

ELIMINATING THE TOP CAUSES OF INSOMNIA: Effective Nutritional Intervention for Neurotransmitter Deficiency and Cortisol Excess

The following article was written by Julia Ross and published in the Townsend Letter #339, 2011. The author updated the article in August 2014.

I have been the director of three clinics in the San Francisco Bay Area that have treated a variety of disorders--primarily compulsive eating and chemical dependency--for over 26 years. In that time we have provided nutrient therapy to at least two thousand chronic insomniacs. The careful diagnosis, and the targeted and closely-monitored treatment of the underlying causes of each client's sleep disorder have led to successful outcomes in almost every case. At least half of our sleepless clients have responded quickly and well to neurotransmitter precursors such as tryptophan and/or melatonin, or GABA,. Others have required specific cortisol-lowering regimens instead or in addition. These latter cases have tended to involve more severe sleep disturbances and, often, the use of the highly addictive benzodiazepines, the only class of pharmaceutical in current use capable of temporarily suppressing cortisol levels.

INITIAL INTERVIEWS OF INSOMNIACS

A detailed sleep function assessment has been crucial for our clinic's determining the course of successful therapy:

How long have you had a sleep problem?

Did it begin during or after a particularly stressful time?

Does insomnia run in your family?

What time do you get to sleep?

How long does it take to fall asleep?

How long do you sleep?

How often do you wake up in the night? For how long?

Do you need to take benzodiazepines such as Xanax, Ativan, or Klonopin to sleep? Or marijuana? Or alcohol? Or carbs? If so, when?

Do you have the symptoms of any of the following three types of insomnia?

TYPE ONE INSOMNIA: SEROTONIN/MELATONIN DEFICIENCY

This is the most common cause of insomnia, in our experience: When levels of the extraordinary antidepressant neurotransmitter, serotonin, are subnormal, there is typically inadequate surplus to use for conversion to melatonin. What results is a difficulty falling asleep (night owl syndrome) more commonly than one of staying asleep (though either or both may be present.) Either way, worries and obsessive thoughts make wakefulness unpleasant. This syndrome is often genetic and longstanding (though the severity may have increased over time.)

The following is a list of the common symptoms of serotonin deficiency,

which helps us rule this syndrome in or out as a cause of the particular insomnia being endured. We ask that it be filled out using a severity scale from 1 to 10.

night-owl, hard to get to sleep
 disturbed sleep, premature awakening
 negativity, depression
 worry, anxiety
 low self-esteem
 obsessive thoughts or behaviors
 hyperactivity / tics
 perfectionism, controlling behavior
 winter blues
 irritability, rage (e.g., PMS)
 dislike hot weather
 panic attacks; phobias (fear of heights, small spaces, snakes, etc.)
 fibromyalgia, TMJ, migraine
 afternoon or evening cravings for carbs, alcohol, or pot
 * The frequent use of benzos is not part of this syndrome

Re Serotonin Testing: Blood platelet testing for serotonin levels is superior to any other than cerebrospinal fluid testing and almost as hard to find. Blood plasma testing gives a rougher idea of actual levels. Research and practice have convinced us that urinary neurotransmitter testing is very unreliable. (See my article on this subject originally published in the Townsend Letter of October 2006 and posted on my website: moodcure.com/relarts)

TREATMENT FOR TYPE ONE INSOMNIA: Tryptophan (500 - 2000 mg for adults--less with children), taken when insomnia occurs, e.g., at bedtime and/or in the night, is the first treatment of choice. 5-HTP *raises* cortisol (should hypercortisolism also be an issue) so we avoid it in serious insomnia cases (otherwise nightmares or other sleep deterioration can result.) If tryptophan does not do the whole job, we add melatonin (.5 - 5 mg) as an immediate-release supplement for bedtime-only insomnia, or in a delayed-release form for later-in-the-night awakenings. (We prefer NOW Foods' two-stage release Melatonin.)

Re dosing: We start with the lowest dose and have our clients go up as needed. Children under 14 start with a small amount from an opened capsule, mixed with mashed fruit or any other palatable protein-free food. The younger and more sensitive the child, the less provided.

