NUTRI NEWS

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Seasonal Affective Disorder

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Hippocrates believed that diseases are related to the seasons of the year, stating *"Whoever wishes to pursue the science of medicine in a direct manner must first investigate the seasons of the year and what occurs in them."* — Hippocrates

The cold, dark, damp and rainy, gray days are upon us. Lengthy periods of darkness are known to cause the winter blues and even more serious levels of depression. In psychiatric usage, mood disorders are referred to as affective disorders. One in twenty Americans may have some mood disorder during their lives which could develop into major long term depression. Consequently, the normal winter environment in many locations poses a greater challenge to such individuals.

The National Institute of Mental Health first identified "seasonal affective disorder," or SAD, in 1980. Today it is officially recognized by the medical and psychiatric communities as a subgroup of major depression and a mood disorder. One of the first people to bring SAD to national attention was Norman Rosenthal, MD, author of the newly revised "Winter Blues: Seasonal Affective Disorder—What It Is and How to Overcome It. " According to Dr. Rosenthal, "An estimated ten million Americans are said to be suffering from SAD, and another 14% of the adult U.S. population is estimated to suffer from...the winter blues."

SAD is also four times more common in women, than men; even children may sometimes be affected. Symptoms of sadness, fatigue, depression, diminished concentration, withdrawal, apathy, irritability, sleep disturbances (sleeping more and waking unrefreshed), decreased physical activity, weight gain, and increased appetite may begin gradually during the winter months as the length of sunlight begins to diminish.

There are no clear cut treatments for SAD, mainly because not all of the symptoms occur for each depressed individual. In addition, there may be other causes for the depression that SAD may be exacerbating: hypothyroidism, hypoglycemia, chronic viral infections, and chronic fatigue syndrome. Although there are a multitude of other diseases that produce similar symptoms, the cyclical nature of this disorder is key to diagnosing SAD.

Biochemical Roots of SAD

Although SAD is now fully recognized as a valid disease, the physiologic pathways are still not well understood. There are no definitive tests to confirm SAD. It appears that these disorders are affected by biochemical disturbances involving the hormone melatonin and the neurotransmitter, serotonin. The subsystem involved in seasonal depression is the brain and the element for this illness is the hypothalamus. Anatomically, the most likely route along which photoperiodic information may be channeled is the retinohypothalamic tract that terminates in the hypothalamus. The hypothalamus controls emotion/mood, heat/cold response, food, sex drive; it also controls the perception of light. Consequently, the decreased amount of sunlight during the winter is believed to be one of the etiological factors of SAD.

Another consideration is circadian rhythms, which are the body's natural cycles that control sleeping, wakefulness, and hormone secretion. Light exposure helps the body synchronize its "internal clock." There is some evidence that disturbed biological rhythms are a consequence of inconsistent resetting of the circadian pacemaker and these rhythms are worsened by shorter periods of daylight, exposure to cold weather, and aging.

Melatonin produced by the pineal gland regulates the circadian rhythms and the sleep-wake cycle. When there is no sunlight, melatonin is secreted. Increased melatonin levels in the body have been associated with increased drowsiness. This sets up a corresponding feedback loop since sleep can induce or reverse many of the functions of the hypothalamus.

In addition to melatonin, the pineal gland also produces the neurotransmitter serotonin, which produces a heightened sense of calm, lowering stress and anxiety and inducing sleepiness. Serotonin is a derivative of tryptophan, an amino acid that is present at low levels in the bloodstream. During the short days of winter, this neurotransmitter reaches its lowest concentrations in key parts of the brain. The body produces less serotonin in winter, and low serotonin levels are believed to be one of the primary causes of clinical depression. Serotonin also inhibits the stress-

induced increase of cortisol secretion and "stress" hormones. Cortisol has an inhibitory effect on the immune system, which could explain some of the physiological changes in depression.

