

## Seasonal Affective Disorder (SAD)

## ABSTRACTS

- Blouin AG., 1996. Light therapy in bulimia nervosa: a double-blind, placebo-controlled study.
- Eastman Cl., 1998. Bright light treatment of winter depression: a placebo-controlled trial.
- Ghadirian AM., 1998. Efficacy of light versus tryptophan therapy in seasonal affective disorder.
- Lam RW., 1997. L-tryptophan augmentation of light therapy in patients with seasonal affective disorder.
- Lansdowne AT., 1998. Vitamin D3 enhances mood in healthy subjects during winter.
- Lewy AJ., 1998. Morning vs evening light treatment of patients with winter depression.
- Neumeister A., 1997. Effects of tryptophan depletion on drug-free patients with seasonal affective disorder during a stable response to bright light therapy.
- Neumeister A., 1998. Effects of tryptophan depletion in fully remitted patients with seasonal affective disorder during summer.
- Partonen T., 1998. Seasonal affective disorder.
- Swedo SE., 1997. A controlled trial of light therapy for the treatment of pediatric seasonal affective disorder.
- Tarquini B., 1998. [Melatonin and seasonal depression]
- Terman M., 1998. A controlled trial of timed bright light and negative air ionization for treatment of winter depression.

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- Beauchemin KM., 1996. Sunny hospital rooms expedite recovery from severe and refractory depressions.
- Birdsall TC., 1998. 5-Hydroxytryptophan: a clinically-effective serotonin precursor.
- Boenink AD., 1997. Prediction of acute and late responses to light therapy from vocal (pitch) and self-rated activation in seasonal affective disorder.
- Costa A., 1998. Cluster headache and periodic affective illness: common chronobiological features.
- Danilenko KV., 1996. The importance of full summer remission as a criterion for the diagnosis of seasonal affective disorder.
- Gross F., 1996. [Phototherapy in psychiatry: clinical update and review of indications]
- Guillemette J., 1998. Natural bright light exposure in the summer and winter in subjects with and without complaints of seasonal mood variations.
- Kasper S., 1998. Pharmacological treatment of seasonal affective disorder - The role of hypericum extract.
- Kogan AO., 1998. Side effects of short-term 10,000-lux light therapy.
- Kripke DF., 1998. Light treatment for nonseasonal depression: speed, efficacy, and combined treatment.
- Lingjaerde O., 1998. Dawn simulation vs. lightbox treatment in winter depression: a comparative study.
- Partonen T., 1998. Extrapineal melatonin and exogenous serotonin in seasonal affective disorder.
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- Terman M., 1996. Predictors of response and nonresponse to light treatment for winter depression.
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- Light therapy in bulimia nervosa: a double-blind, placebo-controlled study.**

Blouin AG; Blouin JH; Iversen H; Carter J; Goldstein C; Goldfield G; Perez E Department of Psychiatry, Ottawa Civic Hospital, ON, Canada.

Psychiatry Res (Ireland) Feb 28 1996, 60 (1) p1-9

The effects of light therapy on food intake and affective symptoms of bulimia nervosa (BN) were examined in a double-blind study. Eighteen women who met DSM-III-R criteria for BN were randomly assigned to receive either 2500 lux of bright light (experimental condition) or < 500 lux of dim light (placebo condition) daily in the early evening for a 1-week period. The Structured Interview Guide for the Hamilton Depression Rating Scale-Seasonal Affective Bulimic Symptoms Checklist were administered to subjects before light

exposure, after 1 week of light exposure, and after 7 days of withdrawal of light exposure. Throughout the study, the Profile of Mood States and the Daily Binge Record were completed daily. Compared with subjects in the dim light condition, subjects in the bright light condition showed a significant improvement in depressed mood during light exposure, as measured by both the BDI and the SIGH-SAD. There was a return to pretreatment levels of depression after withdrawal of light exposure. No changes in depression were noted in the placebo group. No effect of light therapy was found on the frequency, size, or content of binge-eating episodes. The results are discussed in terms of the physiological processes associated with light therapy and seasonal affective disorder that may underlie the affective and food intake symptoms of BN.

### **Bright light treatment of winter depression: a placebo-controlled trial**

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Arch Gen Psychiatry (United States) Oct 1998 , 55 (10) p883-9,

**BACKGROUND:** Bright light therapy is the recommended treatment for winter seasonal affective disorder (SAD). However, the studies with the best placebo controls have not been able to demonstrate that light treatment has a benefit beyond its placebo effect.

**METHODS:** Ninety-six patients with SAD completed the study. Patients were randomly assigned to 1 of 3 treatments for 4 weeks, each 1.5 hours per day: morning light (average start time about 6 AM), evening light (average start about 9 PM), or morning placebo (average start about 6 AM). The bright light (approximately 6000 lux) was produced by light boxes, and the placebos were sham negative-ion generators. Depression ratings using the Structured Interview Guide for the Hamilton Depression Rating Scale, SAD version (SIGH-SAD) were performed weekly.

**RESULTS:** There were no differences among the 3 groups in expectation ratings or mean depression scores after 4 weeks of treatment. However, strict response criteria revealed statistically significant differences; after 3 weeks of treatment morning light produced more of the complete or almost complete remissions than placebo. By 1 criterion (24-item SIGH-SAD score <50% of baseline and < or =8), 61% of the patients responded to morning light, 50% to evening light, and 32% to placebo after 4 weeks of treatment.

