

Seasonal Affective Disorder: Avoiding the Winter Blues

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

Seasonal Affective Disorder (SAD) sometimes known as "winter depression" or "winter blues" belongs to a group of depressive disorders known as major depressive disorder. Characterized by ongoing or recurrent depressive episodes that are associated with changing seasons into the winter months, with symptoms subsiding during the spring and summer months, SAD is a mood disorder associated with periods of depression and is related to seasonal variations of light. SAD may begin insidiously in younger people (20-30 years of age) appearing as mild to moderate depressive occurrences. Social withdrawal, sadness, anxiety, and irritability are key features, while associated atypical depressive symptoms of increased sleep and lethargy, and increased appetite (especially for "starchy" carbohydrates) and concomitant weight gain is common as well.¹ Women are more often affected for unknown reasons.²

SAD was not officially recognized as a clinical disorder until the 1980's. SAD is relatively common, occurring in 11% of patients who have major depression³ with a prevalence of 1%-3% in Canada, 1.3%-3% in Europe, and 0.9% or less in Asia⁴ while total North American incidence is 6%.⁵ It is estimated that SAD occurs in 13% to 17% of first-degree relatives of people with SAD.⁶ Symptoms of SAD include, but are not limited to:

- Regularly occurring symptoms of depression (lethargy, fatigue, anxiety, inability to cope, social avoidance, insomnia)

- Increased appetite, sleep time, and weight gain during fall or winter months

- Resolution of symptoms in the spring and summer months

- Symptoms have occurred during the past two years, with an absence of non-seasonal depressive episodes

- Loss of libido, not interested in sex or physical contact

- Craving for carbohydrates and sweet foods, increased appetite leading to weight gain

Humans, much like animals, are affected by seasonal light variation. Animals experience reproductive cycle, sleep/wake, and hibernation behavioral changes that are largely attributed to seasonal sunlight amounts. Although human activity patterns are largely unregulated by seasonal sunlight levels, human circadian rhythms (biologic clocks) are affected by sunlight despite the relative control of our living environments. With changing seasons, our internal rhythms begin to change and in susceptible individuals, their biologic clockwork may easily become out of sync with established daily schedules. Accordingly, the most difficult times of year for people with SAD are December, January and February.

Although the exact cause of SAD is not entirely known, much speculation rests on decreased exposure to sunlight during the winter months as the primary etiologic factor for this condition. Interestingly, a meta analysis of the research investigating the incidence of SAD in correlation with latitude revealed a relatively weak, albeit positive link between extremes of latitude and occurrence of SAD. The average prevalence of SAD is twice as high in North America compared to Europe, and a similar link does exist in Europe although this is much less than that of North America.⁷ The authors of this study concluded that the influence of latitude on SAD is relatively small in comparison to other factors such as climate, genetic susceptibility, and social-cultural context.

A definitive link between climate and SAD was explored in another study in which weather data was gathered in accordance with completed depression symptom surveys from study participants over a course of 4 years. No significant links between depression survey scores and cloud cover, rainfall or atmospheric pressure were noted, however a significant correlation between depression scores and amount of sunshine, global radiation, temperature and length of daylight was noted, emphasizing the role of sunshine

deprivation as a contributory factor to SAD.⁸

Melatonin

Melatonin is a neurotransmitter produced within the pineal gland, located deep within the brain. It has numerous functions in the body, and levels are regulated to some extent by sunlight exposure. Melatonin secretion is increased during hours of darkness, and decreases with sunlight exposure. Various studies indicate that melatonin plays a role in the regulation of circadian rhythms,⁹ and investigations into the role of melatonin as a causative factor of SAD have revealed various results. Previously, excessive melatonin production was indicated as a main causative factor in SAD, partially because of the hypnotic, or sleep-inducing effects of it when administered outside of the body and because it was produced in higher amounts during times of darkness. Recently, it was recommended that melatonin be used as a treatment for SAD when administered in the late afternoon or early evening. This approach was used because it was thought that precise timing of melatonin administration could shift the sleep-wake cycle, decreasing daytime somnolence. Efficacy of this approach is yet to be clearly determined in treating SAD, however melatonin as a sleep aid is effective in people with insomnia from other causes.