TYPE TWO INSOMNIA: GABA DEFICIENCY

Gamma amino butyric acid is the second of the brain's primary inhibitory (i.e., calming) neurotransmitters. It neutralizes adrenaline as a primary function. A GABA deficiency can accompany a serotonin/melatonin deficiency, or cause sleep problems on its own. Here, muscle tension and other symptoms of overstress interfere with sleep. The following is a list of common symptoms of GABA deficiency which, again, helps us to determine if this syndrome is a significant

factor in a particular case of insomnia.

overstressed and burned out

unable to relax/loosen up

stiff or tense muscles

often feel overwhelmed

may experience panic attacks

when resorting to sleep meds, respond best to the benzodiazepines

RE GABA TESTING: We are not satisfied with any lab testing for levels of this neurotransmitter. (GABA is not found in the platelets and urine testing is especially unreliable when it comes to GABA level testing.)

TREATMENT OF TYPE TWO INSOMNIA: 100-500 mg of GABA taken whenever sleep is a problem can be very helpful along with, or instead of, tryptophan/melatonin. The Hudson/Bush article makes the signature Neuroscience (and Senesco) error of, while recommending that levels of the inhibitory neurotransmitter GABA be enhanced, not recommending GABA supplementation itself. GABA is wildly effective (at 100-500 mg, at bedtime and/or later in the night on awakening) for all over-stressed states, including many cases of insomnia. We do avoid GABA 750 mg, as reverse syndrome (e.g., anxiety) may develop at such high doses. In the few non-responders to GABA, L-theanine often provides a very similar calming effect as they note.

TYPE THREE INSOMNIA: HIGH CORTISOL

A number of things can raise nocturnal cortisol temporarily: alcohol or caffeine use and evening exercise among them. (For accurate testing and effective treatment, these factors need to be eliminated. Excessive stress always raises our levels of the stress-coping giant, cortisol, the chief of our stress-response team (which also includes adrenaline and endorphin.) Chronic stress, e.g., protracted pain or financial, legal or emotional problems, can lead to a permanent hypercortisol state—even long after the precipitating events have resolved. When this disturbance occurs at night, when cortisol levels should be at their lowest, the quality of insomnia is typically an alert "ready to get to work" one or an agitated and hyper-vigilant, or even a startled or shocked sensations on sudden nocturnal awakening.

Because, chronically elevated cortisol suppresses serotonin and exhausts GABA, the worried Type One and tense Type Two Insomnia conditions are a regular, but minor, feature here. The balance of this article will concentrate on the less well understood, but often critical, dynamics of insomnia caused by excessive nocturnal cortisol output.

TESTING NIGHTTIME CORTISOL LEVELS: *In addition to the initial sleep status assessment, salivary cortisol testing is critically important--specifically, salivary collections in the night at the time(s) that sleep is disturbed.* Without the results of such testing, we cannot be sure if a particular person's insomnia is high-cortisol related or not, and should be reluctant to suggest therapy. All labs can have

lapses, but for the most part we find this to be the most clinically relevant test we've ever recommended. Because we are often concerned about daytime as well as nighttime adrenal function, our clinic usually recommends the standard four samples: three daytime samples plus a bedtime (10 - 12PM) sample. We add a 1 - 5AM sample, if early awakening is a problem. *Use bedtime reference ranges to evaluate any samples collected between 10PM and 5AM.* Alternatively, you could order one or more single sample cortisol test kit(s) to be used only during the sleepless period(s). Practitioners who cannot order salivary testing may order tests from ZRT Lab through the Canary Club at canaryclub.org or have clients order directly through Direct Access Lab at directlabs.com.

LOWERING CORTISOL LEVELS: We start by providing rich, *basic adrenal support* using high dose multi-vitamins¹, multi-minerals, and extra vitamin C to support a *blood-sugar stabilizing diet* of at least 3 meals, each including 20-25 grams of protein, adequate fat (preferably including saturated fat), and no sugar or other refined carbs. We typically suggest 1000-1500 mg of glutamine between meals to support blood sugar stability. If compliance is a problem, we refer clients to the questionnaire from my book *The Diet Cure*, to identify whether persistent carbohydrate cravings may be due to neurotransmitter deficits, chronic under-eating/dieting, food allergy, yeast overgrowth, or sex hormone dysregulation.

