety

As insomnia is often a symptom of a deeper problem, identifying the physical or mental cause(s) is seen as the first step toward relief. Medical problems (surgical pain, asthma, etc) cause insomnia due to some form of discomfort; this is often treated with pharmaceuticals. Treatment of other insomnia causes with sleep-inducing drugs carries significant risk; medications can be addictive, have a rebound effect, and are typically only prescribed in small doses for short periods of time for the aforementioned reasons. Additionally, they are not curative.

Perhaps the most popular insomnia remedy is alcohol, which should be strongly avoided. Commonly considered to be beneficial in treating insomnia, alcohol consumption can diminish the quality of sleep by disruption of the sequence and duration of the various sleep states. Consumed close to bedtime, alcohol will decrease the time of sleep onset. However, consumption of alcohol up to 6 hours before sleep caused a perception of superficial sleep quality in test subjects, while other measures such as sleep efficiency, total sleep time, rapid eye movement sleep, and stage 1 sleep were all decreased in comparison to subjects who consumed only mineral water.3 Also, at the beginning of the test sleep episode, breath alcohol levels in those who imbibed were zero, and during the second half of sleep, wakefulness was increased by twofold in alcohol-consuming subjects. This particular study demonstrates the latent effects of alcohol consumption on sleep that occurs hours after consumption.

When alcohol is consumed prior to sleep, the sleep episode is characterized as being more fitful with increased awakening from dreams and difficulty in falling back asleep. When one continues to rely on alcohol for a bedtime sleep aid, the sleep inducing effects are decreased while its sleep disrupting effects increase.4 Seniors may be more affected by this as their ability to metabolize alcohol is less than that of a younger person and they may be susceptible to higher levels of blood and or brain alcohol levels when consuming similar amounts as a younger person. At the opposite end of the spectrum, alcohol consumption in pregnant women has been shown to cause sleep disruptions in the baby as well.5 (Babies develop sleep/wake cycles in the womb; at 6-7 months they experience REM sleep.) Additionally, measurements of the brain activity of infants whose mothers consumed at least one alcoholic drink per day during the first trimester of pregnancy showed sleep disruptions and increased arousal in comparison to infants of alcohol-abstaining mothers.6 Also, it was noted in this study that infants who were exposed to alcohol in breast milk fell asleep sooner but slept less overall than those infants not exposed to alcohol. Avoiding alcohol is important in the treatment of insomnia; use of it only compounds sleep difficulties and can lead to abuse and dependency over the long term.

Magnesium

The most abundant positively charged electrolyte in the body, magnesium is necessary for the movement of ions across cellular membranes and the transmission of nervous impulses.7 The role of magnesium in the nervous system has led to its intense study throughout the medical literature. Known for its ability to affect sleep, sleep-related neuroendocrine functions, and EEG (electroencephalogram) patterns, magnesium was utilized as a treatment for insomnia in the elderly in one study.8 The authors of this study noted that decreases in several sleep measurement indices (decreased slow wave sleep and delta and sigma wavelength power) were improved upon supplementation of magnesium. These investigators suggest that magnesium, used as a sleep aid, may affect glutaminergic and GABAergic neurotransmitter systems and can alter age-related sleep changes.

Subsequent depletion of magnesium associated with low intake is thought to disrupt normal biologic rhythms including sleep cycles. Low intake is associated with hypo- and hyperfunction of the biologic clock; hyperfunction of the biologic clock is associated with various manifestations of nervous hypoxcitability such as depression, headaches, and myalgias (fibromyalgia, chronic fatigue syndrome) while hypofunction is associated with expression of nervous hyperexcitability such as delayed sleep onset, age-related insomnia, anxiety, and migraine.9 Researchers speculate that the role of the biologic clock and magnesium are linked in a way that a certain level of magnesium is necessary for the efficient function of the pineal gland and the suprachiasmatic nuclei.10 Additionally, this research hypothesizes that magnesium may stimulate inhibitory neurotransmitter systems such as GABA and taurine and may antagonize carbon monoxide and nitric oxide, gases characterized as "neuroactive." Clinically, the authors of this paper note a beneficial effect of magnesium supplementation in the late evening hours on sleep quality; this effect is achieved with 200-300 milligrams over a period of one to two weeks of continuous supplementation. Magnesium plays an interesting role in the function of biologic rhythms; more research is needed in this area.

Vitamin B-12

Vitamin B-12 plays a role in the development of insomnia and therefore is useful in treatment as well. When used to treat sleep-wake rhythm disorders, methylcobalamin (a coenzyme form of B-12) was shown to provide a significant improvement in sleep-wake cycle measurements and in clinical symptoms associated with this...
This study reported that both high and low dose groups of B-12 supplementation exhibited improvements in sleeping patterns, although this was noted to be inconsistent. Another small study of B-12 involved using the vitamin in the treatment of patients with chronic sleep-wake disorders. One patient was a 15-year-old blind girl who had become entrained to a free running sleep-wake pattern of 25 hours (this is a common period of time that humans, when deprived of external time cues, shift their biologic rhythms toward this makes difficult the establishment of set schedules of falling asleep and waking). This patient was supplemented with 1.5 milligrams B-12 three times per day and was able to reestablish a 24-hour periodicity. This effect continued until two months after stopping the therapy when her sleep-wake patterns fell back into 25 hours. Another patient was a 55-year-old man who had fought with delayed sleep onset for nearly his entire life. After a period of supplementation with 1.5 milligrams B-12 one time per day, his sleep pattern was improved and lasted for the 6 months of followup.