**CONCLUSIONS:** Bright light therapy had a specific antidepressant effect beyond its placebo effect, but it took at least 3 weeks for a significant effect to develop. The benefit of light over placebo was in producing more of the full remissions.

### **Efficacy of light versus tryptophan therapy in seasonal affective disorder.**

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J Affect Disord 1998 Jul;50(1):23-7

**BACKGROUND:** Although light therapy has become the accepted treatment for patients suffering from seasonal affective disorder (SAD, winter depression), almost 40% of these patients do not respond, and require an alternative treatment.

**METHODS:** The therapeutic effects of light versus tryptophan on SAD were studied in a repeated measures design in 13 SAD patients (11 women, 2 men). Light therapy for 2 weeks or tryptophan for 4 weeks was given, separated by a one week washout period. All were assessed with the modified Hamilton Depression Rating scale (SIGH-SAD) at the beginning and end of each treatment.

**RESULTS:** Four (31%) of the patients did not respond to either therapy. Four tryptophan-resistant patients responded to light therapy, while one light therapy-resistant patient responded to tryptophan. Relapse occurred rapidly after stopping light therapy but not after stopping tryptophan therapy.

**CONCLUSIONS:** There were significant therapeutic effects of both light ( $p = 0.012$ ) and tryptophan ( $p = 0.014$ ) on SAD, which were not significantly different from each other. There may be a time difference between the residual pharmacokinetic effects after stopping therapy.

**LIMITATIONS:** The groups studied were small. This was an open study.

**CLINICAL RELEVANCE:** Tryptophan was equally effective to light therapy in treating SAD, but relapse after withdrawal of tryptophan probably occurs more slowly.

### **L-tryptophan augmentation of light therapy in patients with seasonal affective disorder.**

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Can J Psychiatry (Canada) Apr 1997, 42 (3) p303-6

**OBJECTIVE:** Up to one-third of patients with seasonal affective disorder (SAD) do not have a full response to light therapy. Given the evidence for serotonergic dysregulation in SAD, we examined the possible role of L-tryptophan as an augmentation strategy for nonresponders and partial responders to light therapy.

**METHOD:** Eligible drug-free patients meeting DSM-IV criteria for SAD were treated for 2 weeks using a standard morning light therapy regimen (10,000 lux cool-white fluorescent light for 30 minutes). Partial and nonresponders were treated for 2 weeks with open-label L-tryptophan (1 g 3 times daily) while light therapy was continued. Ratings at baseline and follow-up included the 29-item Structured Interview Guide for the Hamilton Depression Rating Scale, SAD version (SIGH-SAD) and the Clinical Global Impression (CGI) scale.

**RESULTS:** Sixteen patients began the L-tryptophan augmentation phase. Two patients discontinued medications within 3 dg treatment, the addition of L-tryptophan resulted in significant reduction of mean depression scores. Nine of 14 patients (64%) showed very good clinical responses to combined treatment and minimal side effects.

**CONCLUSION:** This open-label study suggests that L-tryptophan may be an effective augmentation strategy for those patients with SAD who show limited or poor response to bright ligh therapy. Further placebo-controlled studies are warranted to demonstrate efficacy.

### **Vitamin D3 enhances mood in healthy subjects during winter.**

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Psychopharmacology (Berl) 1998 Feb;135(4):319-23

Mood changes synchronised to the seasons exist on a continuum between individuals, with anxiety and depression increasing during the winter months. An extreme form of seasonality is manifested as the clinical syndrome of seasonal affective disorder (SAD) with carbohydrate craving, hypersomnia, lethargy, and changes in circadian rhythms also evident. It has been suggested that seasonality and the symptoms of SAD may be due to changing levels of vitamin D3, the hormone of sunlight, leading to changes in brain serotonin. Forty-four healthy subjects were given 400 IU, 800 IU, or no vitamin D3 for 5 days during late winter in a random double-blind study. Results on a self-report measure showed that vitamin D3 significantly enhanced positive affect and there was some evidence of a reduction in negative affect. Results are discussed in terms of their implications for seasonality, SAD, serotonin, food preference, sleep, and circadian rhythms.

### **Morning vs evening light treatment of patients with winter depression.**

Lewy AJ, Bauer VK, Cutler NL, Sack RL, Ahmed S, Thomas KH, Blood ML, Jackson JM Department of Psychiatry, Oregon Health Sciences University, Portland 97201-3098, USA.

Arch Gen Psychiatry 1998 Oct;55(10):890-6

**BACKGROUND:** According to the phase-shift hypothesis for winter depression, morning light (which causes a circadian phase advance) should be more antidepressant than evening light (which causes a delay). Although no studies have shown evening light to be more antidepressant than morning light, investigations have shown either no difference or morning light to be superior. The present study assesses these light-exposure schedules in both crossover and parallel-group comparisons.