Providing nutrient supplements that specifically lower cortisol: Perhaps 15% of cases of chronically elevated nocturnal cortisol respond well to GABA and/or tryptophan or melatonin. The rest require the nutrients I'll mention next.

The use of phosphatidyl serine to lower cortisol is advocated by many practitioners. However, we have found that the phosphorylated form of serine (e.g., Enerphos²) has a much stronger cortisol-lowering impact. DiagnosTechs' comparison trials demonstrated this years ago. Our clinic has used both forms and can attest to the superiority of the phosphorylated form. It is, in fact, one of a very few substances that can permanently subdue really stubborn cortisol elevation after only a few weeks or months of use. Hydrolyzed casien (Lactium³) is another. We often combine the two. Enerphos usually needs to be given 4-6 hours prior to an elevated-cortisol sleep disturbance, while (1-2) Lactium 85 mg. works immediately. Only (3) Enerphos (i.e., 3,000 mg) per day may be used, while Lactium may be used more freely by those who are not casein sensitive. (See the case studies at the end of this article.)

Cortisol-lowering Herbs: Holy basil can be helpful, as can reishi and magnolia bark and the combination formula Relora. We use them for those who do not tolerate Enerphos or Lactium well. Acupuncture/Chinese herbs for kidney/adrenal treatment should always be considered, especially when cortisol is elevated

¹ We prefer True Balance by NOW or GlucoBalance by Biotics for their strong blood sugar regulating impact, stable blood sugar spares the adrenaline- and cortisol-raising impact of hypoglycemia

² Contact InterPlexus.com for information on its use and contraindications.

³ Supplements of Lactium/hydrolyzed casein are sold by several companies. We prefer Biotics (De-Stress).

during the day as well as at night.

Avoid supplementation with stimulating, cortisol-elevating nutrients. For example, insomnia caused by high cortisol is not eliminated, but, rather, exacerbated by the use of the stimulating amino acid, *l-tyrosine* (*l*-tyrosine converts to noradrenaline and adrenaline.) If indicated by the noradrenalin deficiency symptoms of fatigue or poor concentration, we might recommend tyrosine in the AM only. Typically we forgo such treatment until after cortisol levels are lowered, and often find that the resulting improved sleep alone restores energy and focus.

The "*adaptogenic*" *herbal mixtures* recommended by so many practitioners typically contain ashwaganda, which can elevate, and licorice, which certainly *elevates* cortisol. Ashwaganda has proven to often be energizing (and licorice certainly is.) We have found these herbs, even when combined with more calming herbs, to be too stimulating for many of our already hyper and sleepless high-cortisol clients. (We like them for clients who need help raising low cortisol levels.)

Other Cortisol-Normalizing Considerations: Stress reduction/management needs, the use of caffeine, alcohol, and other cortisol-elevating drugs as well as excessive dieting or exercise (which also elevate cortisol) may need to be evaluated and addressed.

Where benzodiazepines have been used as regular sleep aids and addiction has resulted, a gradual taper, supported by all of the above nutrients, as needed, and guided by the Ashton Manual⁴ may be required. IVs emphasizing vitamin C (15-25 grams) and taurine are helpful on taper days to reduce or eliminate withdrawal symptoms. (IV-administered GABA sometimes has adverse effects, but taurine strongly and benignly supports GABA function in the brain.)

Eliminating Disrupted Sleep Associated with Elevated Cortisol: Two Successful Cases

With the proper use of the right tools, the stubborn insomnia caused by neurotransmitter deficiency and/or chronically elevated cortisol can be cured very quickly. Here are two examples from cases written up by health professionals enrolled in my certification program or the NeuroNutrient Therapy Institute's (NNTI) training process.