In a larger scale study utilizing B-12 as a part of a treatment, 106 patients with various forms of sleep dysfunction (sleep-wake rhythm disorders, delayed sleep phase syndrome, irregular sleep-wake pattern, and prolonged sleep pattern) underwent light therapy treatment (exposing patients to light at preset times) and time therapy (entrainment to time patterns) in order to improve sleep dysfunction. These patients experienced improvements in subjective sensations of lack of adequate sleep, unpleasant feelings at waking, and daytime sleepiness. This combination of therapy was beneficial in 32% of the patients with sleep wake rhythm disorders, 42% of the patients with delayed sleep phase syndrome, 45% of those with irregular sleep wake patterns and in 67% of those with prolonged sleep patterns. B-12 as an adjunctive in sleep dysfunction appears to have some merit; ensuring adequate B-12 in the diet of a person suffering from sleep dysfunction may improve their chances of resuming more regular patterns. These limited studies demonstrate the possible utility of B-12 in various sleep disorders; it use should be considered in those with difficulty sleeping.

**Trypophan, 5-HTP, Melatonin and Serotonin**

These compounds are well-researched with proven effects on sleep dysfunctions. Used with varying effects in different circumstances, each represents a different portion of the biochemical pathways along which sleep chemistry is followed. In one sense, the use of these items constitutes a secondary approach to treating insomnia (after discerning cause, if possible, and using behavioral changes coupled with nutritional factors) as these compounds directly affect brain chemistry. Highly effective at treating insomnia and sleep dysfunction, these can be reliable treatment for many forms of insomnia.

Trypophan is not produced in the human body and is therefore required in the diet. Trypophan is a direct precursor of the neurotransmitter serotonin, and has a known sedative effect. Useful for treating insomnia, trypophan also has a good record in treating other conditions in which sleep is a problem, such as seasonal affective disorder. Trypophan is thought to induce sleep through its ability to increase serotonin levels in the brain; the most often used dose is 1 gram which has been shown to increase subjective feelings of sleepiness and decreased waking time. Serotonin itself plays multiple roles in the brain; some of these include modulation of circadian rhythms (the so-called biological clock), sleep/wake cycles, wakefulness, and behavioral states.

Derived from trypophan, 5-hydroxytryptophan is another precursor molecule to serotonin. 5-HTP has the ability to cross into the brain, thereby directly increasing serotonin synthesis. This effect has been shown to benefit not only insomnia but also conditions such as depression, fibromyalgia and binge eating. One study showed the effects of a 100-milligram dose on increasing slow-wave sleep. 5-HTP can be a useful adjunctive treatment in sleep disorders that are due in part to serotonin dysfunction.

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Insomnia

A hormone derived from serotonin, melatonin is thought to modulate sleep activity by affecting the neurotransmitter GABA by assisting with its binding to receptors and by down regulating certain neurotransmissions in the brain. Melatonin’s main effect is on the regulation of circadian rhythms and sleep patterns; melatonin levels are influenced by day and night light patterns. Serum levels of this hormone are typically decreased in people with insomnia as well as those with depressed mood.

In people with low circulating melatonin levels, low dose supplementation can promote the onset of sleep and increase its quality without affecting neurologic sleep indices (patterns of different sleep cycles). Melatonin can be used to advance or delay circadian rhythms (when given in the evening or morning, respectively); this effect is useful in treating (or better yet, preventing) insomnia due to jet lag or that which occurs while adapting to shift work. Melatonin is effective at treating insomnia from a variety of additional causes and conditions such as in the elderly, children with mental retardation, and Asperger’s syndrome, and chronic sleep onset insomnia.

As both a symptom and a condition, insomnia is best treated when its origins are known and the original cause is treated. Behavioral and lifestyle modification, while effective once achieved, is of course a challenge to both patient and practitioner. However, while the person experiencing insomnia attempts to circumvent all identifiable factors that have led to the condition, practitioners have several useful agents at their disposal to assist the patient in achieving restful sleep. The natural medicine armamentarium is full of treatments for insomnia; selecting the correct agent is of course, dependent on their particular type or characteristic insomnia.

While not the intent of this article, replacement of standard drug therapy with nutritional/natural medicines should be approached with great care; withdrawal symptoms from pharmaceuticals can be quite severe. On that same note, a person suffering from insomnia may find better success in treatments that utilize nutritional biochemical interventions over the long run; these can contribute to increased daily function and concordant improvement in quality of life, not to mention their effect on promotion of healthy neurologic function. Therefore, a conscious effort to integrate natural medical approaches with standard drug therapy should be pursued; this is especially important in order to avoid unnecessary drug-natural medicine interactions and provide the greatest level of care for those who suffer from insomnia.

References