Phototherapy

Phototherapy, also known as light therapy, is the use of certain wavelengths of artificial light to treat SAD. Phototherapy was put into clinical use after it was demonstrated that exposing animals to light altered their circadian and seasonal rhythms, and that light exposure had the ability to suppress nocturnal melatonin secretion. Multiple studies of light therapy and SAD exist, with most demonstrating a positive effect on SAD symptoms in 60% to 90% of those treated, with the average clinical response of approximately 65%.

Phototherapy is usually prescribed in terms of "lux," a unit of luminance as perceived by the retina, and descriptors such as intensity, wavelength, and duration of daily exposure are included in the prescription. Typically, indoor lighting emits 500 lux, while high noon on a cloudless summer day can emit 50,000 lux. Cloudy days range from 1,000 to 5,000 lux. Light therapy is received, and the effects of it are mediated through the eyes. A common misconception is that this therapy is effected through the skin, however that is a separate biochemical process – vitamin D synthesis occurs in the skin, as rays of sunlight are absorbed.

Standard dosages of phototherapy used in effective studies were 2,500 lux for up to 2 hours per day. Other sources describe 10,000 lux for only 30 minutes per day as effective as well. Researchers place more emphasis on timing of exposure than on duration of treatment for clinical efficacy. In this regard, morning exposure is more effective than evening exposure. Interestingly, the type of light is also not considered as important as intensity, although studies indicate that white light is superior to incandescent or fluorescent light. Tanning lights, which emit ultraviolet light, should generally be avoided due to their negative effects on skin health.

Botanical Medicine: St. John's wort

In addition to light therapy, pharmacotherapy with antidepressants comprises the standard medical treatment for SAD. However, tricyclic, monoamine oxidase inhibitor (MAOI's) and selective serotonin reuptake inhibitor (SSRI's) therapies are rife with side effects for many patients, making compliance with antidepressant therapy difficult for SAD. A literature review of the effects of St. John's wort (*Hypericum perforatum*) indicates that this botanical medicine has efficacy in several biochemical pathways that play a central role in depressive pathogenesis, including the MAO, serotonin, GABA, and dopamine neurotransmitter systems.¹⁰ Although no single constituent of the herb has been indicated in the plant's effectiveness in treating depressive disorders, the efficacy of St. John's wort is similar to that of standard pharmaceutical therapeutics.¹¹

For treatment of SAD, St. John's wort has been demonstrated in clinical studies to be effective for treating this type of depression as well. Patients who

qualified under *DSM-III-R* criteria as majorly depressed with seasonal patterns, were treated for four weeks with 900 milligrams of standardized *hypericum perforatum* daily with light therapy. At the end of the study, patients' depressive symptoms were analyzed using the Hamilton Depression Scale (a standard measure of depressive symptomatology) and were significantly reduced, leading the authors to conclude that *hypericum perforatum* displays promise as an effective therapy in SAD.¹² Another study involving the use of *hypericum perforatum* in SAD revealed that when taken in combination with light therapy, patients experienced significant improvement in anxiety, libido loss, and insomnia.¹³

St. John's wort is a clinically effective botanical medicine that can be used as an adjunctive treatment in SAD. This being said, however, persons wishing to use *hypericum* are encouraged to contact a physician that is knowledgeable in the use of botanical medicines, as several widely used pharmaceutical medications can interact negatively with this herb, especially when used with pharmaceutical antidepressant medications. In order to provide the greatest effective treatment regimen for treating SAD, however, *hypericum perforatum* has few side effects and is therefore better tolerated than standard pharmaceuticals.

Exercise and Depression

Much research exists exploring the curative effects of exercise on depressive disorders. Even more so, exercise plays a major role in the treatment of SAD, and because of this, it may stand to reason that lack of exercise is a contributor to SAD symptomatology. Exercise therapy in conjunction with other treatments (phototherapy, dietary manipulation/supplementation) has demonstrated interesting results, not only in treating SAD symptoms, but also on other health outcomes. One study had subjects perform exercise in both a brightly lit and normally lighted gym for a period of 8 weeks. Both groups experienced "effectively relieved" depressive symptoms.¹⁴ A similar study revealed nearly the same results, increasing the health-related quality of life in wintertime, and was an effective intervention for improving mood.¹⁵ Another study examined the combined effects of exercise and phototherapy on mood, body weight and oxygen consumption in females with

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SAD. Again, SAD subjects responded favorably to the exercise and light therapy.¹⁶