**METHODS:** Fifty-one patients and 49 matched controls were studied for 6 weeks. After a prebaseline assessment and a light/dark and sleep/wake adaptation baseline week, subjects were exposed to bright light at either 6 to 8 AM or 7 to 9 PM for 2 weeks. After a week of withdrawal from light treatment, they were crossed over to the other light schedule. Dim-light melatonin onsets were obtained 7 times during the study to assess circadian phase position.

**RESULTS:** Morning light phase-advanced the dim-light melatonin onset and was more antidepressant than evening light, which phase-delayed it. These findings were statistically significant for both crossover and parallel-group comparisons. Dim-light melatonin onsets were generally delayed in the patients compared with the controls.

**CONCLUSIONS:** These results should help establish the importance of circadian (morning or evening) time of light exposure in the treatment of winter depression. We recommend that bright-light exposure be scheduled immediately on awakening in the treatment of most patients with seasonal affective disorder.

### **Effects of tryptophan depletion on drug-free patients with seasonal affective disorder during a stable response to bright light therapy.**

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Arch Gen Psychiatry (United States) Feb 1997, 54 (2) p133-8

**BACKGROUND:** A dysfunction of the serotonin system may play a major role in the pathogenesis of seasonal affective disorder. Bright light therapy has been shown to be effective in the treatment of winter depression in patients with seasonal affective disorder. Light therapy-induced remission from depression may be associated with changes in brain serotonin function.

**METHODS:** After at least 2 weeks of clinical remission, 12 drug-free patients who had had depression with seasonal affective disorder underwent tryptophan depletion in a double-blind, placebo-controlled, balanced cross-over design study.

**RESULTS:** Short-term tryptophan depletion induced a significant decrease in plasma free and total tryptophan levels ( $P < .001$  for both, repeated measures analysis of variance), with peak effects occurring 5 hours after ingestion of a tryptophan-free amino acid drink. It emerged that tryptophan depletion leads to a transient depressive relapse, which was most pronounced on the day after the tryptophan-depletion testing. No clinically relevant mood changes were observed in the control testing.

**CONCLUSIONS:** The maintenance of light therapy-induced remission from depression in patients with seasonal mood cycles seems to depend on the functional integrity of the brain serotonin system. Our results suggest that the serotonin system might be involved in the mechanism of action of light therapy.

### **Effects of tryptophan depletion in fully remitted patients with seasonal affective disorder during summer.**

Neumeister A, Praschak-Rieder N, Hesselmann B, Vitouch O, Rauh M, Barocka A, Kasper S Department of General Psychiatry and Institute of Psychology, University of Vienna, Austria.

Psychol Med 1998 Mar;28(2):257-64

**BACKGROUND:** Deficiencies in brain serotonin function are believed to play an important role in the pathophysiology of seasonal affective disorder/winter type (SAD). However, no direct evidence has been reported so far that lowered brain serotonin activity causes the symptoms of SAD.

**METHODS:** We studied 11 SAD patients who had suffered recurrent winter depressive episodes of SAD and were fully recovered and off treatment during the summer. In a randomized, balanced, double-blind crossover design patients received two amino acid beverages, one containing tryptophan and the other containing no tryptophan but otherwise identical. Behavioural ratings and plasma total and free tryptophan concentrations were assessed at baseline before administration of the amino acid beverages and at several time points afterwards.

**RESULTS:** The tryptophan-free amino acid beverage induced significant decreases of plasma total and free tryptophan levels and both levels increased during sham depletion (condition x time interaction:  $P < 0.001$ ). Tryptophan depletion, but not sham depletion caused a transient return of depressive symptoms (condition x time interaction:  $P < 0.001$ ).

**CONCLUSIONS:** The present study demonstrates that SAD patients in remission during the summer are vulnerable to a return of depression when depleted of tryptophan. This finding supports the importance of serotonergic mechanisms in the pathophysiology of SAD.

### **Seasonal affective disorder.**

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Lancet 1998 Oct 24;352(9137):1369-74

Seasonal affective disorder (SAD) is a form of recurrent depressive or bipolar disorder, with episodes that vary in severity. Seasonal patterns of depressive episodes are common, but SAD seems to be less common than such patterns suggest. SAD was at first believed to be related to abnormal melatonin metabolism, but later findings did not support this hypothesis. Studies of brain serotonin function support the hypothesis of disturbed activity. The short-allele polymorphism for serotonin transporter is more common in patients with SAD than in healthy people. Atypical depressive symptoms commonly precede impaired functioning, and somatic symptoms are frequently the presenting complaint at visits to family physicians. The best treatment regimens include 2500 lx of artificial light exposure in the morning. When patients seem to have no response or to prefer another treatment, antidepressants should be considered.

#### **A controlled trial of light therapy for the treatment of pediatric seasonal affective disorder.**

Swedo SE; Allen AJ; Glod CA; Clark CH; Teicher MH; Richter D; Hoffman C; Hamburger SD; Dow S; Brown C; Rosenthal NE  
Department of Psychiatry, McLean Hospital, Belmont, MA, USA.

J Am Acad Child Adolesc Psychiatry (United States) Jun 1997, 36 (6) p816-21

**OBJECTIVE:** To evaluate the efficacy of light therapy for the treatment of pediatric seasonal affective disorder (SAD).