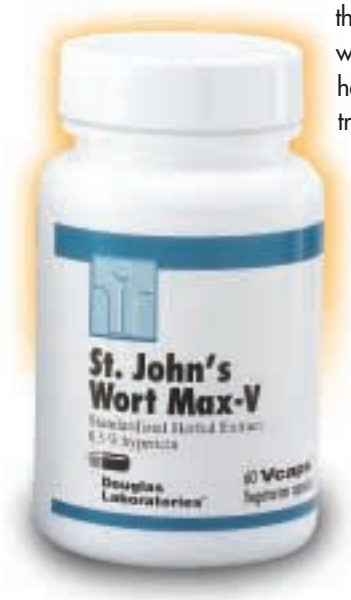
Phototherapy: Bring in the Light

Dawn is more than a pretty sunrise phenomenon-it sends signals to your brain which actually reset your body rhythm for the day and tell the pineal gland to stop producing melatonin. One possible way to treat SAD is to produce an artifical dawn through "phototherapy." Although the antidepressant effect of various light intensities is inconclusive with SAD patients, there have been studies that indicate a correlation. Columbia University researchers Michael and Jiuan Su Terman reported that bright morning light, or "twilight" works best, but the question of exactly what the most helpful light intensity is remains debatable. In an article in the American Journal of Psychiatry, Dr. David Avery, Associate Professor of Psychiatry and Behavioral Sciences at the University of Washington's Harborview Medical Center in Seattle, also concluded that dawn simulation was an effective treatment for winter depression.

Phototherapy and Phytotherapy: St. John's Wort is Nature's Antidepressant

Phytotherapy in conjunction with phototherapy may be the best combination of all. More than 26 double-blind placebo controlled studies indicate that St. John's Wort increases melatonin secretion and is effective in relieving the symptoms of mild to moderate depression. In an Austrian/German study where SAD patients were given daily doses of 900 mg of St. John's Wort, the herbal medicine was even more potent taken along with light therapy. St. John's Wort treatments lower the amount of light necessary to obtain a therapeutic effect, even improving the effects of normal daylight exposure without additional intensive light therapy.

Various species of Hypericum, have been used orally for years to treat anxiety, excitability, exhaustion, hysteria, insomnia, and irritability. *Hypericum perforatum* has specifically been used for the short-term treatment of mild to moderate mental depression. A study published in the British Medical Journal in 1996 gave worldwide attention to this promising herb. An analysis of randomized clinical trials concluded that, "for cases of mild-to-moderate depression, St. John's Wort is superior to the placebo and as effective as a pharmaceutical antidepressant, with fewer side effects."



Hypericin was originally thought to be the component that was responsible for the antidepressant activity in St. John's Wort. St. John's Wort extracts (from the leaves and flowers) are currently standardized to hypericin content (0.2 or 0.3%). However, hyperforin is also naturally present in St. John's Wort in larger amounts than hypericin. Although it is highly unlikely that any one compound is responsible for the antidepressant effectiveness of the herb, one laboratory study showed that hyperforin inhibited uptake of serotonin, dopamine, noradrenaline, gamma aminobutyric acid (GABA) and L-glutamate. According to the results of a double blind study with 147 patients with mild or moderate depression, a 5 percent hyperforin extract was significantly more effective than placebo in alleviating symptoms of depression.

Antidepressants potentiate norepinephrine, dopamine, and serotonin in the brain. Tricyclic antidepressants increase serotonin. MAO inhibitors also increase the available serotonin, as do the SSRIs (specific serotonin reuptake inhibitors). In a recent study, over 60% of the patients with severe depression improved with a combined treatment of imiprimine and St. John's Wort. SJW may be slightly faster acting, as per the 14 day therapeutic effects. The study concluded that the Hypericum extract standardized to 5 percent hyperforin was "an effective option in the treatment of mildly or moderately depressed patients." Adverse events were reported by 41% taking imiprimine and 23% taking St. John's Wort.

Indeed, as an alternative to the dry mouth, gastric distress, and fatigue that patients report as the reasons for not taking antidepressants, one of the advantages of St. John's Wort seems to be that it avoids these side effects. Another important advantage is that is eliminates the abuse potential of benzodiazepine drugs.

St. John's Wort should not be taken with an SSRI since toxicity may result in Serotonin syndrome. Usually the SSRI should be tapered and a baseline established before starting St. John's Wort. Physicians should advise patients not to combine the herb with certain antidepressants and to take the necessary precautions against the herb creating photosensitivity in certain individuals.