It is known that exercise and physical activity play an important role in the treatment and prevention of depressive disorders and anxiety, and that depressed people tend to exercise less frequently than those who are not depressed. Specifically, strength training and aerobic exercise exert the greatest anti-depressive effects.¹⁷ In a study designed to measure various moods following exercise bouts, depressed mood scores were significantly reduced, while feelings of fatigue increased.¹⁸ The majority of studies involving exercise and depression positively indicate the antidepressant, anxiolytic, and mood-enhancing effects of aerobic exercise, not to mention protection from the harmful effects of stress on the depressed patient, whether symptoms are seasonal or continuous. Exercise is popularly known to increase the levels of "feel-good" chemicals in the body known as endorphins and enkephalins. Produced in the body as a "side effect" of exercise and other biologic processes, these chemicals are responsible for relieving pain and the so-called runner's high, among other effects. It is possible that endorphins and enkephalins play a role in alleviating depression as well. Exercise provides lasting resilience to the effects of stress, and because of this, will serve people with SAD in alleviating the seasonal symptoms of depression and the stress that accompanies this occurrence.

Nutrition for Depression

Proper nutrition is essential for all people, and even more so for those with

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any type of adverse health conditions, including SAD. Complete nutrition provides the body with all of the materials it needs to perform at its highest levels. The natural state of the human body is one of perfect health and function. Supplying the body with the nutrients it needs to perform up to this standard is often a foregone conclusion. The highest state of being is health, and when the organism is lacking the raw materials necessary to achieve this state, imperfections in health begin to emerge.

Depressed individuals often have deficiencies of several different B vitamins, namely folic acid and vitamin B12, especially among the elderly.¹⁹ Both folic acid and B12 play essential roles in energy-producing biochemical processes. They act as molecular messengers in the formation of brain neurotransmitters, which act as the chemical messenger "language" of the brain, allowing it to perform its multiple functions. Folic acid and B12 play several roles in the formation of precursor molecules that allow the brain to manufacture two specific neurotransmitters that are important in depression, serotonin and dopamine. Deficiencies of both neurotransmitters are implicated as playing a role in the condition of depression. Supplying adequate amounts of each vitamin will allow the body to supply itself with the necessary precursors for optimal health status.

It is also important to mention that the role of nutrition, and of specific vitamins, (especially those belonging to the B-vitamin group) is at this time becoming more and more widely recognized for playing an important part in complete health. Oftentimes, vitamins are easily overlooked by conventional physicians as having no part in the overall scheme of health. However, the medical evidence that is mounting in opposition to this outlook continues to grow at an exponential rate. Providing the body with a complete armamentarium of necessary biochemical cofactors provides the greatest opportunity for disease-free performance. To summarize, a balanced diet comprised of lean proteins, complex carbohydrates, beneficial fats, and a multimineral and vitamin supplement will afford the cleanest, most energetic fuel for the human organism.

Other possible nutritional/supplemental interventions in depression and SAD include 5-hydroxytryptophan (5-HTP) and S-Adenosylmethionine (SAME). 5-HTP is a compound extracted from the seeds of *Griffonia simplicifolia*, a plant native to the African continent. 5-HTP is an amino acid that serves as the final precursor molecule in the formation of the neurotransmitter serotonin. 5-HTP is a more effective and efficient variation of the amino acid tryptophan, allowing for greater production of serotonin (low levels are implicated in depression) and other neurotransmitters responsible for feelings of well-being. SAME is derived from another amino acid known as methionine. SAME is useful in a number of clinical conditions, and is specifically used in cases of depression because of its action as a methyl donor. As a methyl donor, SAME assists in the production of nucleic acids, proteins, phospholipids, monoamines, neurotransmitters and the metabolism of vitamin B 12 and folate, all of which play a role in healthy brain function. A review of the studies investigating SAME and depression have shown that SAME performed better than placebo and was as effective as tricyclic antidepressants in relieving symptoms of depression, and that it has a quicker onset of action than standard antidepressant medications, is free of side effects, and is well tolerated as a medicine.²⁰

Conclusion

There are many theories about the causes of SAD and depression, most of which are tied into biochemical insufficiencies. SAD however, as a seasonal depressive disorder has a direct causative link to decreased amounts of sunlight during the winter months. This being said however, does not exactly provide a substantiated causative reason for why some people have SAD and others do not. Biologic theories provide some explanation for the cause of this cluster of symptoms, in that wintertime is a period of decreased activity, and conservation of energy for survival during these months of low food availability may lead to decreased activity. Despite this reasoning, and the fact that the majority of humans today do not need to "hibernate" throughout the winter months, a cause for the symptoms of SAD needs to be addressed prior to medicating the patient. Addressing fitness and exercise levels, nutritional adequacy, and providing

regular exposure to light can be used to offset SAD symptoms. The addition of medication in the form of a botanical medicine (*Hypericum perforatum*) and nutritional supplements such as SAME and 5-HTP provide another arm of defense for the person trying to cope with seasonal affective disorder.