**METHOD:** 28 children (aged 7 to 17 years) at two geographically distinct sites were enrolled in a double-blind, placebo-controlled, crossover trial of bright-light treatment. Subjects initially entered a week-long baseline period during which they wore dark glasses for an hour a day. They were then randomly assigned to receive either active treatment (1 hour of bright-light therapy plus 2 hours of dawn simulation) or placebo (1 hour of clear goggles plus 5 minutes of low-intensity dawn simulation) for 1 week. The treatment phase was followed by a second dark-glasses phase lasting 1 to 2 weeks. After this phase, the children received the alternate treatment. Response was measured using the parent and child versions of the Structured Interview Guide for the Hamilton Depression Rating Scale, Seasonal Affective Disorders version (SIGH-SAD).

**RESULTS:** Data were analyzed as change from baseline. SIGH-SAD-P total depression scores were significantly decreased from baseline during light therapy compared with placebo (one-way analysis of variance,  $\rho = .009$ ), and no differences were found between the placebo and control phases. Subscores of atypical and typical depression were also significantly decreased during the active treatment ( $\rho = .004$  and  $.028$ , respectively). A similar trend was noted with the SIGH-SAD-C, but this did not reach significance. At the end of the study, 78% of the parents questioned and 80% of the children questioned rated light therapy as the phase during which the child "felt best."

**CONCLUSION:** Light therapy appears to be an effective treatment for pediatric SAD.

#### **[Melatonin and seasonal depression]**

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Recenti Prog Med (Italy) Jul-Aug 1998, 89 (7-8) p395-403

Melatonin (MEL) hypothesis in seasonal affective disorders (SAD) is supported by: a) historical hint; b) circadian and seasonal MEL periodicity with evidence that the SAD is related to photoperiod; c) relationship between incidence and severity of SAD and latitude; d) the response to bright artificial light (ineffective in depression) which mimics summer time; e) MEL administration can induce some symptoms of the SAD; f) several antidepressant drugs increase MEL plasma levels. Several of these findings are disproved: the light acts independently from the MEL, some antidepressant agents act without modifying MEL levels; a consistent alteration in MEL secretion within SAD has not been convincingly demonstrated. Relationship between incidence and severity of SAD and latitude suggests a new potential implication of MEL in SAD. The daytime melatonin values reflect changes along the scale of a year in sunshine. Accordingly, the about-yearly periodicity, much larger in amplitude than the half-yearly component, yields ratios smaller than unity. By contrast during darkness an about-half-yearly component is more prominent. As the aurora zone is approached, the intensity of magnetic disturbances increases. Thus, the intensity of these two variables shows inverse relationships with latitude and geomagnetic field decreases plasma levels of MEL and inhibits MEL function. (38 Refs.)

#### **A controlled trial of timed bright light and negative air ionization for treatment of winter depression.**

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Arch Gen Psychiatry 1998 Oct;55(10):875-82

**BACKGROUND:** Artificial bright light presents a promising nonpharmacological treatment for seasonal affective disorder. Past

studies, however, have lacked adequate placebo controls or sufficient power to detect group differences. The importance of time of day of treatment--specifically, morning light superiority--has remained controversial.

**METHODS:** This study used a morning x evening light crossover design balanced by parallel-group controls, in addition to a nonphotic control, negative air ionization. Subjects with seasonal affective disorder (N = 158) were randomly assigned to 6 groups for 2 consecutive treatment periods, each 10 to 14 days. Light treatment sequences were morning-evening, evening-morning, morning-morning, and evening-evening (10,000 lux, 30 min/d). Ion density was  $2.7 \times 10^6$  (high) or  $1.0 \times 10^4$  (low) ions per cubic centimeter (high-high and low-low sequences, 30 min/d in the morning).

**RESULTS:** Analysis of depression scale percentage change scores showed low-density ion response to be inferior to all other groups, with no other group differences. Response to evening light was reduced when preceded by treatment with morning light, the sole sequence effect. Stringent remission criteria, however, showed significantly higher response to morning than evening light, regardless of treatment sequence.

**CONCLUSIONS:** Bright light and high-density negative air ionization both appear to act as specific antidepressants in patients with seasonal affective disorder. Whether clinical improvement would be further enhanced by their use in combination, or as adjuvants to medication, awaits investigation.

## **SUGGESTED READING**

### **Sunny hospital rooms expedite recovery from severe and refractory depressions.**

Beauchemin KM; Hays P University of Alberta, 1E7.31 Mackenzie Health Sciences Centre, Edmonton, Alberta, Canada.

J Affect Disord (Netherlands) Sep 9 1996, 40 (1-2) p49-51

Bright light therapy is an effective treatment for seasonal affective disorder, an uncommon condition marked by mild winter depression. Bright lights have been used as adjuncts in the pharmacological treatment of other types of depressive illness. The rooms in our psychiatric inpatient unit are so placed that half are bright and sunny and the rest are not. Reasoning that some patients were getting light therapy inadvertently, we compared the lengths of stay of depressed patients in sunny rooms with those of patients in dull rooms. Those in sunny rooms had an average stay of 16.9 days compared to 19.5 days for those in dull rooms, a difference of 2.6 days (15%):  $P < 0.05$ .