Ginkgo Biloba and Kava Extract

Patients with SAD exhibit a globally lower metabolic rate than healthy people, as measured by PET (positron emission tomography) scans. Only depressed patients with SAD had asymmetrical (left more than right) metabolic activity of the medial prefrontal cortex. *Ginkgo biloba* is remarkable for its ability to prevent metabolic and neuronal disturbances in experimental models of cerebral ischemia and hypoxia. It accomplishes this by enhancing oxygen utilization and increasing cellular uptake of glucose, thus restoring aerobic glycolysis. Ginkgo promotes increased nerve transmission rate, improves synthesis and turnover of cerebral neurotransmitters, and normalizes acetylcholine receptors in the hippocampus. Recent double blind studies showed a memory increase due to the proposed action of vasodilation of the blood vessels via release of nitric oxide. With regard to increasing the number of serotonin binding sites in the brain, *Ginkgo biloba* extract appears to also be effective.

Kava extract (*Piper methysticum*) has been approved in Germany, the UK, Switzerland, and Austria for the treatment of depression, anxiety and insomnia. Kava binds to receptor domains in the limbic system, exerting a comparable action to benzodiazepines with no side effects. Studies using standardized preparations containing 15% kavalactones have demonstrated that Kava not only improves anxiety states, but, unlike standard anxiolytics, it actually improves mental function and does not promote sedation.

Valerian

The primary clinical application for Valerian is as a sedative in the treatment of insomnia. The active constituents in Valerian are valepotriates (iridoid molecules) and valeric acid. It can also be used in the treatment of stress and anxiety. A good SAD insomnia protocol consists of melatonin, valerian and 5-HTP taken 30 minutes before retiring.

Aromatherapy is effective

Certain aromatherapeutic oils, notably the flower and fruit scents, such as frankincense, bergamot and geranium, can be helpful for stimulating the hypothalamus and lifting spirits.

Lavandula officinalis (lavender) first appeared in the London Pharmacopoeia in the 17th century and was used for depression and faintness. It has a sedative/calming action, used for insomnia, nervous tension, and depression. Lavender oil has been used for years to enhance a "sense of well-being." Rosemary is a strong brain and memory stimulant and is an effective nervine for stress, tension and depression. Rosemary tea with a pinch of valerian can help reduce the symptoms of depression. Skullcap, passionflower, and wild oats all show benefit in treating depressive symptoms.

5-HTP (hydroxytryptophan)

Increased levels of serotonin have been correlated with a decrease in depression. Brain serotonergic neurons are involved in mood, sleep, appetite and perception of pain. Serotonin is synthesized from tryptophan by the enzyme tryptophan hydroxylase. Since tryptophan is also a precursor to serotonin, treatment with this amino acid is another approach to SAD. Placebo-controlled studies of tryptophan depletion support the hypothesis of disturbed serotonergic activity in SAD.

5-HTP is a well-researched, direct precursor to serotonin. In the last few years several open studies supported the hypothesis that 5-HTP may be an effective antidepressant. A double blind trial comparing 5-HTP in combination with benzerazide to imipramine in 30 patients showed there was no significant difference in efficacy of 5-HTP and imipramine. Within the human body the amino acid L-tryptophan is converted into 5-HTP. Subsequently, 5-HTP is converted into serotonin which plays a crucial role in healthy nerve and brain function. The amino acid, tryptophan, derived from normal dietary sources, does not directly influence or contribute to 5-HTP levels. *Griffonia simplicifolia*, an herb historically used in West Africa, provides the best source of 5-HTP. 5-HTP may be the best alternative to tryptophan supplements, currently banned by the FDA.

Using the Ginsengs

SAD is a perfect application for the clinical benefits of adaptogens. Adaptogens assist the adrenals in counteracting the stress that the whole body is going through in depression. Ginseng is perhaps the most famous adaptogenic medicinal plant of China. It has been used in Asia for over 2,000 years to promote overall health, alertness and longevity. Specifically, Panax spp. ginseng extracts can be used short-term to increase mental and physical performance or may be used long-term as a revitalizing tonic. Ginseng improves mental functioning, loss of memory, and slow cognition within one week and the effect continues for months after administration. The anti-stress action of Panax ginseng provides support for SAD sufferers. However, it can overstimulate the CNS and cause anxiety, agitation, insomnia, palpitations, hypertension, tremor, headaches, euphoria, decreased sexual function, diarrhea and skin eruptions. So most of the therapeutic effects of ginseng are reversed when taken in doses that are too high.