References

1. Partonen T, Lonnqvist J. Seasonal affective disorder. *Lancet* 1998;352:1369-74.
2. Magnusson A, Boivin D. Seasonal affective disorder: an overview. *Chronobiol Int*. 2003 Mar;20(2):189-207.
3. Levitt A, Boyle M, Joffe R, Bauml Z. Estimated prevalence of the seasonal subtype of major depression in a Canadian community sample. *Can J Psychiatry* 2000;45:650-4.
4. Lam R, Levitan R. Pathophysiology of seasonal affective disorder: a review. *J Psychiatry Neurosci* 2000;25:469-80.
5. Lam RW, Levitt AI, eds. *Canadian Consensus Guidelines for the Treatment of Seasonal Affective Disorder* Vancouver, BC: Clinical and Academic Publishing, 1999.
6. Sheer L, Goldman D, Ozaki N, Rosenthal N. The role of genetic factors in the etiology of seasonal affective disorder and seasonality. *J Affect Disord* 1999;53:203-10.
7. Mersch PP, Middendorp HM, Bouhuys AL, Beersma DG, van den Hoofdakker RH. *J Affect Disord*. 1999 Apr;53(1):35-48. Seasonal affective disorder and latitude: a review of the literature.
8. Molin J, Mellerup E, Bolwig T, Scheike T, Dam H. *J Affect Disord*. 1996 Apr 12;37(2-3):151-5. The influence of climate on development of winter depression.
9. Srinivasan V. Melatonin, biological rhythm disorders and phototherapy. *Indian J Physiol Pharmacol*. 1997 Oct;41(4):309-28.
10. Miller, AL. St. John's Wort (*Hypericum perforatum*): Clinical Effects on Depression and Other Conditions. *Alternative Medicine Review*, 1998 Volume 3, Number 1 1998
11. Whiskey E, Werneke U, Taylor D. A systematic review and meta-analysis of *Hypericum perforatum* in depression: a comprehensive clinical review. *Int Clin Psychopharmacol*. 2001 Sep;16(5):239-52.
12. Martinez B, Kasper S, Ruhrmann S, Moller HJ. *Hypericum* in the treatment of seasonal affective disorders. *J Geriatr Psychiatry Neurol*. 1994 Oct;7 Suppl 1:S29-33.
13. Wheatley D. *Hypericum* in seasonal affective disorder (SAD). *Curr Med Res Opin*. 1999;15(1): 33-7.
14. Leppamaki SJ, Partonen TT, Hurme J, Haukka JK, Lonnqvist JK. Randomized trial of the efficacy of bright-light exposure and aerobic exercise on depressive symptoms and serum lipids. *J Clin Psychiatry*. 2002 Apr;63(4):316-21.
15. Partonen T, Leppamaki S, Hurme J, Lonnqvist J. Randomized trial of physical exercise alone or combined with bright light on mood and health-related quality of life. *Psychol Med*. 1998 Nov;28(6):1359-64.
16. Pinchasov BB, Shurgaja AM, Grischin OV, Putilov AA. Mood and energy regulation in seasonal and non-seasonal depression before and after midday treatment with physical exercise or bright light. *Psychiatry Res*. 2000 Apr 24;94(1):29-42.
17. Paluska SA, Schwenk TL. Physical activity and mental health: current concepts. *Sports Med*. 2000 Mar;29(3):167-80.
18. Lane AM, Crone-Grant D, Lane H. Mood changes following exercise. *Percept Mot Skills*. 2002 Jun;94(3 Pt 1):732-4.
19. Abalan, F. Frequency of deficiencies of vitamin B12 and folic acid in patients admitted to a geriatric-psychiatry unit. *Encephale* 10 (1984): 9-12.
20. Mischoulon D, Fava M. Role of S-adenosyl-L-methionine in the treatment of depression: a review of the evidence. *Am J Clin Nutr*. 2002 Nov;76(5):1158S-61S.

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