### **5-Hydroxytryptophan: a clinically-effective serotonin precursor.**

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Altern Med Rev 1998 Aug;3(4):271-280

5-Hydroxytryptophan (5-HTP) is the intermediate metabolite of the essential amino acid L-tryptophan (LT) in the biosynthesis of serotonin. Intestinal absorption of 5-HTP does not require the presence of a transport molecule, and is not affected by the presence of other amino acids; therefore it may be taken with meals without reducing its effectiveness. Unlike LT, 5-HTP cannot be shunted into niacin or protein production. Therapeutic use of 5-HTP bypasses the conversion of LT into 5-HTP by the enzyme tryptophan hydroxylase, which is the rate-limiting step in the synthesis of serotonin. 5-HTP is well absorbed from an oral dose, with about 70 percent ending up in the bloodstream. It easily crosses the blood-brain barrier and effectively increases central nervous system (CNS) synthesis of serotonin. In the CNS, serotonin levels have been implicated in the regulation of sleep, depression, anxiety, aggression, appetite, temperature, sexual behaviour, and pain sensation. Therapeutic administration of 5-HTP has been shown to be effective in treating a wide variety of conditions, including depression, fibromyalgia, binge eating associated with obesity, chronic headaches, and insomnia.

### **Prediction of acute and late responses to light therapy from vocal (pitch) and self-rated activation in seasonal affective disorder.**

Boenink AD; Bouhuys AL; Beersma DG; Meesters Y Department of Biological Psychiatry, University Hospital of Groningen, The Netherlands.

J Affect Disord (Netherlands) Feb 1997, 42 (2-3) p117-26

It was hypothesized that pre-treatment activation plays a role in the response to light therapy in Seasonal Affective Disorder (SAD). In 55 SAD patients (DSMIII-R) energetic and tense activation was assessed before light therapy via self-rating (AD-ACL) and voice sound characteristics (mean pitch and variation in pitch). These variables were studied in relation to the "acute" response to 4 days

of light therapy (30 min, 10000 lux) and to a "late" response (11 (10) days after light therapy had stopped). Acute response was defined as the percent change in 3 times daily self-rated depressed mood (AMS) with respect to the average of 4 baseline days. "Late" response was defined as the percent change in HRSD or AMS scores between baseline and 11 (10) days after light therapy. It was found that patients having high pitched voices with small variation in this pitch benefitted more from light therapy than the patients with low pitch and large variation in pitch levels. This effect was only significant after the first day of light exposure. No other significant relations were found between baseline activation and acute or late responses to light therapy. Hence, light therapy seems to give extra comfort in "tense" patients, who become rapid responders to light therapy.

### **Cluster headache and periodic affective illness: common chronobiological features.**

Costa A; Leston JA; Cavallini A; Nappi G University Centre for Adaptive Disorders and Headache (UCADH), Section of Pavia I, Italy.

Funct Neurol (Italy) Jul-Sep 1998 , 13 (3) p263-72

Many of the seasonal changes occurring in animals appear to be associated with photoperiodic modifications, and particularly with the duration of the phases of exposure to light and dark. The integration of these processes is made possible by the normal functioning of biological oscillators or synchronizers, presumably located at the hypothalamic level. Cluster headache (CH), seasonal affective disorder (SAD) and bipolar mood disorders are conditions bearing numerous analogies, particularly as regards the temporal pattern of disturbances, the nature of predisposing or precipitating factors, the peculiar relationship with sleep, the neuroendocrine findings, and the clinical response to current treatments. The secretion of melatonin, which is influenced by the light/dark cycle, displays a bimodal pattern, which is likely to be dictated by the activity of distinct synchronizers for light and dark. Changes in the secretory pattern of this neurohormone have also been documented in both CH and SAD. The possibility of normalizing the secretory rhythm of melatonin by means of phototherapy in SAD, and the therapeutic use of the hormone to prevent the recurrence of active phases in CH, represent further interesting similarities between these two disorders. Melatonin, acting as a unique neuroendocrine transducer of photic inputs, may therefore be viewed as a marker of dyschronic disease to be used in patients suffering from CH and affective illness, for both diagnostic purposes and to assess the response to pharmacological and non pharmacological treatments. (47 Refs.)

### **The importance of full summer remission as a criterion for the diagnosis of seasonal affective disorder.**

Danilenko KV; Putilov AA Institute of Physiology, Siberian Branch of the Russian Academy of Medical Sciences, Novosibirsk, Russia.

Psychopathology (Switzerland) 1996, 29 (4) p230-5

From 1987 to 1994, seasonal affective disorder (SAD) has been diagnosed using the Rosenthal or DSM-III-R criteria. No major differences between them have been found, except that the DSM-III-R criteria were more stringent and difficult to implement. Little attention has been paid to differences in the criterion of the quality of improvement in summer. This study compared two groups of winter depressives characterized by complete or incomplete summer remission. Incomplete summer remission is associated with increased heterogeneity of the demographic and clinical profile of the disorder and a shift of this profile to that of classical depression. The data support clinical use of the DSM-IV criterion 'full remission' in the diagnosis of SAD.

### **[Phototherapy in psychiatry: clinical update and review of indications]**

Gross F; Gysin F Clinique de Psychiatrie II, Institutions universitaires de Psychiatrie, Geneve, Suisse.