Case #1 from the practice of Julian Isaacs, PhD, Marin County, California:

VA is a forty one year old single woman with a history of childhood familial psychological abuse. She presents as an intelligent individual who is under considerable stress. She is working a demanding job as well as training to be a nurse. She contacted this office with reference to her sleep disorder in late 2010. Her diet was reported as being of good quality and she was not taking any kind of stimulant food or drinks, nor does she drink alcohol. She exercises and lives a

⁴ Benzodiazepine tapering protocols by UK physician-specialist Heather Ashton, MD, are available at <http://www.benzo.org.uk/manual/index.htm> and elsewhere on the internet.

stable if very demanding and busy life. She reported highly disturbed nocturnal sleep patterns. Surprisingly, despite disturbed sleep she reported normal energy levels. She was not depressed or significantly anxious in the day. She had trouble with sleep onset, the sleep latency period often being up to an hour or more. But she would also awaken every night in the very early morning (2 - 3 am) and usually be unable to get back to sleep. She described awakenings as being accompanied by "adrenalin rushes", with accelerated heartbeat, anxiety and hypervigilance. However she denied cognitive awareness of external threats or fears for body integrity or anxious ruminative content. She had tolerated this condition for two years until being informed by a friend of my amino acid activities.

Her first neurotransmitter deficiency questionnaire suggested needs for tryptophan and GABA for stress, sleep onset and sleep stability. Accordingly she was advised to take one 500 mg Tryptophan capsule at 4 hour intervals during the day, starting at noon, for stress and three at night, half an hour before retiring, for sleep onset. By her report this reduced stress and shortened sleep onset somewhat. However, the adrenaline rush at nocturnal awakenings continued unabated. She was then advised to take one GABA sublingual tablet (125 mg) prior to going to sleep and immediately after each nocturnal awakening. She did this for a week and then the GABA dose was increased to two tablets after nocturnal awakening, which reduced the anxiety after awakenings somewhat but did not prevent the awakenings nor subsequent insomnia.

It was then determined that her nocturnal awakenings were due to high nocturnal cortisol levels and a trial of Enerphos (1000 mg capsules of Phosphorylated Serine) as a cortisol antagonist at night time. She was carefully warned of the dangers of overuse of Enerphos, and warned of the long latency (up to 6 hours) prior to its taking effect. She was advised to take a single capsule at 8pm at night. She found this process effective the very first night, but asked to modify the dosage to be at bedtime rather than before. This worked even better. She tried doubling the dose for three nights but decided that a single capsule was enough. She continued taking the Enerphos for a total of three weeks. She then reported that she spontaneously felt sleepy at night at 10.30pm before taking the Enerphos. She was advised to stop taking the Enerphos immediately and a few days later to try gradually withdrawing the tryptophan, which she did. Happily, she found that both her sleep onset insomnia and awakenings had resolved and have not returned as of our last contact, three months after we began meeting.

Case #2 from the practice of Sabrina Nioche, NNTS, Certified Health Coach, Mammoth, California

M is a 53 year old male. His sleep problems started when the real estate crisis joined forces with a three year divorce. This lasting stress took it out of him. He could not stay asleep, plus he felt constantly agitated and his blood pressure was very high. I had suggested GABA several years previously and he had experienced great relief from it then.

This time we combined tryptophan with the GABA in the late afternoon to help prepare for sleep. He repeated the same protocol 30-60 minutes before bedtime. We did not get the desired result so I chose to test his nighttime cortisol

levels. At 1:30Am his cortisol was through the roof. So we implemented a new protocol of the Enerphos and Lactium combination. He takes 3 Enerphos at bedtime with 2 Lactium capsules. Because Lactium takes effect more quickly, he takes more Lactium if he wakes up in the night. He has not slept this well in years. He texted to thank me after sleeping for 11 hours more recently. He is no longer as tired because he is sleeping. His agitation and blood pressure are problems of the past as well.

Notes on Additional Causes of insomnia:

As a possibly Bipolar Spectrum symptom: lithium orotate OTC (5-15 mg 1-3x/day.) Lithium carbonate Rx or Seroquel as needed.

As a consequence of Pain: d-phenylalanine (500-1000 mg at bedtime).

Julia Ross, MA, MFT, is a pioneer in the use of nutritional therapy for mood, sleep, and addiction problems, and the author of The Diet Cure and The Mood Cure. She directs The Diet Cure Virtual Clinic for food addicts (dietcure.com). She also heads the NeuroNutrient Therapy Institute's training programs for professionals (moodcure.com). Based in Mill Valley, CA; 415-383-3611; info@dietcure.com

[A list of practitioners who have been trained and certified in the use of the methods described in this article may be found on moodcure.com.](http://moodcure.com)