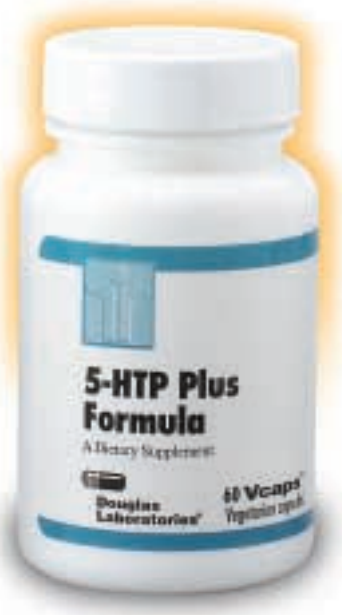
Siberian ginseng (*Eleutherococcus senticosis*) is also an adrenal adaptogen and has been shown to increase monoamine levels in the brains of rats. It is best to dose Eleutherococcus in the morning and around noon to match the diurnal rhythms of the adrenal gland.

Macro and Micro Nutrients

Nutritional components that affect SAD can be split into macro and micro nutrients. The use of macronutrients and micronutrients provide natural ways to offset the effects of SAD.

Macronutrients

Certain foods help boost serotonin levels in the brain. SAD sufferers crave carbohydrates, which stimulate the production of serotonin and its anti-depressant effects. They may gain 20-30 pounds per winter, and sleep up to four more hours a night. Research conducted at MIT has shown that consumption of carbohydrates stimulates the production of serotonin, which results in deeper, more restful sleep, feelings of well-being, and greater mental focus. Richard J. Wurtman, writing in the Scientific American, points out that the feedback mechanism is disturbed in people with SAD...and the brain of a SAD sufferer fails to respond when carbohydrates are eaten, so the desire for them persists longer than it should.



Simple carbohydrates have been refined to contain simple sugar molecules and are burned up by the body faster. However, complex carbohydrates have numerous physiological benefits. People experiencing SAD symptoms are encouraged to include more complex carbohydrates and other healthful foods in their diets, including eating plenty of fresh fruits and vegetables, whole

grains, seeds, and small amounts of fish, poultry, and dairy. Fiber is emphasized along with a reduction in the consumption of saturated fats, refined sugar and white flour.

Micronutrients

Low levels of B vitamins are also associated with depression and behavioral changes. Bicknell and Prescott, in *The Vitamins in Medicine*, point out where cases of senile dementia in mental hospitals and convalescent homes dramatically improved in twenty-four to forty-eight hours after large doses of B vitamins. In some cases, administration of B vitamins have been more successful than antidepressant drugs.

Nutritional researchers are discovering that deficiencies in many other vitamins, including iron, calcium, and magnesium, may all contribute to depression. In the Encyclopedia of Natural Medicine, Dr. Pizzorno and Dr. Murray suggest that vitamin B12, vitamin C, folic Acid, and magnesium—as well as Vitamin D, also known as the "sunshine vitamin," help offset the depressive effects of lack of sunlight. The mechanism for the positive effects of vitamin D supplementation are not entirely understood, but may be related to increasing 5-HTP levels.

Some animals use hibernation to adapt to the colder months, spending winter asleep in an almost comatose state. Hibernating animals characteristically lower their body temperature, cease reproductive activity and spend the winter in deep sleep. Although this inclination to hibernate is typical of SAD patients, the time they spend in deep sleep (measured by electroencephalogram) is reduced.

This author lives in one of the cloudiest cities in the country. Seattle is the coffee capital of the world. One might suggest there is a direct correlation between SAD and caffeine intake. Many people use this drug as a form of amphetamine or "speed" to give them energy and keep them going during the dark winter months. However, caffeine can have a rebound effect on the nervous system, as well as irritate the stomach lining, causing gastric disturbances and ulcers.

Increased exercise stimulates the production of endorphins which also offsets depression. Indeed, natural light therapy often works best in conjunction with exercise to improve SAD symptoms. Such simple activities as taking a walk at lunch time and spending more time outside can improve SAD symptoms.

We may not have all the answers to explain SAD but we do have novel and effective therapies, such as light, exercise, nutrition and botanicals. We are all wired differently and so depression may manifest differently in each one of us. SAD, in whatever form it takes, should be treated with attention.

Written by Nita Bishop, Clinical Herbalist.

Nita Bishop practiced as an herbalist in Phoenix, Arizona before entering the Naturopathic program at Bastyr University where she is in her third year of medical school. Ms. Bishop holds undergraduate degrees from Pepperdine University in Biology and English. Ms. Bishop has an extensive background in natural medicine and working with traditional healers and is actively dedicated to enthusiastically elevating the awareness and validation of herbal medicine via the lecture circuit.

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