Encephale (France) Mar-Apr 1996, 22 (2) p143-8

Phototherapy introduced in 1984 by Rosenthal as a treatment for SAD (Seasonal Affective Disorder) is the first therapeutic answer to season-related psychopathology. Findings in chronobiology have largely contributed to pathophysiological theories of disorders in the internal circadian system. Actual researches on the etiology of SAD covers fields as retinal deficiency (i.e. disorder of photoreceptors), phase disturbance of the internal circadian rhythms given by internal oscillators and neuroendocrinologically driven disorders, supposing that melatonin is the main mediator of human circadian systems in the CNS. Disorders of the neurotransmitters are an other explored cue. Recent longitudinal studies show a prevalence of seasonal depressive symptoms in general population up to 10%. In populations treated for depression the prevalence of SAD is up to 20%. The SAD sex-ratio (women/men) of 3/1 is found repeatedly. Above 55 years SAD get rare. Effectiveness of phototherapy is showed in nearly all controlled studies. Bright light for patients with mild SAD appears to be most effective as is also the authors clinical impression through the practice of phototherapy in Geneva since 1991. A true placebo for bright light is still to be found according to enable evaluation of potentially important impact that unspecific therapeutic factors may trigger in phototherapy. Actually possible new indications for phototherapy are being explored: bright light for non seasonal depression has been tested with features with SAD; effectiveness in bulimia has been suggested and recently sleep disorders in pn improved. Nonseasonal circadian disorders such as jet lag might be sensitive to light.(37 Refs.)

## **Natural bright light exposure in the summer and winter in subjects with and without complaints of seasonal mood variations.**

Guillemette J; Hebert M; Paquet J; Dumont M Laboratoire de chronobiologie, Hopital du Sacre-Coeur de Montreal, Quebec, Canada.

Biol Psychiatry (United States) Oct 1 1998 , 44 (7) p622-8

**BACKGROUND:** Considering the success of bright light therapy in seasonal affective disorders, it was suggested that seasonal mood disorders are triggered by decreased exposure to bright light in the winter; however, no previous studies have used objective measures to assess seasonal patterns of bright light illumination in subjects with seasonal mood variations.

**METHODS:** Eleven subjects reporting seasonal mood variations and 8 control subjects had their levels of natural bright light (BL) exposure measured for 5-6 days with an ambulatory monitor during both the summer and winter, at a latitude of 45 degrees 31'N.

**RESULTS:** Both groups received significantly more BL in the summer than in the winter, but there was no difference between the two groups for the pattern of BL exposure, including total duration, daily distribution, and amplitude of seasonal variation.

**CONCLUSIONS:** These results suggest that complaints of seasonal mood variations are not caused by a differential pattern in bright light exposure compared to normals. It is possible, however, that some individuals are more sensitive than others to variations in natural bright light. Whether an increased vulnerability is due to a more fragile affective state or to a lower sensitivity to light remains to be determined.

## **Pharmacological treatment of seasonal affective disorder - The role of hypericum extract**

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Psychopharmakotherapie, Supplement (Germany) 1998, 5/8 (21-25)

Seasonal affective disorder (SAD) is a subgroup of major depression and characterized by a regular occurrence of symptoms in autumn/winter and full remission or hyponia in spring/summer. Light therapy (LT) and recently pharmacotherapy with specific antidepressants have been shown to be beneficial. Within the array of pharmacotherapy hypericum extract has also been found to be effective in a single-blind study. In this 4-weeks-treatment study 900 mg of hypericum extract LI 160 was associated with a significant reduction in the total score of the Hamilton Depression Rating Scale. There was no significant difference when bright light therapy was combined with hypericum extract, compared to the situation without bright light therapy. Overall, hypericum extract was well tolerated and therefore the data suggest that pharmacological treatment with hypericum may be an efficient therapy in patients with SAD, which needs to be substantiated in further controlled studies.

## **Side effects of short-term 10,000-lux light therapy.**

Kogan AO, Guilford PM Borgess Medical Center, Kalamazoo, Mich., USA.

Am J Psychiatry 1998 Feb;155(2):293-4

**OBJECTIVE:** Previous reports of side effects from light therapy were mostly based on administration of 2,500-lux treatments. It has become common practice to use brighter, 10,000-lux exposure when treating seasonal affective disorder. The authors studied side effects produced by short-term 10,000-lux light therapy.

**METHOD:** Seventy subjects with seasonal affective disorder who underwent brief 10,000-lux light therapy were asked to report side effects.

**RESULTS:** Of the 70 subjects, 32 (45.7%) experienced side effects, and nine (12.9%) reported two or more apiece. Headaches and eye or vision problems were the most common. Almost all were mild, were transient, and did not interfere with treatment.

**CONCLUSIONS:** Short-term 10,000-lux light therapy often produces side effects early in treatment. These are not serious or prolonged, however, confirming findings from earlier studies that used dimmer light.

## **Light treatment for nonseasonal depression: speed, efficacy, and combined treatment.**

J Affect Disord (Netherlands) May 1998 , 49 (2) p109-17

**BACKGROUND:** Using bright light for treating major depressive disorders which are not seasonal needs reassessment.

**METHODS:** Clinical trials of light treatment for nonseasonal major depressive disorders were compared with selected trials of light treatment of winter depression and with antidepressant clinical drug trials.

**RESULTS:** Light treatment of nonseasonal depression produces net benefits in the range of 12-35%, often within 1 week.

**CONCLUSIONS:** Light's value for nonseasonal and seasonal depression are comparable. Light appears to produce faster antidepressant benefits than psychopharmacologic treatment.

**LIMITATIONS:** Direct randomizing comparisons between light and medications for nonseasonal depression are not available.

**CLINICAL RELEVANCE:** Bright light can be combined with standard therapies for treating nonseasonal depressions and appears synergistic.

### **Dawn simulation vs. lightbox treatment in winter depression: a comparative study.**

Lingjaerde O, Foreland AR, Dankertsen J Department of Research and Education, Gaustad Hospital, Oslo, Norway.

Acta Psychiatr Scand 1998 Jul;98(1):73-80

Dawn simulation, with gradually increasing bedside light in the morning, has shown promising results as an alternative to bright light treatment for winter depression. To compare these treatments, 61 out-patients with winter depression (20-70 years of age, 80% women) were randomized to receive either lightbox treatment with 1500-2500 lux white light for 2 h in the morning for 6 days on an out-patient basis (n=34), or dawn simulation treatment in their homes, with 60 or 90 min of light augmentation time to 100-300 lux, for 2 weeks (n=27). Patients' ratings of improvement on a visual analogue scale (correlating strongly with percentage reduction in an extended Montgomery-Asberg Depression Rating Scale (MADRS) score) at the end of treatment showed a mean of 40.0% (SD 27.7%) in the dawn simulation group and 57.4% (SD 29.9%) in the lightbox group (P=0.02). The majority of the patients in both groups maintained their improvement during a 9-week follow-up. Age, sex, current major depression or current use of antidepressants did not predict outcome in either group. No serious side-effects were observed.

### **Extrapineal melatonin and exogenous serotonin in seasonal affective disorder**

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Medical Hypotheses (United Kingdom) 1998, 51/5 (441-442)

Visible light inhibits the binding of melatonin and serotonin to cultured human peripheral blood mononuclear leukocytes (PBMLs) in winter. The decreased binding switches the metabolism in PBMLs towards serotonin synthesis, resulting in the reduced production of melatonin. The ingestion of L-tryptophan during the day is hypothesized to increase the levels of melatonin, released from the gastrointestinal tract, in patients with winter seasonal affective disorder (SAD). Due to the relative shortage of light, coincident with a predisposed metabolic error, there would be no switch towards serotonin synthesis among winter SAD patients in winter. The rate of serotonin synthesis could thus remain inadequately low to maintain optimal mood in winter SAD patients.

### **Greater improvement in summer than with light treatment in winter in patients with seasonal affective disorder.**

Postolache TT; Hardin TA; Myers FS; Turner EH; Yi LY; Barnett RL; Matthews JR; Rosenthal NE Clinical Psychobiology Branch, NIMH, Bethesda, MD 20892, USA postolache@nih.gov

Am J Psychiatry (United States) Nov 1998 , 155 (11) p1614-6

**OBJECTIVE:** The authors sought to compare the degree of mood improvement after light treatment with mood improvement in the subsequent summer in patients with seasonal affective disorder .

**METHOD:** By using the Seasonal Affective Disorder Version of the Hamilton Depression Rating Scale, the authors rated 15 patients with seasonal affective disorder on three occasions: during winter when the patients were depressed, during winter following 2

weeks of light therapy, and during the following summer. They compared the three conditions by using Friedman's analysis of variance and the Wilcoxon signed ranks test.

**RESULTS:** The patients' scores on the depression scale were significantly higher after 2 weeks of light therapy in winter than during the following summer.

**CONCLUSIONS:** Light treatment for 2 weeks in winter is only partially effective when compared to summer. Further studies will be necessary to assess if summer's light or other factors are the main contributors to this difference.

### **Disorders of the sleep-wake cycle in adults.**

Sedgwick PM Department of Addictive Behaviour, St George's Hospital Medical School, London, UK.

Postgrad Med J (England) Mar 1998 , 74 (869) p134-8

Adults have an intrinsic body clock which regulates a complex series of rhythms including sleep and wakefulness, fatigue and cognitive ability. This endogenous clock naturally runs more slowly than the solar day and is entrained to a 24-h rhythm primarily by the alternation of light and darkness. Jet lag, shift-work sleep disorder, and some of the chronic insomnias are caused by a temporal discrepancy of the body clock relative to the surrounding environment and social network. The underlying mechanisms and general management are described. Both bright light and melatonin therapy have potential in the management of these disorders. Traditionally, bright light therapy has been used to alleviate the depression associated with seasonal affective disorder. Melatonin has received much ill-formed publicity, it being claimed that it is a panacea and an 'antiageing' treatment. Both of these treatment approaches are reviewed. (30 Refs.)

### **Platelet serotonergic functions and light therapy in seasonal affective disorder.**

Stain-Malmgren R; Kjellman BF; Aberg-Wistedt A Department of Psychiatry, Institution of Clinical Science, Karolinska Institute, St. Goran's Hospital, Stockholm, Sweden.

Psychiatry Res (Ireland) May 8 1998 , 78 (3) p163-72

We investigated platelet 14C-serotonin uptake and platelet [3H]LSD and [3H]paroxetine binding in 11 patients with seasonal affective disorder (SAD). Patients were reinvestigated after light therapy, applied at 07.00-09.00 h for 10 consecutive days. The degree of depression was rated before and after light therapy using the Comprehensive Psychopathological Rating Scale (CPRS). Baseline data in patients were compared with data from a control group consisting of 11 age- and sex-matched healthy volunteers. Seven patients responded to light therapy with a > 50% reduction in CPRS scores. In non-responders, the reduction in CPRS was 24.7 +/- 5.5%. There was a significant inverse correlation ( $P = 0.014$ ) between  $K_m$  for platelet 14C-serotonin uptake and CPRS scores. Patients had significantly higher  $B_{max}$  for platelet [3H]LSD binding ( $P = 0.04$ ) and significantly lower  $B_{max}$  for platelet [3H]paroxetine binding ( $P = 0.016$ ). There was a strong, multiple correlation between  $B_{max}$  for [3H]LSD, as the dependent variable, and  $K_m$ ,  $V_{max}$  and  $B_{max}$  for [3H]paroxetine binding in patients ( $P < 0.0001$ ) but not in controls. Responders to light therapy had significantly higher  $K_m$  ( $P = 0.023$ ) and significantly lower  $B_{max}$  for [3H]paroxetine binding ( $P = 0.028$ ) than non-responders.  $B_{max}$  for [3H]paroxetine binding increased significantly to normal levels after light therapy. The results indicate that SAD is associated with aberrations in the serotonin uptake mechanism. The enhanced 5-HT<sub>2</sub>-receptor density may reflect a consequential up-regulation.

### **Predictors of response and nonresponse to light treatment for winter depression.**

Terman M; Amira L; Terman JS; Ross DC Department of Psychiatry, Columbia University, New York, USA.

Am J Psychiatry (United States) Nov 1996, 153 (11) p1423-9

**OBJECTIVE:** The authors' goal was to determine whether the pattern and severity of depressive symptoms predict response to light treatment for seasonal affective disorder.

**METHOD:** Subjects with winter depression ( $N = 103$ ) were given bright light treatment. Seventy-one were classified as responders, 15 as nonresponders, and 17 as partial responders. Using depression rating scale data and correlational and multivariate analysis, the authors sought predictors of response in baseline symptom and scale scores.

**RESULTS:** Responders were characterized by atypical symptoms, especially hypersomnia, afternoon or evening slump, reverse diurnal variation (evenings worse), and carbohydrate craving. By contrast, nonresponders were characterized mainly by melancholic symptoms, retardation, suicidality, depersonalization, typical diurnal variation (mornings worse), anxiety, early and late insomnia,

appetite loss, and guilt. The ratio of atypical symptoms of depression, rather than severity per se, best predicted treatment outcome for the group as a whole. treatment expectations were positively correlated with improvement on the Hamilton Depression Rating Scale but not on a supplementary scale of atypical symptoms.

**CONCLUSIONS:** Light-responsive seasonal affective disorder is distinguished by a dominant atypical symptom profile closely associated with depressed mood. Nonresponders from a clinically distinct group with melancholic features. The patient's symptom profile, therefore, should be considered when diagnosing seasonal affective disorder and selecting treatment.

### **Seasonal affective disorder and season-dependent abnormalities of melatonin suppression by light.**

Thompson C, Stinson D, Smith A Department of Psychiatry, University of Southampton, Royal South Hants Hospital, UK.

Lancet (1990 Sep 22) 336(8717):703-6

Twelve patients with seasonal affective disorder (SAD) and eleven normal controls were exposed to 2000 lux and 300 lux of artificial full-spectrum light on consecutive nights during the winter. Suppression of melatonin secretion under the two light intensities was measured and the difference between their effects was taken as a measure of light sensitivity. The test was repeated in summer in both groups, when the SAD subjects were well. The SAD but not the normal group showed a significant seasonal variation in sensitivity to light. There was evidence of supersensitivity in the winter but also of subsensitivity to light in the summer.

### **'Natural' light treatment of seasonal affective disorder.**

Wirz-Justice A; Graw P; Krauchi K; Sarrafzadeh A; English J; Arendt J; Sand L Psychiatric University Clinic, Basel, Switzerland.

J Affect Disord (Netherlands) Apr 12 1996, 37 (2-3) p109-20

Patients with seasonal affective disorder (SAD) were treated for 1 week either with a daily 1-h morning walk outdoors (natural light) or low-dose artificial light (0.5 h@2800 lux). The latter treatment (given under double-blind conditions) can be considered mainly placebo and did not improve any of the depression self-ratings, whereas natural light exposure improved all self-ratings. According to the Hamilton depression score, 25% remitted after low-dose artificial light and 50% after the walk. Sleep duration or timing were not crucial for the therapeutic response. The morning walk phase-advanced the onset and/or offset of salivary melatonin secretion, but individual clinical improvement could not be correlated with specific phase-shifts. Morning cortisol was decreased. Low-dose artificial light did not modify melatonin or cortisol patterns. This is the first study to provide evidence for the use of outdoor light exposure as a potential alternative or adjuvant to conventional light therapy in SAD.

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